



THOUGHT LEADERSHIP

ENHANCING LIQUIDITY MANAGEMENT WITH THE SUPPORT OF ADVANCED DATA ANALYTICS

A review of the status of data analytics in corporate banking and how it supports the corporate liquidity management ecosystem.

EBA LIQUIDITY MANAGEMENT
WORKING GROUP

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INTRODUCTION

The accumulation of substantial amounts of data has led financial institutions to explore new ways of using and monetising that data. A recent report by the EBA Open Banking Working group has identified data analytics, data accessibility and data availability as three areas in which, if they improved their capabilities, banks could create value for both their own business and that of their corporate clients.¹ Data analytics is the process of collating and analysing data from different sources to provide insight into past decisions and to help predict and model future scenarios. Passing on such insights to customers will create value for those customers and represent a potential source of new business for banks. In the area of liquidity management, both banks and corporates agree that data analytics could add immense value by, for example, facilitating the development of more accurate cash forecasts. This will allow companies to plan their liquidity more accurately which, in turn, will allow banks to manage their balance sheets more efficiently. Yet, despite the potential benefits, neither banks nor their corporate clients have yet adopted data analytics on a large scale.

Perhaps the greatest hurdle to widespread adoption of data analytics is the lack of a “data culture” in most organisations. Banks and corporates both need to train or acquire staff to ensure they have the expertise to recognise how data can transform the organisation and the ability to identify pathways towards implementing a data-driven culture. According to a Boston Consulting Group survey², 44 banks revealed that most treasury functions have a relatively low level of digital maturity. Their analysis found that only 11% of bank treasuries make widespread use of advanced digital technologies, while as many

as 70% have yet to embrace digitisation in any meaningful way. On the corporate side, while treasuries may have installed a digital officer, few officers have the authority, budget and staff to enact a comprehensive digital strategy.

As well as having a culture and the competences to use data effectively, organisations need to be able to process large quantities of data received from many different sources. At present, data is held in multiple silos, making it difficult to access. Changing the way data is collated and organised is a highly complex series of tasks, yet it is a prerequisite for advanced data analytics. Once the issue of data accessibility has been tackled, banks and corporates will also have to enable technologies such as artificial intelligence (AI) and machine learning to derive intelligence from data. While there has been some adoption of these technologies, their full adoption, and consequently the use of advanced data analytics, is still some way off.

In this paper, the EBA Liquidity Management Working Group (LMWG) takes a closer look at what corporates need to adopt in order to expand their use of data analytics and how their banks can support them. The paper starts by outlining the main challenges currently faced by corporate treasurers, before identifying advanced data analytics as a potential solution. The paper outlines how data analytics could drive efficiency within corporate treasuries, before describing how corporates currently use data. The paper concludes by identifying the primary hurdles to the adoption of data cultures in both banks and corporates and briefly discusses how they may be overcome.

¹ See EBA Open Banking Working Group publications, “Data Exploration Opportunities in Corporate Banking: Key Concepts and Applications,” September 2017, https://www.abe-eba.eu/epaper/epaper-data_exploration_opportunities_in_corporate_banking/index.html#0.

² Elgeti, Clemens et al, “Creating a Digital Treasury in Banking,” 20 May 2019, <https://www.bcg.com/publications/2019/creating-digital-treasury-banking.aspx>

