beyond

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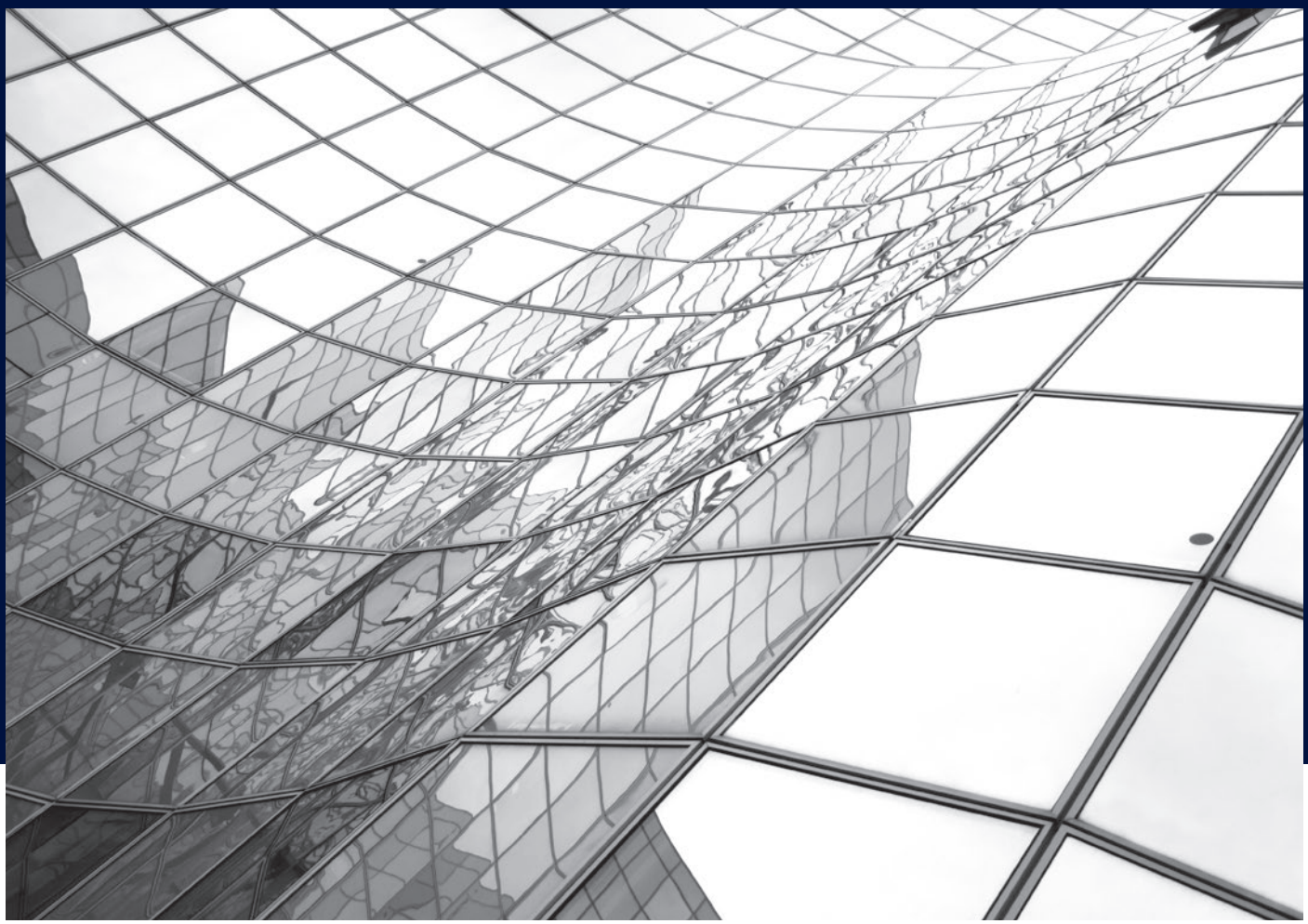
BANKING FUTURE

This issue

SANCTION SCREENING EFFICIENCY
FORWARD THINKING PAYS
FOCUS ON LITHUANIA



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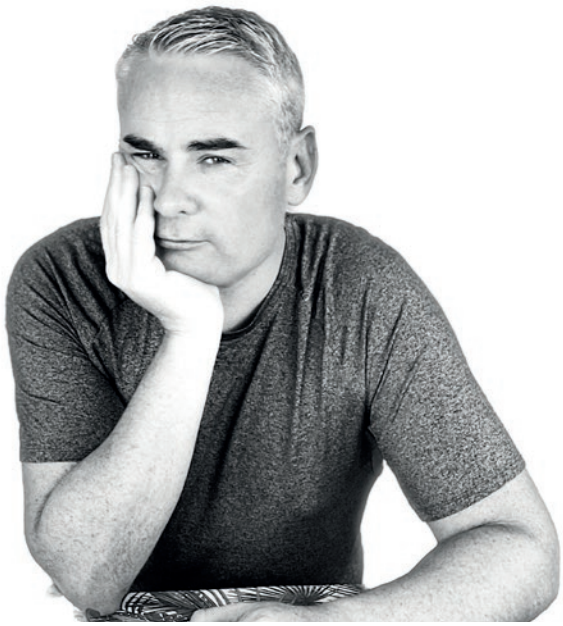

Paul Alexander
Group Chief Executive Officer
Beyond

SUPERPOWER OF THE FINANCIAL SERVICES WORLD

The financial services sector has been named the most technologically innovative since the start of the pandemic. Already an industry that contributes $26 billion to the global economy, it's expected to grow at a compound annual growth rate of close to 10% to reach $37 billion within three years. However, to realise this significant growth, financial services brands will need clear strategies to drive efficiency and unlock currently untapped value.

Data transformation is being hailed as a catalyst, with the Euro Banking Association calling it 'the new superpower of the financial services world.' And this is no exaggeration – one US bank expects to see more than $400 million in savings from rationalising its data assets and $2 billion in gains from additional revenues, lower capital requirements and operational efficiencies. Another institution expects to grow its bottom line by 25% in target segments and products thanks to data-driven business initiatives.

This newsletter demonstrates the tangible results we're delivering in both cost reduction and incremental revenue generation to organisations with financial interests, including banks and brands that offer credit. You'll also find articles outlining some of the latest analytical advancements, as well us an update on AML regulations and data science best practice. And as a little light relief we've thrown in a book review too!

With the speed of data advancement combined with the sector's growth potential, there's never been a more exciting time to be at the helm of a financial business.

Get in touch to find out how we can identify and convert your unknown unknowns into value.

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DRIVING EFFICIENCY IN SANCTIONS SCREENING

Sanction screening weakness can pose a significant problem for financial institutions and their customers. It's a critical compliance process that helps identify and prevent financial transactions involving individuals, entities, or countries subject to economic sanctions.

Liz McCall
Partner
Beyond

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When an organisation has a sanction screening weakness, it means that its processes for identifying sanctioned entities or individuals may not be effective, leaving the institution vulnerable to financial crime, including money laundering and terrorist financing. This can lead to heavy fines, loss of business and reputational damage. Moreover, customers may also be affected if they inadvertently engage in transactions with sanctioned individuals or entities, potentially facing legal and reputational consequences themselves.

