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The Data Imperative

A guide to successful data management in treasury

Data is everywhere

With our tools, people and technology, we find unexpected correlations to turn that data into insights and possibilities for businesses.

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Making data work harder for the business

Data is the lifeblood of business, but what does successful data management look like? As a prelude to the new Bank of America playbook that tackles some of the most pressing issues for corporate treasurers, TMI talks to Jarrett Bruhn, Head of Data and Artificial Intelligence for GTS at Bank of America, about the changing relationship between corporate treasury, its key stakeholders, and data management processes.

It's been said that data is the new gold or oil. There's no denying its importance, but how far would you agree with such a statement?

Without question data is an incredible store of value, like gold and oil, and the paradigm holds that they share certain qualities. However, unlike the physical commodities, data alone is valueless. To generate the value of a data asset, it must be transformed in ways that provide insights, which when acted upon, yield its intrinsic value. And like oil transformed the world with its endless applications once refined, data will as well, as our ability to harness and process it increases exponentially, affecting every facet of our lives and the operation of every corporation. As Eric Schmidt noted, "There were five exabytes of information created between the dawn of civilisation through 2003, but that much information is now created every two days."

What do you believe, then, is the true value of data in terms of strategic advantage, and how does this value reveal itself and translate into treasury?

Data, visualisation and artificial intelligence (AI) are a treasurer's spotlight to strategically obtain a better understanding of their external funding needs and how to optimise working capital. Data does this by better informing people throughout the enterprise of purchasing needs, payment terms and processes, warehouse efficiency, collection strategies, etc., the list is endless. Each of these flow back to the treasury function, leading to visibility and transparency of the true financial position of a company like never before. The strategic advantage is clear, as that transparency gives a treasurer the opportunity to better guide management and the board with respect to many critical operational and competitive decisions.

Introduction

There's a real practical side to this notion, so to what extent are businesses and their treasuries ready to extract real value from their data?
In our frequent conversations with clients, while it is readily discernible that we are at a tipping point for a data explosion, it is also clear that each company is on its own data and AI journey.

Starting points are not universal, as we see feverish interest building with clients in how to begin, where to start, does it all need to happen at once, and how do we change our culture? But importantly, questioning the benefits of data is no longer a primary concern.

With that in mind, what do you feel successful data management looks like for treasury in terms of processes, systems and even approach?
How you approach data management is step one, and organisations must provide direction to all employees to embed data-driven perspective through AI and visualisation in decision-making processes. How? Cross-functional collaboration throughout the enterprise that centres decision-making on data-driven insights to improve performance, and, in treasury, to establish a data-driven cash-focused culture. With respect to processes, data speaks volumes, and reveals the interdependence across treasury workflows – success is both listening and evolving, based on what you've heard. A system's success is simply measured in readily discernable output that provides actionable insights.

When all that comes together, what would you say treasuries might expect from a successful data management programme?
A successful data and AI programme will yield countless benefits by providing beneficial insights throughout the enterprise, which will be reflected in greater visibility into treasury and business processes, better decision-making, and ultimately optimised working capital and more accurate forecasting.

Data management is clearly not a one-off project. But how can data be sustained as a valuable resource, and what should treasurers be doing now to ensure optimal data handling?
The two keys are, first, a safe, reliable, flexible data infrastructure that seamlessly meshes with your enterprise, and second, shifting from an organisation that is wrapped around disparate systems that house data, to a data house that wraps around the enterprise. With data infrastructure and dynamic systems as a focus, you will minimise data-quality issues, and truly engage in maximising the value of your data insights.

Jarrett Bruhn
Head of Data and Artificial Intelligence for GTS at Bank of America

A treasurer's guide to data analytics

As a resource, data has been described as 'the new oil'. But as with oil, something has to happen to it to make it useful. For treasurers, data analytics is a discipline that can no longer be left to the IT team. We explore the reasons why.

The numbers related to data production are mind-boggling. The amount of captured data already generated has been estimated by the World Economic Forum at 44 zettabytes. That's 40 times more bytes than there are stars in the observable universe. By 2025, the daily generation of data is expected to reach 463 exabytes globally.

The increasing importance of knowing how to handle this immense resource is driving change in treasury. It is ushering in the discipline of data analytics, shifting it from being a function of IT towards one that professional treasurers must also grasp as an essential tool of the trade.

Powerful drivers

Increasing treasury complexity, the march of digitalisation, regulatory compliance, pressing issues around liquidity and working capital management, increasing competition – all of these should now figure as drivers for individual treasurers to enhance their data analytics skill sets. Indeed, it's rapidly becoming an essential marriage of professional and technological competences because failing to correctly interpret the right data may now be viewed by some senior stakeholders (not least the board and the investors) as a fundamental management weakness.

Of course, sitting at the crossroads of company cash flow, treasurers are charged with managing specific risks – foreign exchange (FX), interest rate, liquidity, counterparty risk and so on – and these "need to be measured to be managed", says Dino Nicolaides, MD, Head of Treasury Advisory UK & Ireland, Redbridge Debt & Treasury Advisory.

"But related data is often siloed and frequently in a format from which it can be difficult to derive any sense, if it is even accessible," he notes. Data analytics has a role to play in enabling data consolidation and classification, transformation, modelling and reporting, "all with the goal of supporting effective treasury decision-making".

Some treasurers may question their need to enmesh themselves in this traditional IT

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function. But, says Joan Gelpi, Head of Data & AI, Global Transaction Services, Bank of America (BofA), for data analysis to fully support treasury (and thus the business) it absolutely requires treasury subject matter expertise. "Only treasurers fully understand the appropriate modelling assumptions and hypotheses to produce usable output," he argues. IKEA's case study (see box) demonstrates the power of merging treasury and IT data skills.

In and beyond treasury

Cash flow forecasting is a prime candidate for improvement by data analytics. "Treasury's responsibility for liquidity management increasingly demands accuracy here to ensure business-as-usual is maintained," Nicolaides explains. Treasurers faced added urgency during the pandemic as revenue streams became evermore volatile and the reliability of funding sources in the early days was often uncertain.

However, with the challenges stemming from manipulating vast siloed data sets, Gelpi observes that it is frequently necessary to deploy simplifications of them, to the detriment of forecasting accuracy. "Yet with the power of computing today, it is possible to use granular data to incorporate the nuances even of specific transactions into the forecasting model, to improve them."

"For treasurers, data analytics is a discipline that can no longer be left to the IT team."

As the means of handling more data are adopted, it becomes increasingly likely and desirable for treasury to work beyond its core remit. Its central position within an organisation places it in regular dialogue with a wide ecosystem of functions including accounts, the CFO, and various operational units, notes Guillaume Roudeau, Senior Director, Redbridge Debt & Treasury Advisory.

With that wider ecosystem to support, each with different concerns, treasury has to find ways of reporting different data sets to each, he says. By engaging in the wider conversation, treasury becomes a trusted source of information for other functions, analysing and advising on the impact of FX volatility on new non-core currency contracts or the setting up of overseas operations, for example.

Indeed, FX risk management may be optimised through efficient data analytics, suggests Roudeau. When different business units within an organisation are providing pricing quotes for major projects to customers, these units should be seeking treasury guidance around FX and hedging. "Accurate information helps the units take a more considered pricing decision – and that can safeguard profit margins," he explains.

With supply chains, supplier data analysis opens up opportunities for vendor and expense management, for example, notes Gelpi. Basic transactional data is broadly similar across lines of business and functions. By using this fairly uniform but potentially vast data source as a starting point, he believes the application of analytical methodologies will detect emerging patterns, such as trends in payment timings or shifting order flows. In turn, this can facilitate decisions on expense optimisation and vendor consolidation, for example.

Extent of knowledge

It's a given that treasurers understand core treasury systems. But, says Roudeau, a working knowledge of data-specific software such as business intelligence (BI) systems and of data warehousing processes is increasingly valuable. Treasurers should also be developing an understanding of more advanced technologies such as artificial intelligence (AI) and machine learning (ML), he argues.

Ingka group (IKEA): Agile data management

As part of the Ingka Group, global home-furnishing brand IKEA's group treasury is supported by a unique team of eight technical specialists, combining dedicated IT and treasury experts led by Michael Aandahl, Head of Digital Treasury. His operation gets swift results, especially when it comes to data management. As Aandahl acknowledges, "we don't have to wait for IT to complete a project, we're already part of it, so we can move much faster".

Within any business, a vast and rapidly expanding pool of data brings with it certain issues. With Ingka Group's processes creating pain points where repeated checking is demanded, the Digital Treasury team decided to go back to basics, looking at data formats and sources. And for good reason.