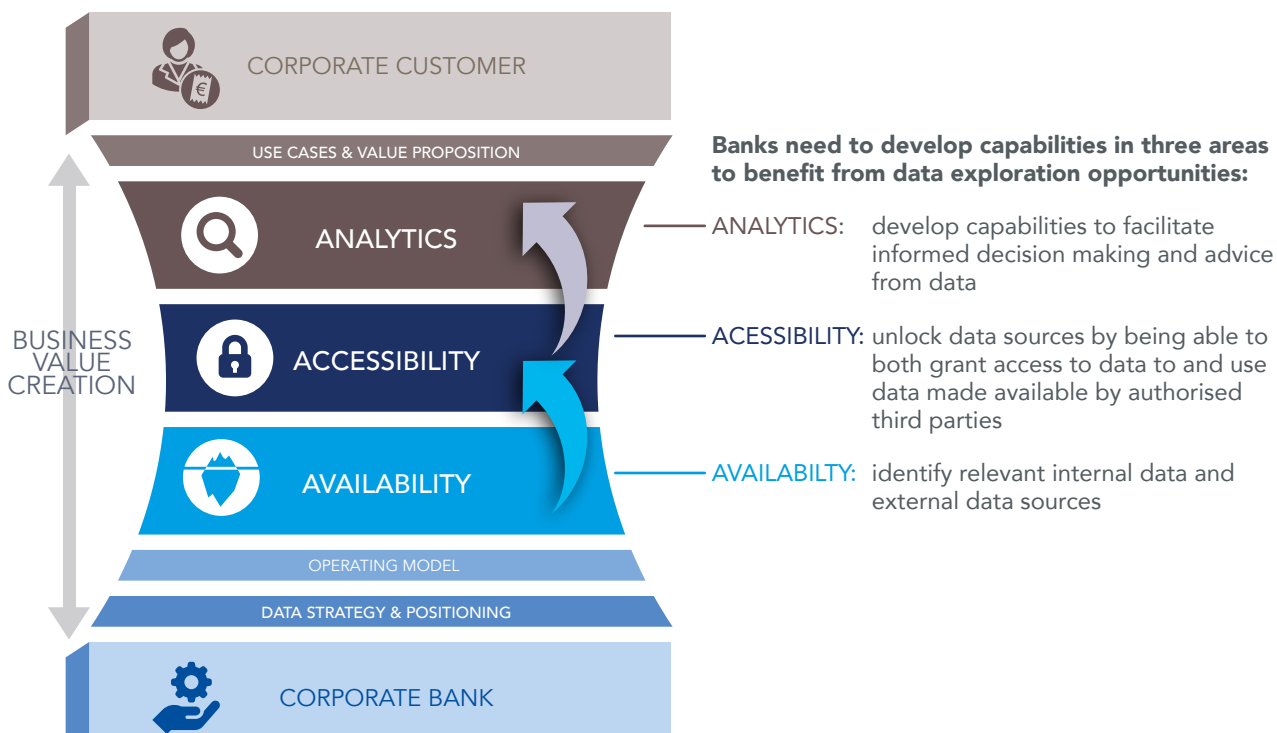


Figure 1: Triple A model – business value creation stack³

³ See “Data Exploration Opportunities in Corporate Banking: Key Concepts and Applications”, p. 5, https://www.abe-eba.eu/epaper/epaper-data_exploration_opportunities_in_corporate_banking/index.html#0

1. THE NEED FOR DATA ANALYTICS IN THE CORPORATE LIQUIDITY MANAGEMENT ECOSYSTEM – A CORPORATE PERSPECTIVE

The EBA Liquidity Management Working Group's (LMWG) previous paper⁴ concluded that the relationship between banks and their corporate clients will evolve to include increased two-way sharing of information, which in turn will help develop mutual understanding within the corporate liquidity management system. This paper extends that analysis by examining whether there is a need for improved analysis of data within the corporate liquidity management ecosystem.

In preparation for the 2019 edition of its biennial global treasury report⁵, Deloitte surveyed over 200 corporates to understand the top strategic challenges for treasury organisations around the world. The survey reported that treasurers' priorities had shifted slightly since the previous (2017) edition. In 2019, the limited visibility of data on global operations, cash and financial risk exposure was identified as the top challenge, being listed by 62% of the respondents; limited visibility of data had ranked second in 2017, when 43% of the respondents had listed it among their top strategic challenges. FX volatility remains a key challenge too: it was the top-ranked challenge in 2017 (listed by 52% of respondents) and was still listed by 50% of respondents in 2019.

The same survey found that 84% of treasury organisations are expected to be a "strategic adviser to the business". To be able to discharge this role effectively, treasurers need to have, and to be able to explain, insights from payments and other data held across the business. For banks, helping their corporate clients to benefit from these insights will enhance those client relationships which will, in turn, help banks attract and retain the operational cash deposits to support their balance sheets.

Following on from its previous paper, the LMWG explored the role banks could play in helping their corporate clients mitigate some of the challenges identified in the 2019 Deloitte report. The LMWG discussions focused on core corporate treasury operational activities (such as cash forecasting and enterprise resource planning [ERP]) and transaction banking services (including payments and transaction reporting). In particular, the LMWG sought to identify whether the introduction and provision of value-added services, such as data analytics, by banks to their corporate clients could strengthen these client relationships.