The consequences of poor sanction screening

These were exactly the issues faced by a leading European Private Bank. The weaknesses related to the architectural set up of the vendor system and a partial outsourcing of scoring to a third party. They required a new solution and tuning support to optimise and benchmark the system.

A key objective was to lower the bank's false positive rate. The false positive rate refers to the percentage of flagged transactions that are determined to be false positives, or transactions that are wrongly flagged as potential sanctions violations. In other words, it's the ratio of the number of transactions that are flagged for further review to the number of transactions that are sanctioned. A high false positive rate can be a significant problem as it can lead to unnecessary delays in processing legitimate transactions, increased costs and decreased efficiency. Moreover, if a bank's false positive rate is too high, it can lead to compliance officers overlooking true violations, which can result in regulatory fines, reputational damage and legal consequences. Therefore, it's essential for banks to maintain a low false positive rate to ensure that they can accurately identify and prevent financial crimes while minimising disruptions to legitimate transactions.

An initial capability assessment was used to identify the weaknesses and provide recommendations to improve the system's effectiveness. This resulted in a re-assessment of the institution's risk profile and enabled the bank to reduce its false positive rate by 6.4%. In addition, the recommendations also enabled the bank to decrease the number of hits the system returned by 50% without impacting its ability to identify true matches, resulting in greater system effectiveness and increased performance which ultimately reduced overall screening costs. To further reduce the false positive rate, machine learning algorithms were applied to the post-processor. These were trained on large datasets of known sanctioned and non-sanctioned individuals and entities to learn patterns and identify features that are indicative of sanctions. The post-processor refined the results of the initial screening process to improve its accuracy, resulting in the number of false positives falling by a further 11%.

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One of the recommendations also highlighted in the initial capability assessment was the tuning of date of birth parameters. Our experience revealed that often this parameter was set to the default setting. Sanction screening systems typically use date of birth as one of the key criteria for identifying and flagging sanctioned individuals or entities. However, the accuracy of this criterion can be significantly impacted by various factors, such as variations in date format and data quality issues.

Date of birth tuning involves adjusting the format of the date of birth, such as changing the order of the day, month and year, or specifying a range of acceptable values for each component. This ensures that the system can correctly interpret and match the date of birth information provided in the screening data. Another approach is to apply fuzzy matching techniques that account for variations in data quality and format by using algorithms to identify and compare partial matches and variations in the date of birth information, such as missing or incorrect digits. Our approach altered the variable by calculating the difference in date of birth and the assigned weight in the aggregation of the final match score to improve the system's performance. The optimisation regime used the output dataset and considered over 4 million total score options for each of the returns. Based on the system's existing threshold, a combination of parameters were investigated to introduce a scoring function that had the highest impact on suppressing false positives, but with minimal impact on reducing the system's ability to capture sanctioned entities. Once an appropriate configuration was deduced, comparisons of the performance against other solutions were made to confirm the stability of the recommendation. The combination yielded a significant and stable reduction of 10%, with no impact to control and manipulated records.

Due to the success of the above projects, we also worked collaboratively with the bank to provide assurance of their adverse media system. An adverse media system is a tool used in sanctions screening to identify any negative news or information about an individual or entity that may be indicative of financial crime or other illegal activities. This system uses advanced algorithms and natural language processing techniques to scan large volumes of news articles, social media posts, and other public records to identify any information that may be relevant to a sanctions screening process.

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The adverse media system is an essential component of sanctions compliance programs, helping to identify potential risks and ensure that they are not inadvertently doing business with individuals or entities that are subject to sanctions. The system will flag potential matches for further investigation by the compliance team, who then determine whether a transaction or relationship should be allowed to proceed. It is therefore very important to get the balance right as too high and more flags will be raised meaning more time will be spent having to manually investigate risks, whilst too low and the bank runs the risk of falling foul of AML regulations.

A statistical analysis of the cap the bank used to determine the volume of adverse media documents was run to determine if the cap was fit for purpose. It also explored other potential cap settings to ensure compliance to regulations and to optimise the number of documents being generated in relation to the risk appetite of the bank.

The goal of the analysis was to estimate the probability that for a specified number of documents at least one document is relevant. This was achieved by implementing a customised analytical framework for estimating the marginal probability of documents in a row to understand their average relevance. To minimise bias and ensure the accuracy of the results the relevance was determined based on the frequency of languages per data vendor for each territory and thus the findings deduced illustrated the confidence level and hence the stability of the results. The analysis proved that for all data vendors the existing cap was appropriate to reduce relevant results, while minimising false positive without missing identified true alerts. It was also found in some cases that it would be appropriate to implement a marginal reduction in the cap for each data provider with minimal impact (less that 1 per cent) to the existing system performance, further demonstrating the reliability of the existing cap.

Clearly, the application of data science and machine learning techniques are important in sanctions screening and the maintenance of AML compliance. They enable organisations to analyse large volumes of data more efficiently and accurately than would be possible using traditional methods. As these activities demonstrate optimising the process of data analysis and more accurately flagging potential risks, means suspicious activity can be identified more quickly, more accurately, more effectively and more efficiently.

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THE CHANGING FACE OF COMPLIANCE RISK MANAGEMENT: REGULATORY REQUIREMENTS FOR INDEPENDENT MODEL VALIDATION

Lucy Hughes
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Beyond

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The application of data science and analytics technologies to deliver operational effectiveness and efficiencies in compliance risk management is not a new phenomenon. Although, the use of these technologies is accelerating due to the increasing availability of data and advances in analytical techniques.

In the 1990s, financial services firms began to adopt more sophisticated risk management techniques, including the use of quantitative models to measure and manage risks. These models relied on large amounts of data and sophisticated analytical techniques, such as Monte Carlo simulations and value-at-risk (VaR) analysis, to estimate the likelihood and potential impact of various risks.

As technology continued to advance in the 2000s, financial services firms began to collect even more data and apply more advanced analytical techniques. This led to the development of new tools and platforms for compliance risk management, such as anti-money laundering (AML) and know-your-customer (KYC) systems that use machine learning algorithms to detect suspicious transactions and identify potential fraud.

Today, however, financial services firms are increasingly using big data and artificial intelligence (AI) to improve compliance risk management. They are leveraging vast amounts of structured and unstructured data from a variety of sources, including social media and other external sources, to identify potential risks and trends. They are also using AI to automate and streamline compliance processes, such as regulatory reporting and document review, improve customer experience and deliver better returns internally.

However, what is perhaps a greater challenge to financial institutions embracing the digital and data-led era, is keeping up with governing bodies and the regulator who bring about new waves of important regulation impinging the application of these technologies within compliance risk.

We have long seen the impact of stringent regulation within credit risk and market risk that dictates the implementation of models across processes, however more recently this increased due diligence is being highlighted and more broadly implemented in the world of compliance risk.

In order for financial institutions to maintain a competitive edge and avoid being penalised by the regulator, they must have effective procedures in place to quantitively and qualitatively prove the soundness and robustness of their models, be able to tune models appropriately, monitor and act on model failures in a timely manner and independently, without bias, validate their models to prove they are fit for the intended purpose.

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Regulatory requirements

In 2017 Riksdag and Finansinspektionen in Sweden published new and more explicit regulation on the procedures of model risk management in relation to anti-money laundering and counter terrorist financing - one of the first European countries to publish such regulation in this field.