"As an organisation, we want to be more data-driven. In terms of identifying the highest value to the business, the obvious one to us was artificial intelligence [AI]. But to increase AI accuracy, we need the highest quality data," states Aandahl.

Ingka Group has already made significant progress with AI enabling short-term cashflow forecasting accuracy to reach 91% under test conditions. In the run up to go-live in Q1 2021, AI has been analysing sales forecasts, the results being uploaded to the group's FIS Quantum treasury management system (TMS).

Other elements of incoming and outgoing cashflow data, such as inter-company payments, are now being added too. "It's gradually coming together and we can see this is something we will use to increase forecasting precision," comments Aandahl.

Robotic assistant

At a broader level, Ingka Group treasury's data import and export activity between systems is extensive, and this has historically been labour-intensive, notes Aandahl. "With data updates from various stock exchanges and different currencies, for example, it represents a lot of manual work."

Around two years ago, his team started to make use of robotic assistants, mostly rules-based devices deployed across spreadsheets to clean up data before uploading to the TMS. "I usually say robotics shouldn't be part of your strategic direction for systems – it's better to have more integration than use robots to capture data from diverse sources," Aandahl comments. "Nonetheless, we use it to carry out some of the cleansing and enrichment during the data import process. I have to admit that this has driven down our workload considerably."

With the pandemic having created an urgent need for real-time liquidity reporting, the team's integration focus was able to shift accordingly. "In the first wave, we quickly had to understand our liquidity position," Aandahl explains.

In most cases, the data was already there, so the effort was centred on extracting it in the most efficient way, and presenting it in the clearest format to senior management. "With a lot of hard manual work, we made it happen," he says. "We're now making real-time reporting part of our ongoing business operations, so if a 'here-and-now' data snapshot is required, it's no problem."

In creating an embedded treasury/IT setup, Aandahl has removed what he deems to be "an in-built conflict", where IT is seen as a support function that will do as it is asked, but will not be part of the steering of other functions. "If a company has the resources, it makes a lot of sense to join forces," he says. With its unique treasury/IT approach enabling Ingka Group to move ahead with increased agility and speed, it's likely that data management will soon be climbing every treasurer's agenda.

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Although Roudeau notes that in the shorter term, "because there are few who have the required knowledge of both treasury and data science", their emergence nonetheless "edges treasury closer to the data scientist world". For practitioners still bound to spreadsheets, this may all sound fanciful. But even learning advanced skills in this medium, to be able to 'slice and dice' the right data, has considerable value.

But if ML is to create what Gelpi refers to as "a new paradigm in treasury understanding", discovering how to create accurate metadata (data about data) becomes necessary too, and for good reason. ML creates its own algorithms but does so initially based on its understanding of (correctly) labelled historical data (whether an outcome was good or bad, for example). And, as he said earlier of modelling assumptions, this cannot be approached without a working knowledge of treasury.

The role of treasury may to an extent be merging with that of data scientist but Gelpi is quick to point out that the requisite components of a good data scientist are already present in many treasury professionals. All treasurers have subject matter expertise and therefore know what they are looking for in data. Many will have some knowledge of mathematical statistics, and of computer science too. "And data science is an intersection of the three," he explains.

Full proficiency may require "a little more literacy in computer science". But with a boost in "conversational knowledge" of data bases, and a basic understanding of algorithms and ML, and possibly "a one or two notch improvement" in mathematical statistics, the notion of treasurer as data scientist is, he feels, entirely feasible. "And even if they do no more than consume treasury products, it will benefit all treasurers to learn more about these topics."

Future-proofing

Any treasury intent on revising its data analytics architecture will be trying to future-proof it, says Nicolaides. This may not be achievable, he warns. Organisations and the markets in which they operate are dynamic; what works today may not work tomorrow. A business therefore must constantly review and revise its approach "to ensure it continues to look ahead and remain relevant".

From Roudeau the advice is to bring on board more knowledge through people that

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are data-oriented, "to cope with the new technologies, to explore, understand and report on this ever-expanding resource in the best way possible". And this, he adds, must take place while continuing to develop and merge traditional treasury skills. One way to push ahead is by working with trusted partners.

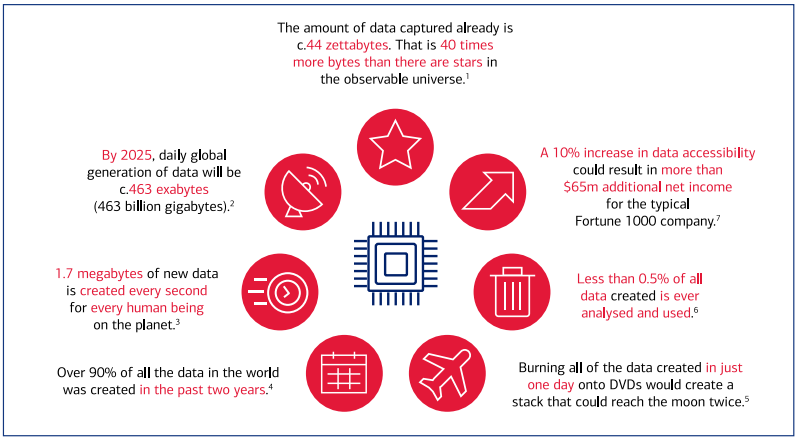
Bank input/output

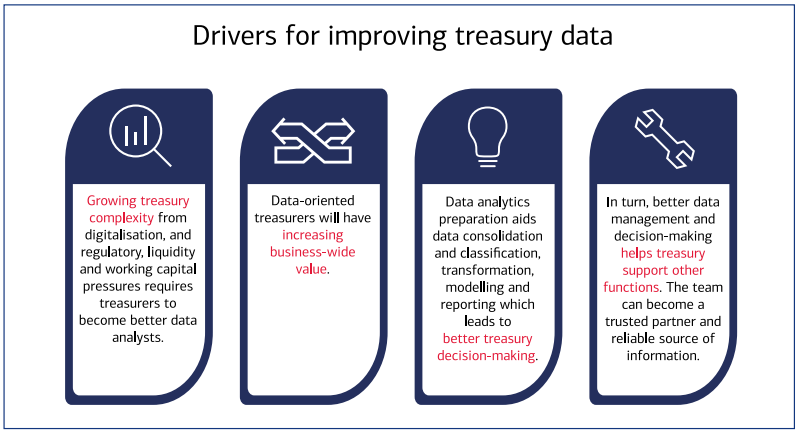
With banks holding "vast lakes of data" that they can share with corporate clients, it should be expected that their investment in analytics is ongoing, notes Gelpi. He explains that bank investment in data management systems and analysis "is crucial because many clients will not have the capacity to do so".

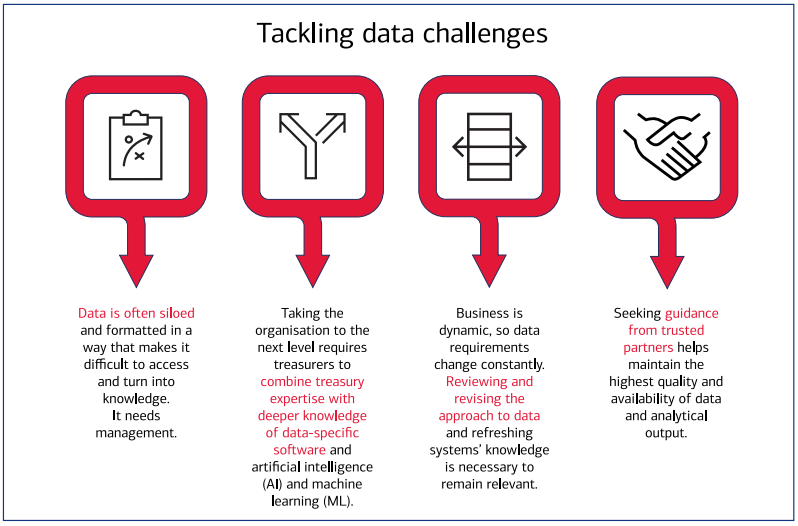
One current area of investment focus by BofA is the development of ML where enhanced cash forecasting, anomaly detection and transactional optimisation are common goals. "We're investing in and building AI so we can provide that to clients, alongside our advisory services," reports Gelpi.

It's likely that a host of new data services will be made available to corporate clients through application programming interfaces (APIs) and online self-service pathways. But while Gelpi notes many clients are already exhibiting increased sophistication around data analytics, he is quick to assure all that this does not need to be a solo journey. For him "maintaining the highest quality and availability of data and analytical output should be matched by expertise on how best to deploy it".