To better understand the needs of corporate treasurers, the LMWG held a number of meetings with representatives of treasury departments of EBA members' clients. The LMWG heard from corporate treasurers working in a range of organisations, from small and medium-sized companies to large corporations, across a range of different industries. These discussions form the resource base of this paper.

Most of the corporate treasurers who spoke with the LMWG stated that they were satisfied with the data provided by their banks, although they agreed that access to more information (e.g. more P&L focused reporting, more detailed reference information and the use of harmonised formats) would help to create additional value in the future.

⁴ EBA Liquidity Management Working Group publications, "Impact of Instant Payment and Intraday Liquidity on the Corporate Liquidity Management Ecosystem", September 2019, https://www.abe-eba.eu/media/azure/production/2351/eba_19_09_fact-sheets_rz3_web_liquidity.pdf.

⁵ Deloitte, "2019 Global Treasury Report," <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/finance/us-2019-global-treasury-report.pdf>.

However, given their focus on cash visibility and forecasting, corporate treasurers currently prioritise reducing data fragmentation and consolidating data that is spread across multiple systems and geographies. With this in mind, corporates would like their banks to:

- ≡ Improve the level of cooperation among banks. For example, payments data should be delivered in a standard format that can be easily collated, stored and managed by their ERP and/or treasury management systems (TMS). This will allow consistent analysis of data, such as the development of more reliable cash flow forecasts, leading to more accurate reporting and more efficient decision-making.
- ≡ Provide better support to their corporate customers in all jurisdictions in which they provide banking services. For example, banks could provide technological interfaces such as Application Programming Interfaces (APIs) with all local IT infrastructures, which would help companies move from manual to automatic processes when opening bank accounts or managing payments. By offering interfaces with local government systems, banks could help their clients file and pay taxes and other statutory payments.

While the immediate focus may be to improve communications within the corporate liquidity management ecosystem, the LMWG recognises that there will be opportunities to analyse data more effectively, if that data can be collated and stored more consistently.



2. HOW DATA ANALYTICS IMPROVES DECISION-MAKING

If banks and corporates can improve the way they share information, the next stage is to find ways to analyse that data to develop better decision making within both banks and their corporate clients. To do so, it is helpful to understand data analytics and how it is being, and could be, used within the corporate liquidity management ecosystem.

2.1 DIFFERENT LEVELS OF DATA ANALYTICS

Put simply, the goal of data analytics is to reveal trends and metrics that would otherwise be lost in the mass of unstructured data. The four primary analytical techniques are outlined in the table below.

Figure 2 shows how a corporate treasury department's use of data analytics evolves over time. Initially, departments can become more efficient simply by adopting more streamlined processes. Adopting technology to first manage those processes and then automate them provides further efficiency gains. The last two stages represent a major step change in the deployment of technology, the use of artificial intelligence (AI) and machine learning. Neither technologies have yet been adopted within corporate treasury departments.

2.2 POTENTIAL USES OF ADVANCED DATA ANALYTICS IN THE LIQUIDITY MANAGEMENT ECOSYSTEM

From the perspective of data analytics, treasurers consider achieving greater visibility of cash and developing more accurate cash forecasts to be their most significant and immediate challenge. Information that is readily available to companies

(whether provided by their banks or their customers and suppliers) could be used to achieve both these objectives, if improved methods of analysing data were adopted.

The use of more advanced data analytics could support improved corporate decision making in other ways too. For example, data analytics could help companies to:

- ≡ Identify patterns of payment by customers and accurately forecast when a payment will be received based on previous behaviour. Predictive analytics could be taken a stage further. For example, based on knowledge of customer payment behaviour, AI can help to adjust the collection process and reduce / minimise the risk of late or even non-payment. Analytics could also identify any changes to customer payment patterns, so that, for example, a delay in collecting payment from a customer might represent an additional counterparty risk to be managed.
- ≡ Identify patterns of behaviour based on geography, segment or other factors. As an example, if analytics indicated an increased tendency for customers across a country, region or specific sector to delay payments, this might suggest weakening economic conditions in this area or a deterioration in those customers' ability to meet their financial obligations (or their creditworthiness more generally), resulting in delayed and/or reduced payments or a bad debt. Identifying such patterns early would allow treasury to update its cash forecasts and credit management to adjust its collection processes, while also giving time for the corporate management to take action (e.g. to reduce inventory) in anticipation of reduced regional sales.