Over the last five years we've seen its extensive use across compliance regulation in Europe, and the ongoing pressure this has put on institutions to ensure they have the procedures in place to meet the requirements, as evidenced by the transaction monitoring thematic reviews of Denmark 2019/20. Evidence therefore demonstrates that any banks that don't include compliance models under their risk management frameworks will need to do so or face the consequences.

There is a strong indication that the review of models within compliance risk is changing and is being taken more seriously and, with the same due diligence as within market risk and credit risk, models must be validated to be fit for their intended purpose both before they are put into production and regularly thereafter.

This change in regulatory focus will require financial institutions to find and accept specialist support and technical expertise, to ensure that they're meeting the changing needs of the regulator and to be able to independently and unbiasedly demonstrate, with supporting documentation, that they're compliant.

The reality for banks and financial institutions is that regulators across all jurisdictions will need to follow in Swedish footsteps, to ensure that their regulated entities are operating effectively and efficiently.

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Challenges of model adoption

Whilst the reality for financial institutions to embrace model review and validation is clear, it still poses the question as to whether businesses understand how to achieve this effectively. Independent model validation in compliance, is still not covered extensively in the scientific press and with little guidance on best practises to meet requirements the challenge remains for companies to ensure they are independently validating their models without bias.

While independent model validation remains critical to ensure they're fit for intended purpose, in addition to resource and skill requirements, institutions will face additional challenges posed by the vendor. The vendors' methodology around model parameters is bound by intellectual property and thus, implementing the indicative solutions to ensure the level of risk is within acceptable limits cannot be determined subjectively. To apply appropriate and objective solutions, institutions need to be able to take a quantitative approach to reverse engineer the model parameters and minimise model risk.

Furthermore, with independently validated models certified fit for intended purpose, institutions will need sound documentation of model risk management to ensure complete governance, and evidence that change and incident management procedures are in place. This requires a specialist skillset of quantitative expertise with advisory support and a broad understanding of the regulatory requirements of the jurisdiction to ensure all needs are met.

Evolving compliance risk management: beat the curve

To perform compliant risk management internally without bias, would be impossible for financial institutions, so it's essential for businesses to embrace collaborative and independent partners to support in independent model validation. Those preparing models, systems and processes ahead of the impending regulatory reviews will have an overall advantage in effectiveness and efficiency while minimising the need for regulatory action to be taken and negating the risk of reputational damage.

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BUILDING DIGITISATION FOR FINANCIAL INSTITUTIONS: HOW TO ACHIEVE POSITIVE ENVIRONMENTAL IMPACT ON THE HIGH STREET BANKS

Danny Holmes
ESG Principal Consultant
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As the world becomes increasingly aware of the need for sustainability and environmental responsibility, many businesses are looking for ways to reduce their carbon footprint and energy consumption. Financial institutions with a significant presence on the high street are no exception.

With a complex portfolio of mixed building types and facilities technologies, banks face challenges in implementing enterprise-wide environment strategies to reduce their energy consumption.

One of Beyond's key clients, with a significant high-street footprint and presence, wanted to address their energy consumption, which averaged 18 kilowatt-hours (kWh) per square foot across more than 80 store locations. The mix of technologies combined with the complex age profile of their various sites made it difficult, and less commercially viable, for them to use a single-technology led approach alone to control the consumption.

To address the client's specific requirements on investment budget to achieve the results outlined here, Beyond managed to achieve an investment pay-back period of 60 days. As a result of these strategic applications, a 24% reduction in energy was achieved (equivalent to a saving of over £480,000 per annum), at a rate of 0.38p per kWh. With further small investments for stores that require the most support, store managers felt supported by the retailer's central team, in not only reducing carbon emissions but also supporting group-wide cost reductions.

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Beyond has taken these learnings and started rolling-out these insights and programs across a range of businesses both on and off the High Street. Without exception, every deployment has seen double-digit reductions in energy consumption driving environmental benefits and the corresponding double-digit reduction in operating costs at a power/electricity line level.

Looking at a bank, such as Lloyds Bank in the United Kingdom, who have a large high street retail presence, with a branch footprint of 860 branches (in 2022), each with an average retail size of 4,000 sqft, we would expect their annual energy costs to be approximately £23.5million. Using a similar approach to the one used for our retail customer, assessing where reductions in energy consumption could be made, and with the introduction of the appropriate building digitisation tools (based on the size/number of branches as stated above), we would expect to see a year-one reduction in energy costs of approximately £5million. This is a significant reduction of both energy consumption and cost to the bank.

The adoption of building digitisation strategies has material efficiency impact to our clients in the financial services sector. Assuming Bank of Ireland has an average square foot branch size of 3500 square feet and applying the same business case logic to their estate portfolio, we would expect to deliver some €1.5million of cost savings in Year One from deployment and contribute to a reduction in energy use of the same circa-24%. Likewise, with ING Bank in the Netherlands 170 branches across the country, we'd look to deliver €0.8million in operational savings. Across Danske Bank's 290 sites in Denmark, Norway, Sweden, Finland, Estonia, Latvia, and Lithuania, a cost saving of circa - €1.6million.

In 2020, a report by the European Banking Federation estimated 165,000 bank branches across the European Union. If we assume the British High Street to be not too dissimilar to the baseline established by Beyond to be a sensible read-across to any Rue Commerçante, Einkaufsstraße, or Via Principale, then we could be looking to unlock €0.5 billion[1] of economic impact and not forgetting the positive environment contribution.

With energy prices increasing around the world linked to both inflation and the raw commodity cost, we would expect the adoption of the Beyond building digitisation strategies to have material efficiency impact to our clients in the financial services sector.

1 - Calculations derived on data sourced from Eurostat, the statistical office of the European Union, as of the second half of 2021, the average household electricity price in the European Union was €0.226 per kWh, including taxes.