Understanding the enormity of data







[1] https://www.weforum.org/agenda/2019/04/how-much-data-is-generated-each-day-cf4bddf29f/
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Building a better cash forecasting toolkit

Without effective forecasting, companies are essentially flying blind into the future. We look at the role of new technology evolving to help tackle this challenge.

While much of the finance function has digitised in recent years it's fair to assume that most cash forecasting activity, even in very large corporates, is still spreadsheet-based. The spreadsheet is often the default tool for many planning, forecasting and data modelling activities due to the fact it is available to everyone and used for so many other activities as the aggregation point for data from a host of different systems. As Conor Deegan, CEO of cash forecasting provider CashAnalytics, says, "a spreadsheet is the easy choice".

However, despite that easy familiarity, inevitably with spreadsheets, the cash forecasting process is often manually-intensive and time-consuming. And not only are they difficult to scale for a growing business, they can also be error-prone. As Paul Smithwood, Director of Product Development, Data & AI, Bank of America, notes, errors that are not detected can lead a company to believe it has materially more or less cash than expected. If that company then makes decisions based on those erroneous numbers, at best finding the offending cell is like looking for the proverbial needle in a haystack, at worst it can prove costly.

While some power-users will have set up macros (which come with their own issues) to automate parts of the process, generally it would be fair to ask, why not just get something better?

In Deegan's experience, the reason many companies don't evolve past the spreadsheet is that the other systems they may look to help manage the forecasting process – such as enterprise resource planning (ERP) and treasury management systems (TMS) – are designed for completely different types of activities, "and aren't fit for the purpose of anything other than basic forecasting". The case study in box 1 illustrates this point.

Building a better cash forecasting toolkit

Smithwood comments: "I see a lot of clients looking up future-dated invoices or payment runs and just plugging estimated receipt dates and values directly into the forecast, or making basic calculations from a rolling average from the last couple of weeks of cash flow, and that is their forecast,". Clearly forecasting needs a better vision of the future.

New vision

Enhanced technology is perfectly positioned to support cash forecasting in three key areas, notes Deegan. First, in the collection, management and manipulation of the data required to start the process.

"In the majority of the projects we have worked on, the time spent on 'cash forecasting' prior to the implementation of CashAnalytics was often more about low-value manual activities rather than true forecasting or analysis," he comments. "Technology can take this work off the table and quite quickly solve most of the base-level operational problems experienced."

Second, technology can transform the process of actually creating the forecast itself. Deegan comments: "The data collected from other systems and sources is just the starting point. The assumptions and adjustments made can transform this raw data into meaningful cash forecast data." He continues: "In spreadsheets, activities such as analysing customer payment behaviour, and using this learning to adjust current invoice data to give a more realistic view of cash collection timing, is very difficult. So are other forecasting tasks such as transforming budgets and business forecasts into cash forecasts. Both can be greatly simplified using technology that is specifically built for cash forecasting, as opposed to generalist tech."

The third main area of support is where targeted technology enriches the analysis and reporting on the data. For example, how easy is it to carry out even quite simple actual-versus-forecast analysis in a spreadsheet, or drill down to transaction level of detail through a consolidated spreadsheet report? It can be done, notes Deegan, just not easily. "This type of analysis is a by-product of using a technology solution to support forecasting activity."

Definition

But is there a danger that, as forecasting complexity increases (through, for example, the adoption of tools capable of intricate modelling), treasuries risk so-called 'analysis paralysis'? "With every process using large amounts of data, this is always a risk; there's always more you feel you can do," Smithwood notes.

> *"Two of the most important impacts of better cash forecasting, whether driven by technology or not, are a reduction in reliance on external funding sources, and improvements in working capital."*

It's important to accept that, with so many variables and unknowns, a cash forecast can never be 100% accurate. Indeed, he says while it's prudent to try to improve forecasting accuracy, "it should only be to the point where the business is comfortable, from a risk standpoint, with its range of results". For Deegan, forecasting objectives, together with reporting and analysis output must be very clearly defined upfront. "While access to more analysis is never a bad thing, analysing the wrong thing, or not knowing what to do or how to interpret the output, is always a bad thing," he cautions. "Analysis paralysis is simply a poor use of the technology, not a fault of the solution itself."

Flexible friend

Flex Group is a diverse multinational technological manufacturer. It has over 100 manufacturing and service sites across 30 countries. Revenues in 2020 were over $24bn. Alongside its financial planning and accounting (FP&A) 13-week rolling forecast, executed quarterly, sits its weekly treasury forecast.

The main difference between the two, explains Anita Bubna, Senior Director Treasury, Flex Group, is that to achieve the necessary visibility of cash, the treasury report has to be "super-granular and more accurate". However, the challenge is gathering accurate, real time, granular data from several source systems that house the information on collections and payments for the forecasts and statements from banks to show actuals.

In an ideal world, data must be captured globally by currency and bank account from different systems. Although running a treasury management system (TMS), Bubna says it does not offer the level of flexibility needed for its own forecasting approach. Uploading large amounts of forecasting data from multiple systems is, she admits, sometimes "beyond the system's capabilities". For a business such as Flex that uses a mix of factoring, supply chain finance and asset-backed securitisation, insight into its collections process can be complex, she says .

With no clear means of capturing the source of specific receivables (nor where anomalies may exist) – and with pressure on forecasting accuracy and timeliness increasing – Flex's multiple source systems, constrained data handling capacity and limited aggregation, granularity and analysis, led Bubna to seek a better solution.

As a formally trained software and systems developer, she was under no illusion that a quick fix was likely. "Don't think that simply by moving from a spreadsheet to a new system that all your problems will be solved," she cautions. "From my experience, even today's systems tend to be fairly rigid."

Any incoming system had to have the flexibility and granularity to meet Flex's well-defined requirements. Unable to find the right platform on the market, a different tack was necessary. "At Flex, we are now working on a system – a one-stop-solution – to aggregate all data from source systems and adjust the forecast dynamically as the source data changes," she reports.

This project is based around a strategic partnership between Flex, a trade finance and working capital asset platform vendor, and a blockchain-based digital asset servicing platform provider.

To help the process, while Flex's TMS already consumes statement data, either through SWIFT or host-to-host connectivity, Bubna has ensured bank application programming interfaces (APIs) are being deployed wherever possible to leverage the benefits of real-time updates when generating forecasts.

The vision here is that by enabling Flex's customers, suppliers and partners to connect (using APIs or standard connectivity) on to the same platform, a procure-to-pay and order-to-cash view is created in one place. This makes the platform more like an eco-system, says Bubna. With all stakeholders on the same platform, related data can easily be validated by counterparties. Should a dispute on collections or payments arise, the collaborative and accessible nature of the platform – and "the same version of the truth for all" – will help rapid resolution.

With 30 countries to cover, the platform roll-out started with a small number of entities, customers and API-ready banks. With obvious benefits across the board, the team is now scaling up. Live data exchanges with customers, suppliers and banks will soon be augmented with data feeds from other partners, such as supplier finance programme providers, to further enhance Flex's cash forecasting capabilities.

Once the data volumes and quality are at a

sufficient level, advanced tools such as machine learning will be introduced, says Bubna. "We have all the building blocks ready so this part should be relatively straightforward – and frankly it's the fun part of the whole exercise." With considerable success under her belt to date, she adds that she is willing to discuss the project in depth with other treasurers.

Seeds of change

It may come as a surprise, but not every company has embedded cashflow forecasting into its procedures. Interim treasurer and treasury consultant, Erik Teiken, has been working with a small, Netherlands-based seed production company that has had no formal forecasting process at all. The only point at which it had cash visibility over its c.€300m revenues was when month-end bank statements were delivered.

With operations spread across 30 entities located across the world – many in emerging territories such as Guatemala and Vietnam – accessing its cash has been a constant issue. Indeed, unable to access cash on a regular basis in many of its outposts, the company has been forced to source liquidity from its Dutch banking partners.

With expensive R&D part of its cost-base, it found many drivers for action.

With Teiken's guidance, it is now seeking to control its cash, and limit fraud. Part of the overarching solution is the implementation of a TMS. A key selection criteria here is functionality to facilitate qualitative cashflow forecasting.

To kick off the project, first Teiken undertook a close analysis of existing processes and business drivers. His research found many points of concern, including a revelation that every single entity had its own local bank. In addition to running an RFP for the TMS, he therefore instigated one for primary banking too.

With the aim of consolidating "an impossible to manage" 55 local-bank relationships down to three or four global providers, he anticipates significant bank fee savings along the way.

More importantly, with cash management finally centralised, lack of local forecasting knowledge ceases to be a problem.

Teiken has already proposed some interim cash forecasting templates, but ultimately the aim is to exploit the capabilities of the new TMS. Vendor presentations to date have revealed at least one weaker offering in this respect, he reports. Although that system has flexibility, "it takes more effort to achieve the same results".