Data analytics is broken down into four types:

1. Descriptive analytics describes what has happened over a given period in the past. The preparation of annual accounts is an example of descriptive analytics.
2. Diagnostic analytics explains why something happened in the past. This involves some analysis of historical data to explain, for example, why a company borrowed more than forecast.
3. Predictive analytics moves to what is likely to happen in the near term. It uses models to identify patterns and predict likely outcomes in, for example, cash forecasts.
4. Prescriptive analytics is used to identify and evaluate potential courses of action, with a view to determining optimal decisions.

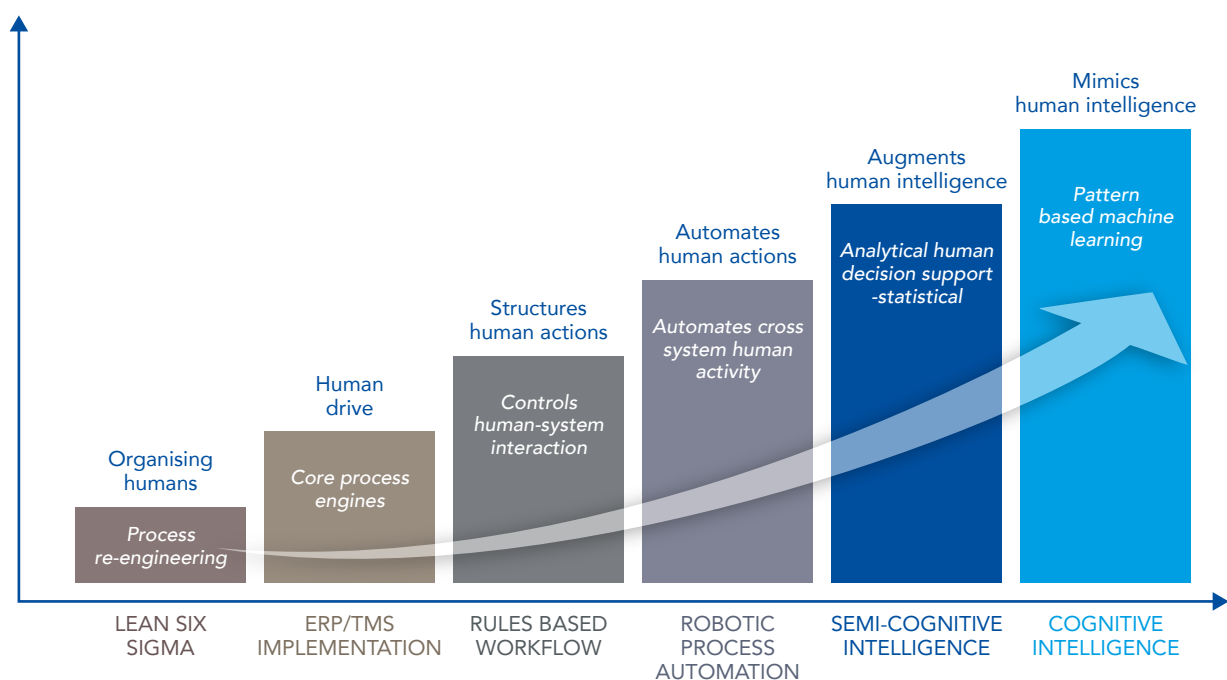


Figure 2: Evolution of data analytics in a corporate treasury department⁶

⁶ Source: Bank of America

Improvements in both cash forecasting and cash collection processes will also help companies manage any currency exposures and any currency derivatives they hold more efficiently and predict external borrowing requirements more accurately. Doing so would also enable banks to manage their balance sheets more effectively.

Banks can use data analytics in a similar way. On one level, with the adequate consents, banks can use the data they gather from individual clients to understand the changing profile of those clients. Then, by combining the data from several clients within the same supply chain, they could identify patterns within wider supply chains. Such insights could be used to analyse how the identified patterns would affect revenues, risk profiles and, perhaps, the profitability of individual organisations within those supply chains. Banks will be able to share these insights with individual clients to enable them to take advantage of opportunities or to prepare for likely falls in revenue.

In return, banks will benefit from any potential cross- and deep-sell opportunities, or help to protect their own clients (and, therefore, themselves) from the effects of any economic downturns. More generally, banks will be able to use these insights to forecast their own positions, for example in respect to their nostro accounts, more accurately and to help manage their collateral more efficiently.