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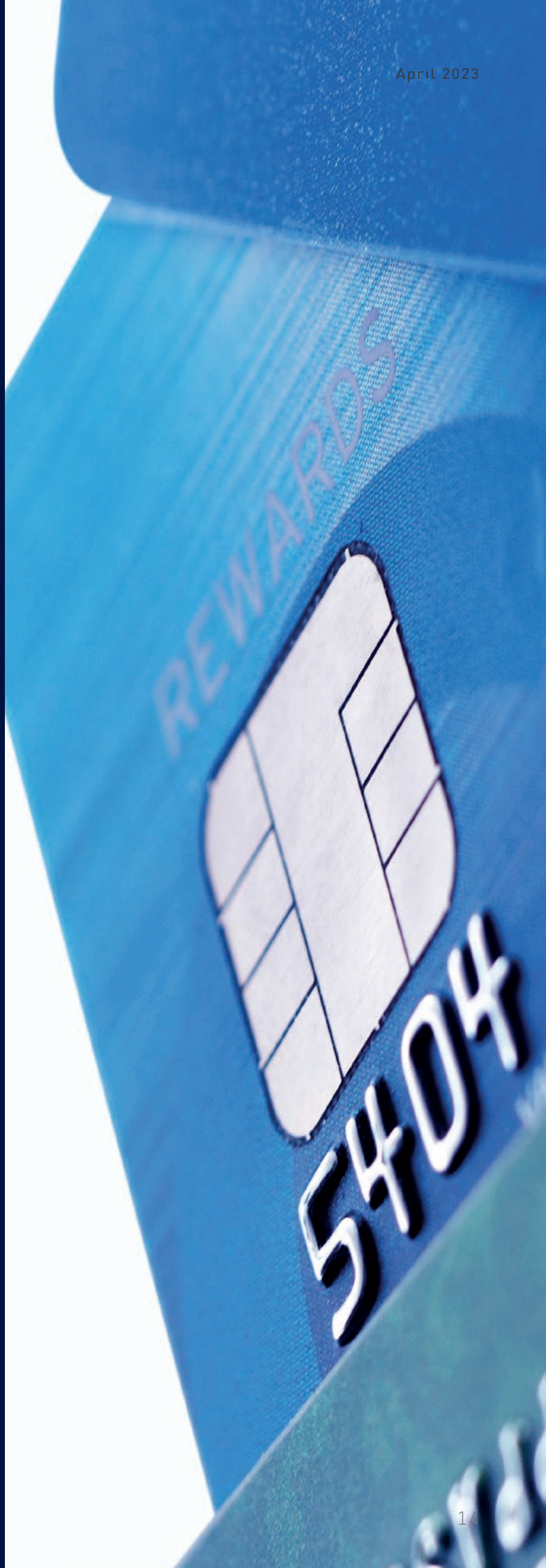
THE ROAD TO ~~PERDITION~~ ATTRITION IS LINED BY A RANDOM FOREST

Everyone knows that it costs more to recruit new customers than it does to keep existing ones. One of the most recent studies reveals that, on average, acquisition costs seven times the amount of retention.

Alex Griffiths
Consultant
Beyond



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In fact according to Gartner, if you reduce customer churn by 5%, an organisation can boost profit by at least 25%.

So, creating an attrition strategy makes excellent business sense, and is exactly the reason why we devised a new approach for one of our financial clients. A leading provider of commercial fuel cards, both in the UK and across other international markets, their customers range from sole traders such as tradesmen, small to medium enterprises (SMEs) with varying requirements and fuel usage, through to large logistics companies with high volume fleets.

The fuel market is highly competitive because it's very much driven by price. In the current climate where the cost of doing business is at its highest level for over 15 years, for smaller businesses getting the best price is critical and just a fraction of a pence difference was proving to trigger customers with multiple fuel cards to switch between providers. Attrition amongst SMEs was becoming a problem and the business was keen to find ways to better identify behaviours which could signal that a customer was truly churning.

Herein lies the problem – different customers have very different behaviours. Just because someone hasn't used their card for three weeks, doesn't necessarily mean that they've swapped to another provider, perhaps their inactivity was actually down to the fact that they had taken some annual leave. If this was the case, triggering an intervention from a customer support agent could do more harm than good and result in eroding lifetime value.

Through the misdiagnosis of attrition behaviours it means that non-churning customers could be offered better rates or more favourable credit terms, which leads not just to direct depletion of the bottom line, but also indirect costs associated with the inefficiency of making the call. Essentially addressing false positives, whilst missing false negatives.

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The solution

To reduce the attrition problem and improve confidence that customer support interventions were being offered to the right customers, we devised an approach using Random Forest, a powerful machine learning algorithm which combines multiple decision trees to make accurate predictions. The model is able to handle complex datasets with many features, including both numerical and categorical variables, which is necessary for attrition datasets. By using a large number of decision trees, each trained on a random subset of the data, the model can avoid overfitting and provide more robust predictions. This means that the interactions between different variables are identified. Additionally, Random Forest models can handle missing data and outliers, making them resilient to "noisy" data. This is critical, because to be effective the model had to be able to diagnose patterns of behaviours for each unique customer, rather than look at the customer base as a whole.

To put it simply, if customers A and B both typically pump every three days and then stop, with no fuel purchase being logged for a month, should they both receive a call from customer support offering them an incentive to continue pumping? If the model was just looking at pattens of inactivity, then yes they both should be called, but if the model takes into account individual behaviour and inactivity, then the answer is no. Only A should receive the call because their individual behaviour shows that this is a true anomaly; whilst B is a shift worker and the stoppage is merely denoting a period of inactivity, rather than churn.

The above example displays one of the major benefits of using random forest for an attrition model. The output is easily interpreted as it provides feature importance scores that can help identify which variables are most influential in making predictions. This means that the customers like A and B who were identified as having an attrition risk, are now ranked and prioritised and the customer support team make calls that target the right customer.

The result

Attrition has been reduced by 18% and the number of inappropriate lures-for-loyalty being offered to non-churning customers have also significantly dropped, demonstrating the double-whammy benefit of the approach.

Ultimately, financial businesses need to keep customers on the books for longer as longevity is directly correlated to loyalty, and loyal customers are proven to spend more, take less resource to service and often make referrals. Whilst customer acquisition is critical to any business, simultaneously stopping needless churn at the bottom of the funnel will, as the above demonstrates, pay dividends.

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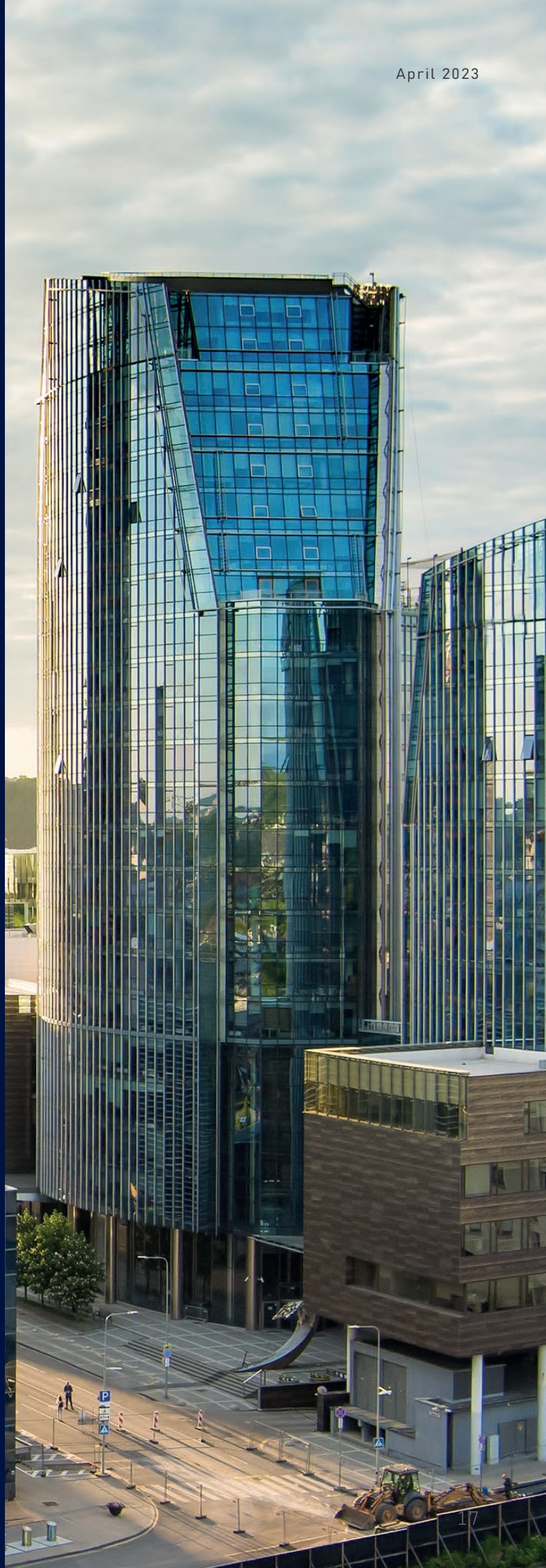
IN FOCUS... LITHUANIA

From mega-growth brands such as Vinted through to ourselves, thousands of organisations are seeing Lithuania as a great place to do business.