A specialist forecasting system vendor is also being considered. Its system is able to drill down into the general ledger, extracting and classifying data for forecasting. "That it would present a powerful opportunity to leverage both automation and machine learning to gain considerably more insight from payments analysis," notes Teiken. With the three TMS vendors unable to compete at this level, he has proposed that the company adopt a best-of-breed tactic, adding the specialist system to the shopping list.

With selections finalised, implementation will be rolled out in stages, Teiken having proposed a project roadmap. A region-by-region and module-by-module approach will be adopted. With straight-through processing favoured wherever possible, primary bank connections to the TMS, preferably using APIs, will be the priority. Payments and cash position data, and then activities such as netting, will follow.

Once the fundamentals are in place, a limited set of local banking relationships will be connected, with automation underpinning the whole centrally-managed cashflow forecasting process. As Teiken comments, "it will be a major step forward".

Building a better cash forecasting toolkit

Wider appeal

Assuming the correct setup and procedures are in place, two of the most important impacts of better cash forecasting, whether driven by technology or not, are a reduction in reliance on external funding sources, and improvements in working capital. Both are achieved through the more efficient use of cash flow within the normal business cycle.

However, says Smithwood, cash forecasts have many stakeholders – including various subsidiaries, and functions such as procurement, collections, AP/AR, tax and payroll – with treasury usually extracting forecast data from each. Often these functions believe there is little benefit derived from what's required of them, even seeing it as an imposition by treasury.

But, warns Smithwood, without buy-in from these stakeholders, treasury cannot do its job effectively, and the whole company suffers as a result. He suggests gaining CFO-level support to create incentives for these teams to acknowledge the value of their own input.

Some of the best forecasting processes he's seen incorporate specific KPIs, measuring, for example, the accuracy of each stakeholder's own forecast data, with results being reported up to the CFO. By escalating that data, in simplified form – perhaps through a dashboard – a clear view of the strengths and weaknesses of each forecast is delivered.

Next level

Due to the variety and depth of activities that ultimately feed into cash forecasting, the tools used to support it will also need to possess a depth and variety of functionality to truly take the process to the next level.

Banks hold the majority of data that their corporate clients use to forecast. They should be making it as easy as possible to access this data to aid cash forecasting. "Rather than forcing our clients to manually extract data and try to manage the process in Excel, we have built a forecasting solution called CashPro Forecasting that sits within our online banking portal that automatically connects to that data," explains Smithwood. But clearly some clients want to push the boundaries, and for these, he says embedded analytics such as machine learning (ML), are a consideration.

With more bank and fintech providers delivering these advanced technologies, typically as a cloud service, the valuable information they can offer is increasingly attainable by smaller firms, says Smithwood. As might be expected, the quality and efficacy of software varies, and full evaluation of any

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Building a better cash forecasting toolkit

new tool, comparing output to actuals, is advisable. To initiate a programme of technological improvement, pragmatism is essential.

As a simple guide to action:

- Define forecasting goals, including how far out it needs to go to be useful.
- Critically assess what data is really needed to support these goals.
- Clinically differentiate between essential and nice-to-have system capabilities.

While some specialised forecasting tools may not be appropriate for all companies, there is a clear case for most to move beyond the limitations of the spreadsheet.

Indeed, where complexity and risk is rising, every finance professional can now choose to base their decisions not on the output of generic risk-laden software, but on insight derived from solutions optimised for their own unique needs.

The dos and don'ts of cash forecasting

Effective forecasting enables companies to take a strategic view on the future. But what are the pitfalls to avoid when looking to improve forecast accuracy – and what does best practice look like?

Don't

- **Think you need absolute perfection.** A cash forecast can never be 100% accurate. Instead, aim for an accuracy level that is within the organisation's risk tolerance.
- **Treat spreadsheets like the holy grail.** Excel might be easy to access and use but it can be manually-intensive and error-prone. Spreadsheets are also difficult to scale as the business grows.
- **Believe forecasting tech is out of reach.** With more bank and fintech providers delivering advanced technologies, typically as a cloud service, cash forecasting tech is becoming increasingly accessible for all.
- **Fall into the 'analysis paralysis' trap.** Although access to more forecasting data is generally a good thing, it's important to analyse the right data and know how to interpret the output. Without this, treasurers can become overwhelmed by meaningless data, as opposed to actionable insights.

Do

- **Define forecasting goals.** When looking to introduce new forecasting tech, goals are critical, including how far out the forecast needs to go to be useful.
- **Critically assess what data is needed to support these goals.** Have a thorough understanding of the data required and the options for integrating these data sources with any new forecasting tech.
- **Secure buy-in from stakeholders.** Business units and functions can help to improve forecasts by delivering cleaner, more accurate data to treasury. A CFO-backed incentivisation programme can help departments such as procurement, collections and payroll to understand the benefits of playing ball.
- **Incorporate specific KPIs.** You cannot manage what you do not measure. KPIs such as the accuracy of each stakeholder's own forecast data, with results being reported up to the CFO can assist in improving forecast accuracy.
- **Work with your banks.** The majority of data required to perform a cash forecast is held by treasury's banking partners. Look for a bank that makes it as easy as possible to access this data – whether through direct connectivity such as APIs, or by offering its own integrated cash forecasting solution.

Making machine learning work for treasury

Machine learning is often seen as the panacea for all modern business challenges. However, while it can be a very useful ally, it won't fix everything – treasurers will still need to make judgement calls. In the company of seasoned experts, TMI explores the reality underpinning this much-discussed technology.

The current level of conversation around machine learning (ML) might suggest that it has already become one of the most prevalent treasury solutions. The truth is that while it is making significant headway in terms of adoption in the treasury context, the journey has only just begun; many firms are still working out where it might fit, and how it can be best used. Is it really time for treasurers to engage?

"Over the next three years, we will create more new data than we have in the entirety of human history combined," states John Pizzi, Senior Director, Enterprise Strategy, Capital Markets, FIS. He argues that artificial intelligence (AI) is "no longer a science fiction", citing PwC figures that show AI is expected to contribute nearly $16tr. to the global economy over the next decade.

Few can fail to have noticed the use of AI by Big Tech firms such as Amazon and Google in helping or steering our decision-making. But in both organisations, the use of AI goes beyond what is obvious to consumers. Amazon is using it to optimise its logistics and warehousing operations, and Google is developing AI to aid screening evaluations for lung cancer patients.

The fact is that the impact of AI is felt across a far wider scope of industries than many would imagine, and in the financial services sector it is already strongly evident. Pizzi notes that around 44% of capital markets firms are already using AI in their trading processes, a figure that he says will rise to 61% by 2023.

"Machine learning is being used to make prediction models more accurate, and in

quantifying and reducing credit risk," he continues. "Predictive analytics are producing more accurate insights around cash management and fraud, and automation is transforming the workplace, improving the speed, accuracy and efficiency of operations."

Business case

In practice, ML is "a piece of software capable of flagging data to match specific patterns", explains Pedro Porfirio, Global Head of Capital Markets, Finastra. In some cases, instead of using pre-defined rules, it can learn by itself what these patterns are. It needs large volumes of data to be effective, and it can process information and detect patterns much quicker than a human being.

"Treasurers need to navigate a lot of data to make decisions and these decisions are made given the patterns of the data, so a good use case is around fraud detection," explains Pizzi. "As ML use starts to become more widespread, treasurers will find it useful to analyse their cash flow data, and to support cash forecasting and liquidity management. While ML technology continues to evolve, those who are quick to adapt will find themselves ahead of their competitors."

It's a compelling scenario, but for many treasurers the business case for adoption is yet to be heard. To tackle this adoption latency (and benefit from Pizzi's predicted competitive advantage), at the very least the business case must reflect the problem being solved and objective being met, says Bruce Meuli, Treasury Advisor Executive, Bank of America (BofA).

Most business cases tend to start off with a cost-efficiency or reduction, he notes. The business case around some early applications of ML has therefore been around reconciliation processes. Here, ML, as a set of "smart algorithms", is taught to understand related values of an input (or multiple inputs) and then make a best-match based on that understanding.

Cash application is a classic use case in this scenario, says Meuli, explaining that BofA has developed a solution for analysing historical data and events, identifying patterns, and taking a "largely supervised" (requiring human teaching) learning approach to defining output.

With very little 'unsupervised' (or self-learning) ML currently in treasury, he explains that human insight is used to 'train' the ML models to follow set business rules. Output will thus be a response that either agrees with the rules and which processes accordingly, or detects an exception for further human action.

Recourse to human intervention may appear to defeat the object of ML but, says Meuli, when it comes to the business case, this step can be seen as part of the preliminary set-up.