2.3 HOW IS DATA ANALYTICS BEING USED NOW?

At present, data analytics is chiefly being used by banks and their corporate clients as a descriptive or diagnostic tool, primarily because these organisations generally capture data from specific applications (e.g. payment transmission) rather than view data capture as part of a wider value proposition. Taking payments as an example, this means companies are focused on processing the data they receive from banks to complete their own payment workflows. Any other potential uses are considered incidental.

That said, there are some instances in which more advanced data analytics are being used. The use of AI is already producing exciting results in the area of fraud management, for example. While tools are available to handle transactions flagged as suspicious, AI's ability to analyse large numbers of transactions and recognise patterns of behaviour enables attempts to launder funds to be swiftly identified. In some cases, the identification of atypical behaviour has led to the recovery of stolen credit cards and the discovery of cases of identity theft.

The use of AI in fraud management offers a glimpse of the potential benefits of a wider adoption of more advanced data analytics both within banks and their corporate clients, while simultaneously raising the question of why a wider adoption has not yet taken place.

3. THE CHALLENGES AND POSSIBLE BARRIERS TO BROADER ADOPTION OF ADVANCED DATA ANALYTICS

Given the depth of data held by both banks and corporates, and the level of data flows between the two, insufficient data is not a barrier to the broader adoption of more advanced data analytics. The experience of AI in fraud management suggests that the availability of suitable technology is not a primary factor either. Instead, it is more likely that organisational and cultural issues present the major hurdles to the greater use of advanced data analytics, both within banks and corporations.

3.1 ACCESS TO DATA

One of the obstacles that prevents corporate treasurers from dedicating time and resources to strategic and decision-making activities is data fragmentation. Legacy systems, decentralisation within organisations and a lack of data standards lead to the inevitable creation of data silos. During EBA LMWG discussions, corporate treasurers shared their difficulties in managing numerous ERP systems at a time (more than 20 different ERP systems in some organisations), with a corresponding lack of data accessibility. Similarly, on the other side of the ecosystem, most banks' legacy systems impede the movement of data between silos, preventing them from implementing the required analytics tools that can generate insights from masses of data.

To benefit from a data analytics model, organisations must ensure that they are capturing and recording data in a way that it can be analysed to provide new insights and ultimately generate value. Taking cash forecasting as an example, the problems in creating a cash forecast are not caused by a lack of data per se. In addition to the data generated within their companies as a whole (e.g. accounts payable, accounts receivable, payroll, etc.), corporate treasury departments receive large quantities of relevant data from their banks

within transaction and balance reports. Rather, it is the inability to analyse data effectively that makes developing the forecast difficult. Standardising the recording of, and simplifying access to, all the various data held within companies and banks would ease the adoption of more advanced data analytics across a range of activities.

3.2 LACK OF A DATA CULTURE

While banks and corporates see the value of data analytics, they have not yet adapted their technology and treasury processes to support it, often relying on traditional, sometimes manual, mechanisms to collect and interpret data. Given the existing organisational hurdles, it is unsurprising that there is not yet a mainstream data analytics culture in either banks or corporations. This will need to change for banks and corporates to be able to adopt advanced data analytics in the liquidity management ecosystem.

Critically, the adoption of a new data-driven culture requires the engagement of staff (whether by training existing staff or bringing in new people) with the necessary expertise to implement and then oversee a new way of managing and analysing data. New competencies are needed for organisations to focus on understanding data and its meaning in order to build up the technology around it. Over time, this is likely to include the adoption of more advanced data analytics, such as AI and machine learning (ML), to support the business in understanding the value chain and speeding up decision-making processes. Without a changed approach to data collation and storage, advanced data analytics will remain out of reach. In other words, investment in technology is required to create an environment in which data analytics can be performed.