Alina Seriene
Head of Reporting UX & UI
Beyond



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Nestled in north-eastern Europe and bordered by Latvia, Belarus, Poland and the Baltic Sea, Lithuania is incredibly easy to get to with most European capitals being within a three-hour flight. Kaunas and Vilnius airports together operate more than 1,200 flights per month and it takes just 10 minutes to get from Vilnius airport into the heart of the city.

Couple this with its favourable business environment, skilled workforce and advanced technological infrastructure, its unsurprising that financial services organisations are also now flocking to the country. The Lithuanian Government has also implemented several measures to encourage the growth of the financial services sector, including the establishment of a regulatory sandbox for fintech startups, and the implementation of a competitive tax regime. As a result, Lithuania is now the fastest growing market for the financial services sector.

The number of licensed electronic money and payment institutions in Lithuania has also increased significantly in recent years, with many companies choosing to establish their operations in the country. Last year alone, there were 30 new banks registered in the country. Lithuania is also a hub for blockchain and cryptocurrency companies, with several major players in the industry setting up operations.

So why is this?

We asked Dovile Meliauskaite from Invest Lithuania, and this is what he said:

"Not to brag but Vilnius is:

- The greenest capital in Europe
- 85% of the workforce speak English and 84% have a university degree
- 2nd in Europe by young specialists (age 15-34) joining ICT sector
- #1 for fintech in Europe
- #1 globally for fastest public wifi speed
- Top 10 for work life balance
- 98 per cent of residents are happy to be living in Vilnius
- 13 per cent annual growth in migration to Lithuania due to attractive quality to cost ratio
- fDi Intelligence has named Vilnius as having the best city strategy in Europe

.....and the list goes on! Ultimately, it's a great place to live and work, combined with a very favourable business environment."

Beyond were early adopters and have been in Lithuania for nearly 5 years. In fact, most of our team is now based in Vilnius and, in addition to the list above, this is largely due to the superior technological community that we just can't get elsewhere. Our data specialists are networked into the best innovation hubs in the world, where emerging technologies are a reality, not a theory. This means that our clients know that the solutions we're providing are cutting-edge, and go beyond expectation to deliver insights that are truly transformational.

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USING DATA SCIENCE AND AML TO REDUCE THE ILLICIT WILDLIFE TRADE

The Illegal Wildlife Trade (IWT) is the fourth largest illegal trade after firearms, drugs, and human slavery, according to the United Nations Office on Drugs and Crime. And it's no wonder with profits generated from poached animals and timber estimated to be between US$7-23 billion per year.

Lucy Hughes
Consultant
Beyond

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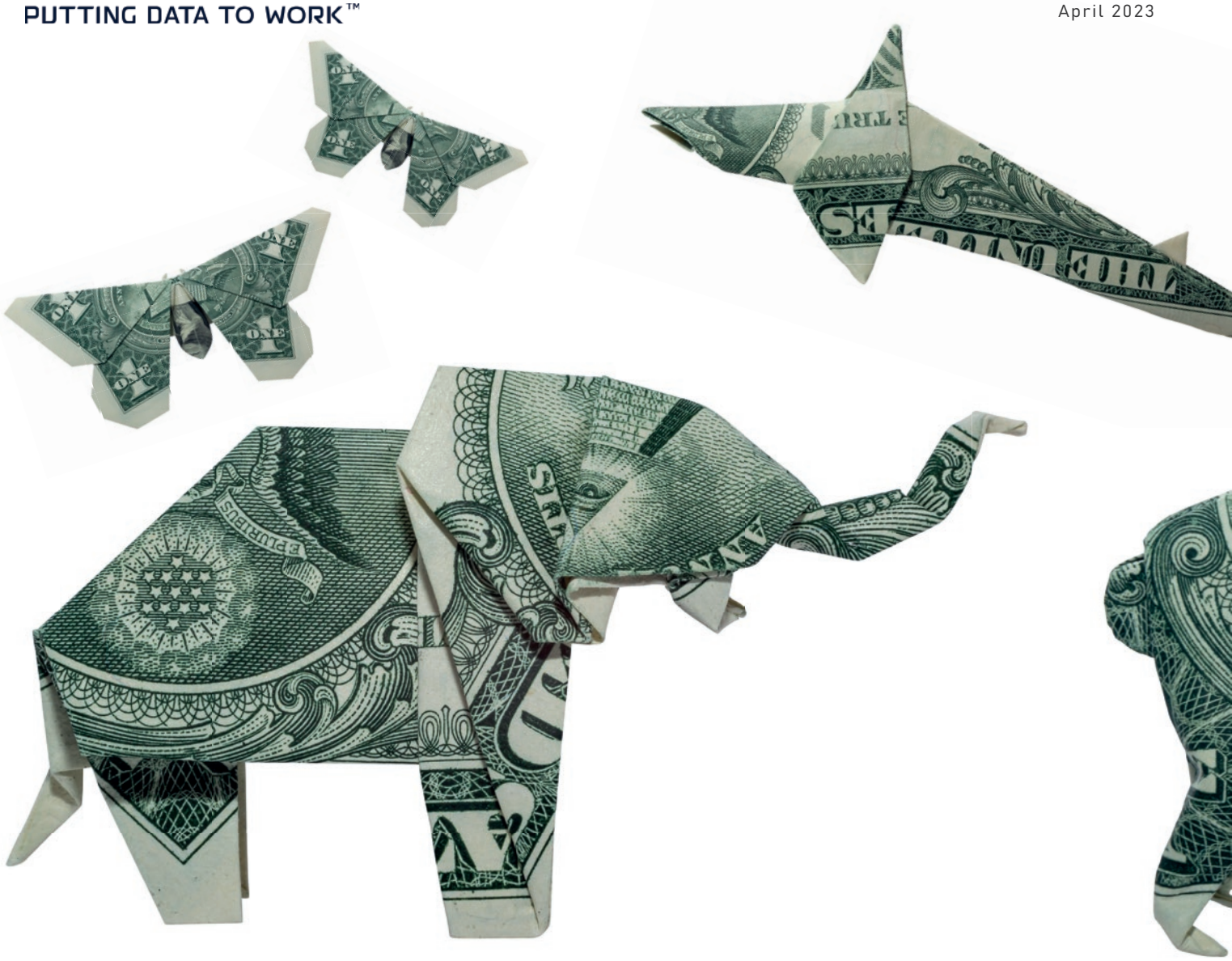

To reap the rewards, wildlife criminals have to legitimise their illicit gains by using techniques common to other forms of serious crime to enable them to access the global financial system. Therefore, one way to reduce IWT is to cut off their profits.