A first-pass match within cash application, for example, may consider customer, invoice number, amount and date, and initially achieve a 60% matching success. The next stage of set-up may enable use of additional information (such as remittance data and customer grouping) with human intervention to refine that understanding.

So while the initial business case focus is on cost reduction and decision support, a phased approach, even with some manual intervention, enables the system to scale up over time, progressively moving to more complex data flows and eventually non-human judgements.

Laying the groundwork

There are different pathways open for ML adoption within treasury. Most users will take a sub-process, such as matching, which can be deployed through a third-party vendor system. "There is no need to bring every system up to the required level in one move," says Meuli. "Treasury can target a single unsatisfactory process and fix that before moving on."

However, there is one stage that cannot be

Machine learning: for best results, add human

The adoption of ML does not have to mean the removal of human input. Far from it, argues, Kunal Makin, Director, Global Treasury Data Product, BofA, the human/ML interface can deliver some impressive results that can lead to better advisory from banking partners and richer insights.

ML has gone through a complete evolution cycle since the early days of elementary analysis and modelling in the industry, says Makin. However, while as an automated means of identifying and leveraging patterns in data it has real power, execution of the cognitive work, such as pre-processing the data and choosing the right parameters, must be carried out by humans.

"While human intervention has exponentially decreased in the models that have more predictor functions, ML-like analyses which provide strategic outputs to drive both top and bottom line value in a business are very much human dependent even today," he notes. "This remains true across treasury functions where ML is used, such as in liquidity forecasting, AML and fraud management."

Of course, ML outputs can vary depending on the business inputs which are human dependent. For Makin there's a whole host of "human-in-the-loop" ML approaches, where humans are called to make a final decision when the algorithm is uncertain and the result of the human decision is then used to improve the model. This, he explains, is why output variables are also very much dependent on human interpretation and usage of the model.

It is critical that the business problem is well-defined at the onset of model building so output parameters can be appropriately plugged-in to solve the problem, comments Makin. "It's also important to consider that while ML accounts for the 'standard' data points within the 80% of the bell-curve of a typical problem, there will always be those outliers making up the 20% of use cases at the bottom and top where individual human assessment of the applicability of model to the business scenario is critical," he notes. "Given the recent changes in the macro environment driven by the pandemic, we encounter these outliers quite often."

The beneficial application of human intelligence in the assessment of outliers suggests that hybrid models may be applied to most treasury use cases, continues Makin. This includes payment optimisation, liquidity forecasting, next-product lead generation, FX analytics, credit risk and underwriting for supply chain activities.

That said, he acknowledges that there are certain functions in the treasury context, such as bank onboarding, that are currently best served by ML-based robotic process automation (RPA) tools. "These are processes that are repeatable and that would otherwise generate a margin of error with human intervention," he explains. "We continue to work on identifying process improvement opportunities across treasury which have a very low human touchpoint and which create efficiencies for both our clients' experience and us."

Kunal Makin, Director
Global Treasury Data Product, BofA

ignored, he adds. The most important aspect of every ML project is data quality. "Only when the data is clean will it be possible to think about the tasks it will be used for, the kind of modelling and analysis that will be needed, and the systems and expertise that will be needed to make best use of it."

Most treasurers will recognise that data de-duping and cleansing projects are rarely quick, and thus may constitute the largest proportion of project time. In the context of ML and its aims, such a project also requires a deep understanding of the data required, and a clear-sighted view of the end goal.

It will be useful to talk to business colleagues to help define that goal so that the data can be formatted in a way that will be both easiest to use and most beneficial to the company.

While the promise of ML may generate excitement, it's important to stay grounded. The target problem may be resolved with a relatively simple automated input. When considering the right tools, the caveat of avoiding the use of technology for the sake of it applies. A well-defined set of aims for ML will help define the shopping list. Indeed, advises Meuli, "starting with the problem, not the solution, is the rational way forward".

Be warned though, he continues, "an unquestioned belief that technology will do it all is often a fallacy". At the very least, he says every system needs to be set up and managed, and to this end some of the best solutions are where technology integrates with humans who will manage the exceptions and the teaching and learning process.

Human/machine interface

Elon Musk may believe that "robots will do everything better than us", but is this correct? While humans cannot match ML capacity to endlessly crunch data and detect patterns, the level of knowledge, experience and intuition that treasurers bring to bear on many more nuanced situations cannot be replicated with full confidence, yet.

FIS' Pizzi admits: "People are still very much at the centre of the workforce." But he acknowledges that "over time, human jobs are going to change". For him, the future is encapsulated by Amazon Chief Technologist, Tye Brady, who has said it will be "a symphony of humans and machines working together".

In practical terms, an ML model that is proven to give high-quality results and drastically improve workflow efficiency is something that treasurers should think about. But we're a long way from AI reaching the level of human intelligence and replacing the entire job of the treasurer.

That said, the capabilities of ML will continue to improve. The focus today for treasurers should be on understanding how humans can complement such improvements, and using time released by automation to add value.

Of course, there is a matter of confidence in technology to take on vital roles. Computers can fly and land a commercial aeroplane perfectly well, yet few passengers would feel happy without a well-trained human pilot on board. Similarly, where the finances of a company can be a matter of existential importance, few boards would hand over full responsibility to a machine, expecting human expertise to correct errors or take over when needed.

As such, Meuli feels it will be the non-critical, mundane and repetitious operational jobs that will be the first to go. Typically, this means low-complexity back-office tasks with business-rules-driven workflows. Once a business has satisfied itself that this is a feasible approach, he suggests that more advanced decision-support tools, such as the aforementioned cash forecasting solution, may be given greater authority, even if the output at this level will still be human-reviewed.

Porfirio believes that one of the most important skills a treasurer offers is the ability to make nuanced judgement calls.

Making machine learning work for treasury

"AI and ML will never be able to fully replace that process. What it does offer is the ability to analyse vast amounts of data in a way that a human would not be able to, revealing patterns of interest. It is then up to the treasurer to evaluate and determine the next steps."

Front-office tasks can be managed in this way too, but Meuli says these roles can still require considerable human involvement. That said, the banking community has invested vast sums in enabling technology to take on some critical processes, but he agrees that these have taken a long time to develop.

"While ML technology continues to evolve, those who are quick to adapt will find themselves ahead of their competitors."

Indeed, computational finance for stock and bond pricing dates back to the 1930s, and in the 1950s it was first used for portfolio selection. Today, while algo trading systems calculate and transact billions of dollars of trade automatically in fractions of a second, the solutions capable of doing this are proprietary tools developed by and for specialist financial institutions.

"Typically, adoption of ML is not about completely replacing but taking away certain elements of a process," explains Meuli. While it may do all of the initial work, faster and more accurately, even making some basic decisions, active decision-making based on prescribed output will, he contends, remain a human task for now.

In the short- to medium-term, while service centres for accounts payable/accounts receivable (AP/AR) may see a significant reduction in employee numbers at the hand of automation and ML, most professional treasuries are already limited in number and arguably will not be displaced by machines. Meuli is adamant that there are "far more positive aspects to having ML working within treasury than there are negatives".

Legal and ethical

A common argument for the control of AI-based tools has its roots in legal and ethical discussion. FICO, a global analytics software firm, recently released its State of Responsible AI report. Working with market intelligence firm Corinium, it found that despite the increased demand and use of AI tools, almost two-thirds (65%) of respondents' companies can't explain how specific AI model decisions or predictions are made.

The study also found that 39% of board members and 33% of executive teams have "an incomplete understanding of AI ethics". While compliance staff (80%) and IT and data analytics teams (70%) have the highest awareness of AI ethics and responsible AI within organisations, wider understanding of these points remains minimal.

"Over the past 15 months, more and more businesses have been investing in AI tools, but have not elevated the importance of AI governance and responsible AI to the boardroom level," comments Scott Zoldi, Chief Analytics Officer, FICO. "Organisations are increasingly leveraging AI to automate key processes that, in some cases, are making life-altering decisions for their customers and stakeholders," he says. Senior leadership and boards "must understand and enforce auditable, immutable AI model governance and product model monitoring to ensure that the decisions are accountable, fair, transparent, and responsible".

So is this a warning shot across treasury bows? Meuli thinks not. "Treasury is not dealing with decisions that impact people directly, but there may be considerations around how ML is used to treat suppliers, for example." Indeed, he adds, the switch to ML simply replaces an individual's actions

with that of a machine, and individuals harbour bias, so wherever there are ethical issues in current treasury practice, the same will apply when ML is deployed.