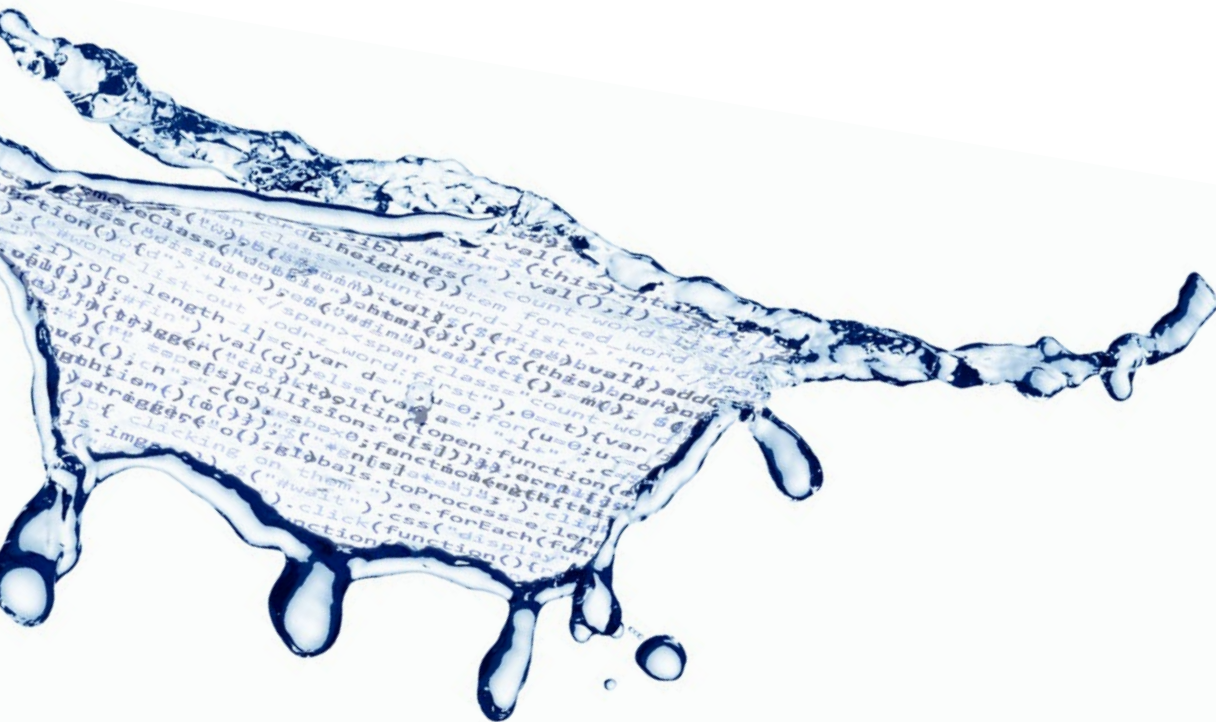
At present, though, while AI and machine learning processes have been identified and are being monitored as possible value-added solutions to be added to (or replace) existing models, they are not yet perceived as sufficiently mature for daily operations, especially in companies not yet having adopted a digital model. As an indication of market perception of these technologies, the Association of Corporate Treasurers' survey of The Business of Treasury 2020⁷ found that while 86% of respondents said their organisations are concerned about "technology, including AI, and automation", 50% have no plans to invest in AI within the treasury department (and 55% have no plans to invest in machine learning).

3.3 DIFFERENCES BETWEEN ORGANISATIONS

While there is broad consensus of the value in the use of new technologies in banks and corporates, the pattern of adoption is more mixed. During LMWG discussions with corporates, a wide spread between low and high technology adoption was apparent. At one end of the spectrum, some companies rely solely on data from their general ledger and bank statements, with no adoption of any technology-driven processes. At the other end, some treasury departments have adopted robotic process automation (RPA) or ML on a broad scale, albeit more as an overlay tool focused on process automation, rather than a fundamental revision of core processes.

That there have been some early adopters of AI and ML technology does suggest that its use may become mainstream in the foreseeable future.

⁷ Association of Corporate Treasurers, "The Business of Treasury 2020", https://www.treasurers.org/system/files/Business%20of%20Treasury%202020_0.pdf



4. THE NEXT STEPS IN THE ADOPTION OF DATA ANALYTICS IN THE CORPORATE LIQUIDITY MANAGEMENT ECOSYSTEM

In order to overcome these hurdles and start to broaden the use of more advanced data analytics, a number of steps will need to be taken. Not all of these are easy, not least because of the wholesale changes to existing processes that are required, notably to data collation and storage.