This is critical as it is widely recognised that IWT is a significant threat to many species and poses a major challenge to global biodiversity conservation efforts. According to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), IWT is estimated to involve hundreds of millions of individual plants and animals, with thousands of species affected. Some of the most commonly trafficked species include elephants, rhinos, tigers, pangolins and various species of reptiles and birds. Many of these species are endangered or threatened, and the illegal trade in their parts and products can have severe ecological, economic, and social consequences. The killing of wildlife for trade can disrupt ecosystems, cause population declines, and reduce the genetic diversity of species. It can also have significant economic impacts, such as reduced tourism revenue and increased law enforcement costs. Added to this is the laundering aspect.

To address this, three years ago the World Wildlife Fund for Nature (WWF) forged a global partnership with Association of Certified Anti-Money Laundering Specialists (ACAMS), the largest international anti-money laundering and financial crime prevention community in the world. This resulted in the launch of a specialised certification program to train individuals to detect, identify and report suspicious or unusual transactions that may be linked to IWT.

As criminals get increasingly creative and expand their illicit activities, innovative solutions need to offer better capability in identifying risk within the financial sector by enhancing systems to better detect IWT red flags in financial flows.

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A Red Flag is a regulatory-referenced indicator that highlights potential illegal activity in a bank account. Red Flags are created from the knowledge and understanding of patterns that emerge from the analysis of criminal transactional activity. They are then defined according to regulation and guidance notes and assigned to a specific financial crime typology, such as the IWT.

AML Analytics, one of our partners, have developed a ground-breaking Red Flag Test solution designed to carry out an on-the-spot transaction monitoring system health check. The innovative tests identify vulnerabilities in a transaction monitoring system's alerting capabilities and validate Red Flags associated with IWT providing the financial industry with a thorough understanding on how to better detect illicit activity.

Whilst, ultimately the reduction of IWT must be part of a broader strategy that includes effective law enforcement, international cooperation, and public awareness campaigns, the introduction of Red Flags in the finance sector could be a significant step in reducing IWT as it can help to detect and prevent financial transactions related to such illegal activities. By identifying suspicious transactions and highlighting potential Red Flags, financial institutions can take proactive measures to prevent the flow of funds associated with IWT. The exact extent to which the introduction of Red Flags in finance could reduce IWT is difficult to estimate as it depends on various factors, but studies have shown that financial institutions will play a crucial role. For example, a report by the Financial Action Task Force (FATF) highlighted that the use of cash in IWT transactions is declining, with a shift towards the use of digital payment systems and other financial channels. In fact, between 30-50% of transactions involve banks, money transfer companies or other formal financial channels, so the introduction of innovative new Red Flag tests will be an essential step in reducing IWT and this increasingly global issue.

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THE ADVANTAGES OF CREDIT RISK MODELS

With the average bank spending between $200 million and $500 million a year on credit risk modelling – understanding how to make it more effective is key.

Kranthi Kumar Kamsanpalli
Head of Data Science
Beyond

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Credit risk models enable organisations to quantify the probability of a customer defaulting on a payment, and how to optimise the credit function to minimise risk, and thereby maximising reward. They draw on vast amounts of historical data to build a view of the potential credit risk profile of any given customer, by analysing both minor and major features and contributions that attribute to risk.

Financial Institutions (FIs) are required to adhere to certain standards and regulations relating to credit risk, such as the recently updated standards for establishing capital requirements for the banking industry, officially unveiled by the Basel Committee on Banking Supervision (BCBS), known as Basel IV. To comply with these new regulations, FIs may need to change their risk management systems and procedures, and will be required to improve their internal models so they can get a more precise forecast and calculate any potential losses brought on by credit risk.

There is a clear requirement for FIs to invest in credit risk models to comply with these regulations, but they're not the only organisations that can benefit from this type of model. For instance, retail companies, mobile providers, energy companies and other organisations that offer credit to customers can use them to evaluate their creditworthiness before providing them with services or credit, helping to minimise the risk of non-payment, reduce bad debt and optimise the company's credit policies and strategies.

There are three main types of credit risk model, which include:

Default Probability Models:
Default probability models are used to predict the likelihood of default for individual borrowers or portfolios. These models are typically based on statistical analysis of historical data, and can be used to estimate the probability of default using different scenarios.

Exposure at Default Models:
Exposure at default models are used to evaluate the amount of capital the lender is at risk of losing if a customer defaults.

Loss Given Default Models:
Loss given default models are used to predict the potential losses that might arise from defaults, this model also considers the potential recovery on default. Recovery is any way the lender can gain back some of their losses.

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Integrating some or all of these types of models, depending on the needs of the business, has clear benefits. For instance, they can improve the accuracy of identifying customers more likely to attract risk to the company, and this increased accuracy can improve their credit decisioning, leading to a reduction in lost revenue. This can be achieved through a reduction in false positives, such as identifying customers who don't pose significant risk and refusing or reducing credit, or by allowing customers credit that do in fact pose significant risk and losing revenue by default.

Additionally, better evaluation of a client's risk facilitates better approval or rejection decisions, keeping to the credit risk appetite of the company (such as 95% of the portfolio must be AAA rated). Credit risk score re-calculations need to be run periodically for the whole of the portfolio to enable credit risk portfolio management, so if clients begin to shift from higher ratings to lower ones, a prompt will be activated to stop onboarding lower rated customers and start making changes to the credit policy for existing clients, to ensure that the business is not put at risk.

Credit risk models also help lenders identify high risk borrowers and take proactive steps to mitigate their risk exposure. This can include adjusting interest rates, requiring collateral, or rejecting credit applications altogether. By using this data driven approach, businesses can make informed decisions on the collateral/repayment terms etc, when lending to the high-risk borrowers.

Lenders can boost profitability by precisely estimating credit risk and efficiently managing their credit portfolios. These can include generating income from high quality credit interest payments and lowering default losses. Furthermore, through improved decisioning, clients that are onboarded are in line with the company's risk tolerance. Understanding the client risk portfolio, such as having quotas for the number of high-risk customers, allows organisations to optimise the number of high risk/high reward accounts.

These models also enable greater transparency, which is critical for explainability. Having fixed and documented rules for credit acceptance, creates clear transparency for business decision making and means that all customers are treated equally. Decisions of customer rejections are also explainable, so if the rejected person/entity asks for feedback, the organisations can explain their reasoning for rejecting. As a result, there's no 'grey area' around credit decisioning, and it's no longer a 'nice-to-have', but a regulatory 'must-have' General Data Protection Regulation (GDPR) has provisions

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that require explainability for decisions made by automated systems that affect individuals. Article 13 requires that data controllers provide individuals with certain information about the processing of their personal data, including "the existence of automated decision-making, including profiling, and, at least in those cases, meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject."

Whilst Article 22 provides additional requirements for automated decision-making, including the right for individuals to obtain "meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject." This means that if a decision is made solely by automated means and has legal or similar significant effects on the individual, the individual has the right to obtain an explanation of the decision-making process.

Similarly, the Financial Industry Regulatory Authority (FINRA) and the Securities and Exchange Commission (SEC) in the United States have issued guidance on the importance of explainability in algorithmic trading and other financial decision-making processes. There's also a growing movement in the machine learning community towards developing explainable AI (XAI) techniques that can provide more insight into the inner workings of complex models. XAI techniques can help data scientists and stakeholders understand exactly how a model arrived at a particular decision or prediction, and can also help identify potential biases or other issues that may be affecting the model's performance.