That said, he shows some concern for potential reputational damage arising from misuse of ML, mainly as a result of acting on inaccurate output. Banks such as BofA employ large teams just to audit models and ensure data integrity, but at the treasury end of the spectrum the need to understand the often inscrutable 'black box' nature of AI/ML is vital.

Referring to the Nobel Prize-winning Black-Scholes mathematical model for pricing options contracts, Meuli believes that few who use it really understand how it works beyond its common input variables. "Using ML models that are making decisions, yet not really understanding how they do so, or failing to implement proper auditable processes around how those decisions are arrived at, could expose an organisation to reputational damage," he warns. With the legal and ethical debate around AI/ML in its infancy businesses should expect more conversation, and maybe even auditing, in the future.

Treasury path to ML

"There is a correct way of approaching ML," counsels Meuli. "The best results come from combining the right tools with a mindset that starts with a specific problem and objective before looking at how it can assist." This is where the currently marginalised discipline of Six Sigma process review and improvement can be advantageous, he says, noting that it is making "something of a comeback".

"It's about evaluating your processes and revealing which are high volume, where data is most intensively used, where and how decisions are made off the back of this, what the risks involved are – including reputational risk – where manual intervention is required, and then judging whether some or all of this could lend itself to ML." The most successful corporates in this space, he notes, will use more than one tool to achieve their objectives, "and that includes humans".

As might be expected, external resources would include vendors in this space. "ML can bring immense benefits to treasurers, but to take full advantage of it some changes might need to happen," says Finastra's Porfirio.

"Where the development and deployment are done on site, it requires a high level of technical skill and commitment of resources," he says. "It will require setting up the environments, accessing data –probably including publicly available information – understanding and developing ML algorithms, which can be heavy in statistical and mathematical concepts, and defining their use case." This may seem like a major undertaking, and for Porfirio, while larger organisations might be able to afford these investments, he feels many are unlikely to make the business case.

> *"The best results come from combining the right tools with a mindset that starts with a specific problem and objective before looking at how it can assist."*

"Moving their technology stack from a conventional on-site set-up to a modern cloud deployment will give treasurers the opportunity to accelerate innovation and time to market, and the ability to transform their operations at scale," he suggests. Finastra's FusionFabric.cloud, for example, enables its clients to connect to fintechs that are developing ML algorithms for several use cases, including fraud detection,

Making machine learning work for treasury

price movements, and stress scenarios.

Banking partners are a valuable resource too, not least because players such as BofA have walked the ML pathway for some time, and have the expertise and client contact to help treasurers explore and understand where the technology can be best deployed. In doing so, they can help eliminate any 'black box'-type fears that could restrict confident ML uptake.

"By better understanding how specific ML models work, it becomes possible, for example, for treasurers to begin collecting additional data points and refining their own models over time."

Indeed, for Meuli, while "the end-goal for us as a bank is to help treasurers gain more business insight and work more efficiently", it is incumbent upon it to help treasurers gain "at least a high-level understanding of what ML is capable of doing and what it is not capable of doing".

Then, by better understanding how specific ML models work, it becomes possible, for example, for treasurers to begin collecting additional data points and refining their own models over time, making the system invaluable (and validating the business case).

Through contact with ML-engaged corporate clients, banks such as BofA are also well placed to provide focused solutions. The bank is, for example, developing an ML programme based around natural language processing (NLP). This is aimed at extracting common questions and their related responses from a vast dataset of historical client documents so that the bank can more rapidly answer client enquiries.

A specific challenge in treasury is accurate cashflow forecasting. BofA has been working with a fintech to help forecast cash volumes for its clients using its CashPro Forecasting platform. This can predict a specific account balance at any determined point. It uses historical balance data analysed across a specified time series, but also takes into account variables such as seasonality or even known events, such as the pandemic, to generate realistic context-based output.

BofA is also using Big Data analytics and ML-based pattern-recognition models to enhance fraud detection, and is now offering

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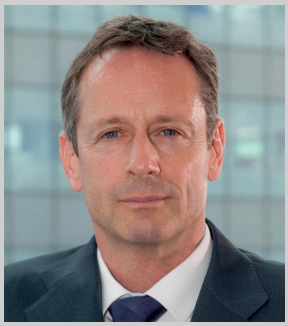


Bruce Meuli
Treasury Advisor Executive, Bank of America Flex Group

intelligent payments routing as clients seek the most appropriate (and cost-effective if desired) cross-border pathway for their transactions.

Furthermore, bank reconciliation and cash application processing, and payment pre-validation tools are also now part of the bank's ML-driven toolkit. Indeed, with its STP rules engine and file validation pilot, treasury clients will be able to detect issues with payments before they reach the bank. As Meuli comments, "post-execution reporting and checking should now be redundant".

The bottom line with any technological solution is whether or not it solves the target problem. The engagement of banks such as BofA with corporate treasury clients is essential to avoid creating solutions that are merely looking for a problem.

It is this collaborative approach that seems to be fundamental to the furtherance of ML adoption and progress. It certainly goes a long way towards realising that 'futuristic symphony of humans and machines working together'.

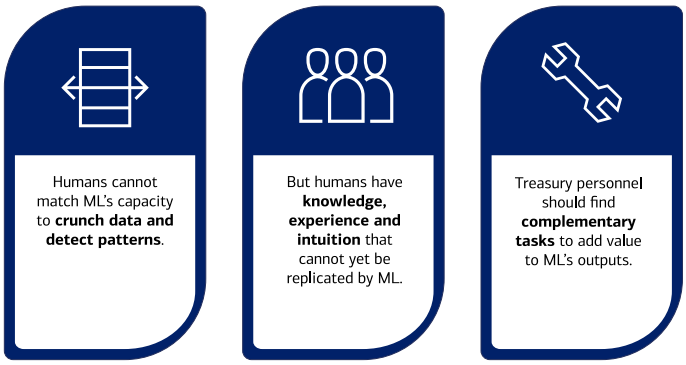
Machine learning in treasury: How to get ahead

Treasurers need to navigate increasingly large volumes of data to make effective decisions – but machine learning (ML) can help. ML can also assist in the detection of fraud, and provide early adopters with a competitive edge. Here, we look at how treasury can make a success of deploying ML.

Laying the groundwork

- The most important aspect of every ML project is **data quality**.
- Start with a **specific problem and/or objective** before looking at how ML can assist.
- Non-critical, mundane and repetitive operational jobs are **low hanging fruit** for ML.
- Talk to colleagues to help **define the aims** of an ML project.
- Understand that technology **cannot cure every problem**.

Human/machine interface



Legal and ethical

- Users of AI/ML must elevate **governance and responsible use** to boardroom level.
- **Ethical codes** in current treasury practice must also apply when ML is deployed.
- **Reputational damage** arising from misuse or uncontrolled application of ML is possible.

Going live

- **Collaborate** with internal partners such as IT and trusted external partners.
- Where the work is done in-house, a **high level of technical skill and commitment** of resources will often be needed.
- The bottom line for proceeding: does it **solve the target problem**?

A Treasurer's Legacy Tech Escape Plan

The phrase 'legacy technology' may invoke images of ancient and unstable IT systems that must be replaced as soon as possible. But is this always the case, and how easy is it to move away from such systems? We sought views from a number of specialists.

Although the notion of 'legacy technology' makes for a rather open interpretation, it has at least one consistent characteristic, notes Kevin Heins, Global Head of Advisory and Complex Client Solutions, GTS, Bank of America. "It says outdated and potentially obsolete software and technology, where the underlying architecture may limit the expansion of purpose of the original application."

It's a view shared only in part by Adrian Rodgers, Director, ARC Solutions. He contends that "legacy technology is not automatically a negative", but qualifies this by asserting that the critical part of his definition is whether or not the original vendor has kept their software up to date, particularly in terms of enabling connectivity to newer systems.

Openness to integration with the work of other vendors, especially specialist fintechs, helps maintain system relevance, even if that system is deemed 'legacy', he argues. "Of course, where functionality has failed to keep pace with user need, or where system support has become poor or non-existent, there is a clear case for moving on."

Taking a straightforward view of legacy, Bob Stark, Global Head of Market Strategy, Kyriba describes it as a "closed system". If it does not integrate easily with others, or it requires IT support to ensure new functionality or connectivity is available to its users, then he believes it is a problem in the making. "Technology is an enabler first and foremost, and if it struggles to adapt and scale to the changing requirements of the business, then its time is running out."

Saying goodbye

While Rodgers accepts that "sometimes there may be no reason whatsoever why treasury should not build on top of an existing stack," he cautions that "this must never be used as a way of taking the easy way out of a problem". Doing so, he warns, "will only serve to lock you further into legacy" that one day will become a problem.

Citing a client with a large in-house bank that repeatedly delayed changing its technology, Rodgers acknowledges the reality of change, saying "some organisations are so big, and their technologies so business-

critical, that change is a frightening thought for them".

Unfortunately, closed legacy technology can prove difficult or impossible to extend. Inhibiting the flow of new real-time data streams because, for example, APIs cannot be connected, will present a significant loss of treasury opportunity, even around basic activities such as managing bank signatories or receiving statement data. This is when the argument for change should become more compelling.

Reasons for replacing a system tend to fall into one of three categories, notes Stark. Until recently, it was likely to be either the relationship with the vendor no longer being satisfactory, or the functionality no longer being sufficient. Increasingly likely now though, he says, is the lack of ability of a system to integrate with other streams of information.

Borrowing the Gartner term 'composable financial management systems', Stark has observed CFOs beginning to build their own finance IT teams, driven by a need for greater data integration and wider sharing across platforms. "If you don't have the ability to support that model from a technology perspective, in my opinion, you have a serious legacy system issue."

However, even if challenges arise, it still does not necessarily make legacy technology a problem to be immediately and unconditionally removed. A disparate and seriously limiting collection of spreadsheets may indeed need upgrading now, but Heins suggests that if legacy refers to vital systems that are deployed organisation-wide across multiple processes it could well be "difficult, risky and expensive to replace". This requires a lot more planning than a simple shopping list.

Resistance is strong

While users of ageing core systems may wish for a rapid upgrade, the idea of ripping and replacing will often raise concerns for the IT team. Replacement, as Rodgers notes above, can indeed be fraught with problems. Herein lies a necessary weighing up of the risk between replacing and not replacing.

A broad argument for replacement today is based on connectivity. Momentum is being driven by the rapid rise of, and demand for, online services and real-time data provision. It's a situation that notably accelerated during the pandemic as business customers – B2B and B2C – were forced online, and finance teams desperately sought updates on liquidity and cash positions to stave off collapse.

For Heins, this situation has created a degree of change inevitability for many corporates where their old architectures are on-premise applications lacking the ability to integrate with new cloud-based offerings. "If you don't upgrade at some stage soon, the business will eventually lose the ability to stay in touch with developments, in terms of both technology and client expectations," he cautions.

Despite strong drivers, some resistance to removing legacy technology persists, even by those in sectors most affected by digitalisation such as retail. Not least of the reasons why is an unwillingness (or inability) to bear the cost, complexity and commitment to deliver transformation.

The lack of budget for upgrading is "an absolute classic barrier", comments Rodgers. "It's particularly an issue where treasury is run as a cost-centre." And where treasury faces a CFO who is only interested in keeping costs down, he says "they will never get excited about increased efficiency and service capacity".

A number of client examples from Rodgers reveal where the treasurer has been "desperately in need of a technology upgrade, yet the CFO does not understand why". Their refusal to acknowledge a real need persists, even after providing independent evidence that organisations have suffered financially because they didn't

A Treasurer's Legacy Tech Escape Plan

have the appropriate treasury systems.

As Rodgers himself notes, "a mistake in accounts payable is survivable but a major meltdown in treasury may not be". With some optimism, he feels old-school denialist thinking may be nearing the end of its tenure, and that those entering the office of CFO now will have had some exposure to treasury, or even been treasurers themselves.

But even with senior executive support, expectations must be managed to avoid disappointment. It may be the case that the first upgrade, from spreadsheets to a TMS, yielded huge savings in time and effort. Subsequent upgrades, notes Stark, are more likely to focus on transformation and new capabilities rather than purely productivity gains.

"Some organisations are so big, and their technologies so business-critical, that change is a frightening thought for them."

"Effective treasury system projects don't stop once they've automated key tasks. The treasury team that continues searching for process improvements, including integrating multiple systems and processes together, will uncover significantly more benefit than those that remain content with only saving hours of time."

In terms of project commitment, organisational changes and turnover at the management level can have a detrimental effect. Agreeing to budgetary and resource requests for a major systems overhaul that delivers only perceived incremental advantages is a crusade only of the brave. Often, it may be felt, it is best to focus on resolving other more immediate issues, leaving treasury upgrades for future incumbents to tackle.

As this attitude continues, so risks may intensify, notably around the continuity of core processes. Where system integration is not tackled, rapid enterprise-wide visibility of financial data is not possible. The potential harm to the understanding of working capital and liquidity positions forced by being unsighted in this way is immense. And yet Heins says he still bears witness to treasuries that are struggling to secure the agreement and the budget to upgrade.

Building a case

Stark believes focusing overly on cost as a barrier is itself a "symptom of legacy thinking". The real focus, he suggests, should be on "value realisation". It is, he explains, about what can be added to either the top or bottom line, based on having transformed the treasury operation using, for example, real-time information, or improving cash and liquidity through more precise forecasting.

If no such benefits are presented, then the upgrade conversation will be short. However, real improvements can have ROI (return on investment) figures attached; these will boost the business case. "Don't think of the shift from legacy as a cost, but as an investment that will yield certain benefits and an ROI," Stark advises. "It's a figure that enables CFOs to crystallise where treasury transformation should be on their priority list. And cost goes away quickly once you really understand what you're looking to accomplish."

Rodgers offers some practical case-building illustrations where, for example, quantifiable cost-benefit analysis might show that four FTEs undertaking cash allocation could comfortably be reduced to two by implementing matching software, based on a specified cost over a defined period. In addition, software deployment could remove practices such as manual keying and error-correction, demonstrating that efficiency also positively impacts security and control measures.

Bel Group: transformation in progress

When family-owned global dairy product firm, Bel Group, sought to bring to order what was already a centralised treasury operation, it had already made serous inroads into centralisation with its Paris-based shared service centre. However, most of its subsidiaries had no overseeing treasury function. With exposure to more than 15 currency pairs, and a significant volume of intercompany cross-border sales, and more than 1,500 market transactions annually, treasury was facing a challenging future.

It was clear that treasury's needs were being hampered by "too many" systems, according to Benoît Rousseau, Group Treasury and Insurance Director, Bel. With no treasury-specific IT to call upon, an "unacceptable" amount of time and effort was required just to maintain system connectivity and scheduled upgrades, he reports. "For a company like us, finding an integrated software-as-a-service (SaaS) solution was really key to our future progress."

Rousseau conducted a detailed review of the market, eventually selecting Kyriba. The vendor was already well known to him as a bank communication and cash management system but less known for its risk management capabilities.

Accepting that Bel might discover some points of compromise in this respect, the fully-integrated nature of Kyriba's platform was the decider. "Instead of adopting a best-of-breed approach and working yet again with several different providers, we were happy to change our way of management to make sure Kyriba gave us the level of integration we need," he explains.

Having made the selection, the 12-month implementation project kicked off with a number of cross-functional workshops. These explored Bel's requirements and specifications around cash management, bank communication and risk management. Having finalised details, the physical implementation work commenced.

"We've put a lot of internal resources into this project," says Rousseau. Indeed, to be able to dedicate some of its internal treasury team to the project, Bel brought on board a team of interim treasury professionals. To cover some areas of technical expertise, the firm also worked with an external integration specialist.

Rousseau is anticipating considerable savings in terms of maintenance, along with more fluid connectivity with its banks and its SAP ERP platform. There will still be some work to close the system's functional gaps for Bel, but this too is in hand.

With Rousseau acknowledging that Kyriba's specialisation is not risk management, the implementation is an opportunity to collaborate with the vendor, particularly around FX risk. Bel is now offering its observations and feedback on how this module can be developed, for itself and other users.

Bel is also engaging with Kyriba on the iteration of a new automated artificial intelligence and business intelligence-based fraud module. It goes further: "Today, most of our FX transactions are managed through a single platform, so now we're looking for a single electronic platform to manage all liquidity products too," Rousseau explains.

He is also taking the opportunity, while minds are project-focused, to expand his review to cover all internal processes and documentation impacting treasury. "This is not about a like-for-like replacement. What we have clearly identified and are undertaking is a transformation."

ArcelorMittal: NextGen build

With its multi-system treasury and trading architecture no longer delivering expected levels of service and risk management, the Paris-based group treasury of Luxembourg steel production giant ArcelorMittal knew the time had come for a major technological upgrade.

The firm's IT team had kept the existing fragmentation of in-house and vendor systems in operation across a group-wide intranet for around 15 years. However, this set-up required an increasing amount of maintenance and audit work, says Laurent Koenig, Treasury Head of Operations, ArcelorMittal. With a number of applications no longer being supported by their vendors, he says the goal was clear: find an integrated solution that could become the heart of treasury for at least the next 20 years.