Improving the accuracy, transparency and profitability of credit decisions are themselves beneficial to the organisation in terms of mitigating risk, but ultimately, they also serve to enhance the customer experience too. CRMs analyse huge amounts of data to be able to provide instant decisions which means customers can be onboarded faster which is more convenient for the customer and reduces early life attrition.

Research from Technavio predicts significant growth in the global consumer credit market over the next few years, with a projected CAGR of 6.2% between 2022 and 2025. This growth is expected to be driven by factors such as increased consumer spending and rising demand for alternative funding options. As a result, CRM is going to become an increasingly important tool for many organisations, not just traditional financial institutions, moving forward.

8

FROM BANK TO BELLWETHER

Banks typically sit on a goldmine of customer information, including transactional data, income and expenditure information. If brought together, this data can provide valuable insights into consumers' lives and behaviours, such as their spending habits, financial stability and even their future financial and life goals.

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With the right analytics banks can convert their data into a powerful barometer, and this is exactly what we did with a leading Australian bank; pooling its customer data from commercial and retail sources to gain insights into the Australian economy and consumer trends.

The bank's marketing director recognised that by combining their data sets, it could become a thought leader in understanding Australian consumers and their spending habits. Beyond the business benefits, this would also enable the bank to have a positive impact on the country's economy by reacting more quickly to consumer trends than official government statistics could provide.

By looking at income and expenditure data from 27 different categories of consumer spending, we created a detailed economic picture that identified the differences between strata of the nation. We also investigated consumer perceptions of the economy, personal financial position, and future income/savings perspectives. By drilling down into dimensions that were not available in the general data warehouse, such as marital status, employment and family data, we were able to provide a more nuanced understanding of consumer behaviour.

There are, of course, challenges to using customer data in this way and one of the biggest concerns is privacy. Customers are rightly concerned about how their personal data is being used and shared. To mitigate these concerns, we applied powerful data modelling and sampling techniques to anonymise the data and ensure that no one's individual information could be traced. We also encouraged the bank to engage in transparent communication with their customers, explaining to them how their data was being used.

Another challenge was ensuring the accuracy of the data, and this is especially true when combining data from multiple sources. To overcome this, we worked with economic advisors to ensure that the data was both valid and responsible.

Through this initiative, the bank was able to use its data to deliver powerful business and market intelligence, which allowed it to identify new opportunities for growth and enhance their reputation in the market. The data also enabled the bank to identify areas where consumers were struggling and tailor their offerings to meet those needs.

However, there were more than just commercial benefits, there was also a Data for Good, angle. Data for Good is a concept that refers to the use of data science and technology to address social, environmental and humanitarian issues. It solves real-world problems and creates positive social impact. By understanding the economic landscape more deeply, the bank is now able to help policymakers in Australia make more informed decisions that benefit the country as a whole.

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FINDING NEW AND BETTER CUSTOMERS THROUGH PROPENSITY MODELLING

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Propensity modelling is an effective tool for financial services brands, particularly credit providers, to acquire new customers because it allows them to target their marketing efforts towards individuals who are most likely to be interested in their offerings and who have a higher likelihood of being approved for credit.

The benefits are proven to be threefold:

Propensity modelling increases conversion rates for customer acquisition campaigns. A study by McKinsey found that companies that use predictive analytics to target their marketing efforts have conversion rates that are 2.5 times higher than companies that don't use such tools.

It improves customer engagement through better personalisation of marketing messages. Accenture found that propensity modelling increased customer engagement by up to 50%.

It reduces marketing costs. By targeting marketing efforts towards individuals who are most likely to be interested in their credit card offerings, credit card providers can reduce their marketing costs and improve return on investment. A study by IBM found that companies that use predictive analytics to target their marketing efforts have marketing costs that are 15-20% lower than companies that don't use such tools.

Propensity modelling involves using statistical techniques to analyse large amounts of data and identify patterns and correlations that can help predict the likelihood of a certain event occurring, such as a customer applying for, and being approved for, a credit card.

By leveraging propensity modelling, credit card providers can identify potential customers based on a variety of factors, such as their credit history, income, spending habits and demographic information. This enables them to tailor their marketing efforts to these individuals and increase the likelihood of converting them into customers. Moreover, propensity modelling helps credit card providers to manage risk and reduce the likelihood of default. By identifying individuals who are more likely to default on their credit card payments, credit card providers can either deny them the credit card or set stricter terms and conditions to minimise their risk exposure.

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For one of our credit card clients in Australia, this is exactly the approach we took to help them to work more collaboratively with its sister airline brand, to identify new customers from its frequent flier database.

By carrying out an initial customer profiling exercise, it was possible to define the profile of both customer bases at a high level, which meant we could provide an understanding of the profile of existing airline frequent fliers and match these with lookalikes in the card base. We created customer segmentation to identify groups of customers with similar characteristics. These were then used within our propensity model and deployed to identify the probability of a person with particular attributes to apply and be approved fora new credit card.

The model was designed with agility at its core to ensure that over time it becomes more effective, as the results and learnings from each campaign are fed back into it. As a result, it continues to work at identifying the top 20-50% of potential card applicants for the credit card brand. The continual improvement of the model resulted in the number of applications rising over time, with an increased successful application rate, as the model helps to reduce the number of rejections and application cancellations, resulting in more customers, a better customer experience and saved marketing budget.

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READING BETWEEN THE LINES

Books we love: Asset and Liability Management: The banker's guide to value creation and risk control (Jean Dermine & Youssef Bissada)