The primary objective was optimisation of ArcelorMittal's front-to-back global trading, liquidity, funding, regulatory reporting, and foreign exchange (FX) and commodities hedging activities. With its financial risk management carried out mostly using Excel, Koenig was keen for the team to build "something far more robust".

To achieve its goals, group treasury embarked upon a two-year quest for a single-vendor, single-platform successor. "We certainly took our time," recalls Koenig. Using the services of KPMG to guide the search, an extensive request for information/request for proposal (RFI/RFP) process was initiated. Calypso's integrated suite of trading and risk applications was eventually selected, alongside its implementation partner, Synechron.

The nature of ArcelorMittal's business means it hedges many commodities. "It's a pain point for us," Koenig explains, noting that "it's often difficult to record trades, so having a customisable system like Calypso is essential". That said, he is adamant that customisation will be strictly limited. "This way it makes it a lot easier for us to document, support and upgrade."

The implementation project will replace most of the applications currently in use by ArcelorMittal's group treasury. However, it will retain one of its core systems for pure cash management activities, Koenig "feeling quite at ease with that system".

Calypso will focus on front-to-back trading operations, interfacing directly with existing settlement functionality. Jérôme Plainchault, Director, Synechron France, says his team will rely on a standardised Calypso platform architecture and messaging formats to deliver the project's remit. "There will be times when we do need to customise for the ArcelorMittal implementation," he notes. "We just need to find the right balance between what's proposed natively by the system, and what the client wants."

The aim is for the entire group treasury to be live by 2022. Access by ArcelorMittal's global community of subsidiaries is under review, not least from a licensing standpoint. The company currently provides user-rights to its existing intranet facilities to more than 1,000 individuals. For Koenig, this means finding "the most economic operating model of integration".

As might be expected, the cost effectiveness of day-to-day running is also part of his equation. "We believe that with the Calypso system we can produce a lot more EBITDA [earnings before interest, taxation, depreciation, and amortisation] than we currently are," he says. "We hedge all our residual financial exposures, so feel we need this integrated system to enable us to generate stronger results here too."

Despite a few early challenges – this is a huge 'rip and replace' project necessitating a massive change management programme – Koenig remains focused on the benefits of improved connectivity, stronger system management and, through full process integration, enhanced financial risk management across the group. After all, he says, "we are building for the next generation".

A Treasurer's Legacy Tech Escape Plan

Managing change

Because every major IT project can present risks, treasury should consider adopting a proven methodology to aid safe migration away from legacy technology. Heins proposes a four-pillar approach that requires the following to be addressed, attaching equal importance to each:

- Set a clearly defined strategy
- Provide adequate funding
- Set aside appropriate resourcing
- Deliver superior project management

A "softer element" that enhances user experience should be added too. "If a business is investing in a major technology upgrade, offering the best user experience for every stakeholder is essential to make the most of that investment," he explains.

At a practical project execution level, Rodgers often reminds project teams that effective data management is vital. "For a system that has been in service for a long time, some of that data will be redundant, and some incorrect.

It generates a data-cleansing imperative that must run in parallel to that of the data migration, where retention and accessibility are possible challenges."

Indeed, he argues that cutting over to a new system and simultaneously switching off the old one requires caution. At least 12 months of comparative data will be required alongside that required for audit, compliance and legal reasons.

"It may be obvious to some, but the archiving and accessibility of data from certain systems is something to be borne in mind," says Rodgers. "For a professional project manager or consultant, this should be just another item on the checklist of important actions.

For a busy treasurer looking forward to a brave new world, something so obvious can go unheeded."

Partners

One way to ensure data accessibility is retained is to extend the legacy replacement consultation to multiple stakeholders across the organisation. Collaboration with colleagues is particularly important in a project that integrates treasury systems into the wider technology environment – to deliver real-time information sharing, for example. Here, the conversation with functions such as finance, procurement, tax, accounting and the business, should explicitly reveal the needs of all up and downstream partners.

At the sharp end of most major projects, a principal player will be IT, notes Rodgers. While the CFO will most likely have the final say on the decision to buy, treasury will need to partner with IT on evaluation, transition and ongoing support. The latter may be a delicate matter.

An organisation with an SAP or Oracle ERP system, for instance, will often see the whole of its IT support function focused on that core system. Treasury may be able to justify why it does not want SAP or Oracle, but IT will always ask where treasury will obtain support because often it will no longer be available in-house, warns Rodgers.

"Almost certainly if IT does not have the skills, resources or incentives to assist, treasury will have to find a way to plug those gaps," he comments. While vendor support should be available, it's essential that the relationship be built on solid ground from the outset.

Still at the sharp end, "perhaps one of the most worrying indicators of potential project failure is when the treasurer refuses to or cannot give up their day job," adds Rodgers. Depending on project size and scope, it may therefore be prudent to call upon expert assistance when assessing the impacts of change, and planning and executing the implementation work. Similarly, if resources and relevant experience and skills are not

A Treasurer's Legacy Tech Escape Plan

sufficiently available in-house, then third-party help may be necessary to achieve the most effective outcome.

It may even be beneficial, depending on how well treasury is staffed, to bring on board an interim treasurer for additional team bandwidth, either taking on the day-to-day work of treasury or, more likely, to act as a dedicated treasury project managing resource. "It's all about speed to market," suggests Heins. "The quicker you can complete the project, the quicker you can achieve ROI."

Future vision

For many businesses, a legacy system that is subject to constant patches and work-arounds to keep it functioning in an increasingly digitally connected world will eventually become a liability, and it will need to be replaced. The escape plan may simply be to provide like-for-like capabilities in treasury. However, says Stark, it may see a more seismic shift from disparate point solutions or basic task automation, to the multiple connected nodes of process automation. Here, solutions such as artificial intelligence can bring considerable commercial and operational advantages, alongside a range of new capabilities.

Where legacy technology and processes often involve basic systems of record that capture transactions and offer simple, siloed viewpoints, the right upgrade can deliver more sophisticated systems of engagement, capable of connecting all available internal and external platforms.

"This is when treasury becomes a data-driven strategic player, connecting with and deriving insight from multiple sources of information across the organisation," Stark comments. "It's how vital enterprise-level decisions are made and, perhaps more critically in the current stressed environment, how treasury begins optimising enterprise liquidity."

Whatever the reason for change, technology often presents as a shifting set of goalposts. For treasurers, trying to keep up or make a judgement as to when

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to change can be a source of frustration and confusion. To better understand the market and relevant developments in this space, the resources of banks such as Bank of America should be fully leveraged by corporate clients, says Heins.

Banks can work with clients on streamlining processes and automation, and determine practical ways to make legacy upgrades smoother, he explains. "The investment we make in innovation in Bank of America is always brought to focus through an 'outside-in' lens. It's a collaborative approach that helps us understand how our clients want to work with us. We see it as a key differentiator. By working together, we can keep building technology that is smart and fit-for-purpose, for the client and for us, across every market and use case."

There is no doubt that moving away from legacy technology represents a major commitment. It's a realisation that can be made more palatable if seen as an opportunity to evolve, rather than a trial to be endured.

Although Heins cautions that when building for the future, "system adaptability, scalability and connectivity are critical", with appropriate planning, funding, resourcing and project management, he believes that businesses of all shapes and sizes can begin moving towards a more future-proof technology stack. That's when legacy technology really becomes a thing of the past.

Legacy technology in treasury: an action plan for future resilience

The idea that legacy technology is always a threat to business continuity is questionable. But when it is a recognised challenge, how is transformation best managed? Here we look at the key considerations for treasurers when reviewing and upgrading current technology capabilities.

Legacy fundamentals

- Legacy is only a problem if it cannot adapt or scale to meet new challenges and opportunities.
- Technology that limits integration with newer software and systems cuts off opportunities for efficiency and growth, and defeats client expectations.
- Acknowledge that replacing legacy can be costly, resource-intensive, risky and daunting.

Project planning

- Set a **clear strategy**.
- Secure **adequate funding**.
- Provide **sufficient resources**.
- Deliver **superior project management**.

Building a case

- Don't think cost, **think investment** in increased efficiency and service capacity.
- Cost-benefit numbers help raise **treasury transformation** on management's priority list.

Talking sense

- Project **support from senior executives** encourages buy-in from all.
- **Talk to other functions** about wider data sharing and closer engagement.
- **Get IT onside** and explain post-change system support plans.
- Use **banking expertise** to keep up to speed with process and system developments.

Practical considerations

- Aim for **greater** system adaptability, scalability and connectivity.
- Delivering a **better end-user experience** will ease the changeover period.
- Data-cleansing, retention and accessibility issues must be **closely managed** at all times.
- Once on the transformation path, **anticipate incremental rather than dramatic** improvements.

Keep moving

- The search for process improvement never ends!

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