Michael Buffham-Wade
Chief Marketing Officer
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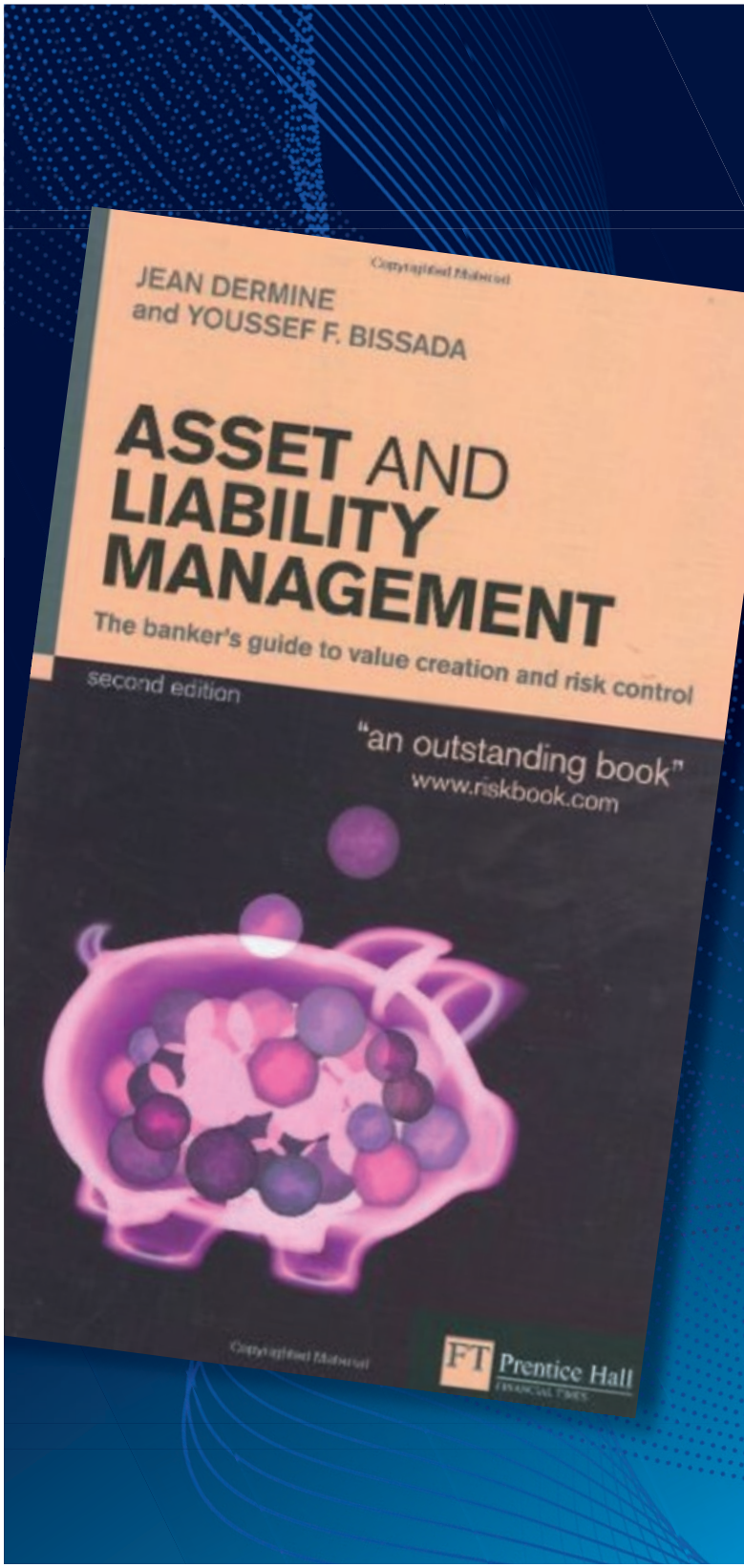
Anyone who's ever heard of Russell Napier and his Library of Mistakes knows that they absolutely don't want to be its poster boy! And herein lies the value of reading this book. I'd go as far to say that if you were only going to read one financial book ever, then this is THE ONE.

Fifteen or so years ago (!), I moved into Corporate & Institutional banking, working in Lloyds Bank's structured finance team. Thankfully, I was put onto a leadership development program to learn how our banking activities contributed to the value creation for stakeholders and was given this book. I haven't looked back. Over the years, it became my faithful friend, something I've referred to so many times I've had to buy a new copy as the old one fell apart (there's something to be said for digital editions, but it's just not the same), from looking to understand the Global Economic Crisis of 2008, the impacts of Brexit on banks and, most recently, how Silicon Valley Bank collapsed.



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We saw back in 2008 that as institutional shareholders increase pressure on value creation and as central banks around the world forced banks to improve their ALM capabilities, the time came for every banker to master the tools of Asset and Liability Management, and the control of value creation and risk.

This book, written for a general business audience by Jean Dermine, an INSEAD expert, is a complete toolbox for those wishing to get to grips with the subject. Unique in its concise, clear and accessible presentation of the concepts, the book steers clear of complex mathematics and presents the tools in an intuitive and simple way by using modern, visual, educational techniques.

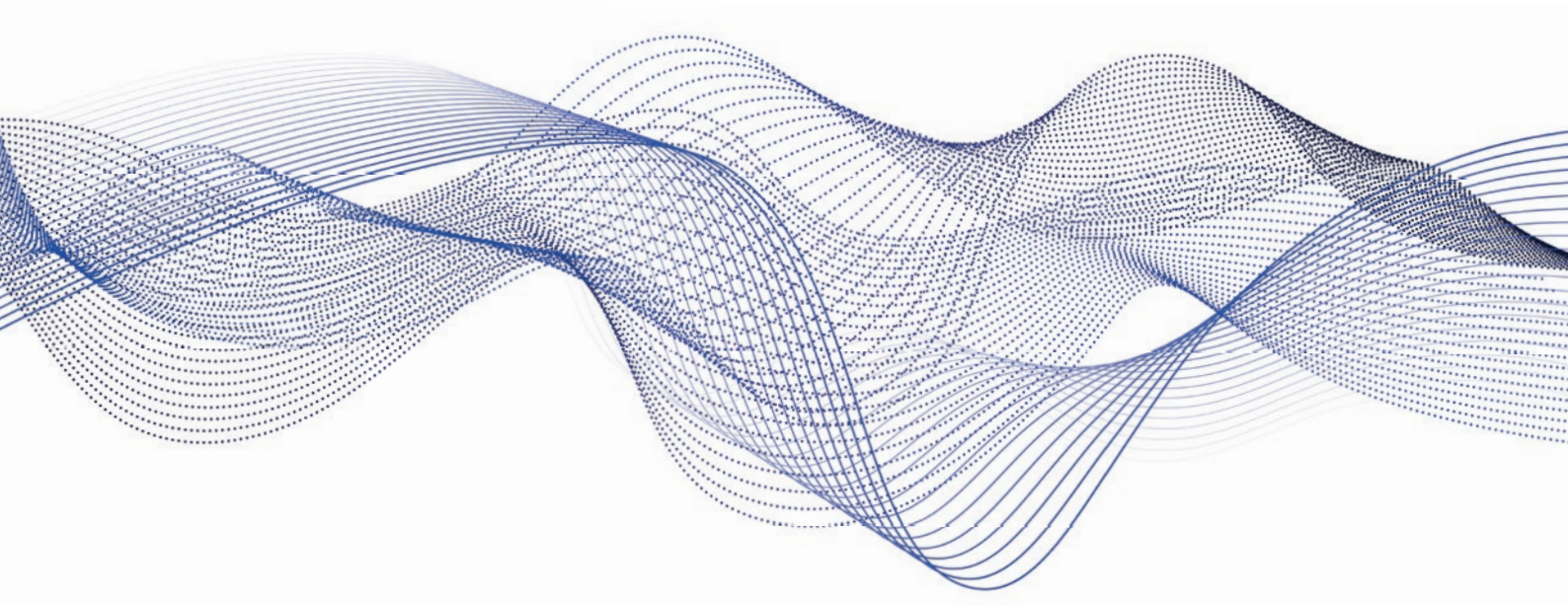
The book sheds light on important questions such as:

- How do the various pieces of the bank puzzle fit with one another?
- How does each piece of the bank contribute to value creation?
- How does one ensure that risks are being controlled?
- How do you evaluate performances on a risk-adjusted basis?
- How do you price loans to secure the creation of value?

It also includes discussions on profit-centre management, pricing credit risk and loan provisioning, and the management of interest rate and liquidity risks.

Helpfully, threading through the book are a set of exercises with solutions to measure your understanding of the concepts as they build on each other.

After my time in Structured Finance, I moved to Institutional Banking covering financial institutions and then into the financial markets business. This book remains as relevant today as it was when it I first received it, proving that the traditional ways of banking do stand up to the test of time.



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