4.1 DEMONSTRATE HOW DATA ANALYTICS CAN SUPPORT BETTER DECISION MAKING

Because of the organisational and cultural challenges outlined above, the demands on most organisations to move towards a data-driven culture are significant. In addition, although the potential benefits from the use of more data analytics can be identified, any predicted benefits have not yet been realistically quantified. Moreover, in the one area where AI has demonstrated success, fraud management, the benefits come in the form of losses avoided, rather than revenues gained.

At present, despite the existing use cases, most benefits from an increased use of data analytics remain theoretical. In order to build momentum towards an increased use of data analytics, proponents need to be able to demonstrate how potential insights can support better decision making across the business as a whole, not just within the treasury department. Obtaining leadership support and backing is critical: to achieve the potential benefits will require some wholesale changes within both banks and corporates.

4.2 IMPROVE DATA STORAGE PROCESSES AND STANDARDS

As organisations grow, so does the quantity of data they hold. Because banks and corporates focus on their primary business objectives, less thought is given to how this data is stored. Each department tends to develop its own databases to meet its own operational requirements with the result that, fairly quickly, data silos inevitably evolve. This fragmentation of data worsens as companies gain additional legacy systems and databases through mergers and acquisitions. When combined with a lack of data standards, this haphazard method of data collation has resulted in organisations holding a mass of unstructured data, which is a major obstacle to the use of advanced data analytics.

To perform data analytics, data storage procedures should enable access to both users and advanced processes such as AI, RPA and ML without additional manual intervention. For most organisations, this will require a major restructuring of the way data is collated and stored. Banks can assist by continuing the process of standard harmonisation, such as within payment messages, which will simplify the process of storing data for corporates.

4.3 ADOPT DATA ANALYTIC TOOLS AND MACHINE LEARNING PROCESSES WHERE POSSIBLE

There are clear potential benefits of using advanced data analytics tools and machine learning processes, but banks and corporate treasurers will want to understand how these tools and processes operate in practice before committing to use them.

Corporate treasurers want to be able to consolidate cash flows on a short-and medium-term basis to improve their strategic and decision-making processes, and to reduce risk exposure. Dependent upon data availability across the organisation, the adoption of data analytics tools has the potential to unlock the current constraints on producing meaningful forecasting positions, while also significantly improving working capital management and accounting procedures. At the same time, RPA can reduce the manual activities related to liquidity management, payment execution and reporting⁸.

Banks can benefit from similar predictive techniques too. Their clients will use cash more efficiently, allowing banks to manage their balance sheets more effectively. The greater adoption of automation on both sides will reduce the risk of error and fraud, reducing operational costs for both the banks and their corporate clients.

4.4 DEVELOP AN INVESTMENT STRATEGY TO ENABLE THE USE OF DATA ANALYTICS

As outlined, existing data management processes and IT infrastructures are not sufficiently robust to support advanced data centralisation and enrichment. Many include multiple outdated layering processes which run simultaneously to clean data, repair errors and feed fragmented data storage. Banks and corporates processes are not designed with data analytics in mind, with the result that the data that they do capture is not always consistent: instead of having accessible data “lakes”, they have inaccessible data “swamps”.

The critical starting point to implement advanced data analytics tools, as well as AI and ML processes, is to provide a stable environment in which data can be accessed and analysed according to business priorities. Data analytics will be most effective when the tools can access all data across an organisation. Getting to such a point, where all data is structured and accessible, will be a complex implementation task that will require careful planning.

During the transition, all required existing processes will have to continue to function until the new tools have been implemented and legacy processes are no longer required. The selection of the right technology partner is crucial especially in terms of compliance to users, IT requirements and the cost and length of the project scope.

⁸ PWC, "Digital Treasury – It takes two to tango. 2019 Global Treasury Benchmarking Survey"
<https://www.pwc.com/hu/hu/kiadvanyok/assets/pdf/2019%20PwC%20Global%20Benchmarking%20Survey.pdf>

4.5 INVEST IN STAFF

Organisations are investing heavily to become more data driven, but only 8% have been able to successfully scale analytics to get some of the estimated USD 9.4 trillion to USD 15.4 trillion of value out of their data, according to a McKinsey Analytical Survey⁹. For an organisation to become truly data-driven requires a change in mindset, attitude and habit. In reality, too few organisations have people at 'C-Suite' level, for example a Chief Digital Officer (CDO), with the ability to identify the critical gaps in competencies and culture that are preventing the adoption of a data-driven culture. A CDO's main role would be to drive growth and strategic renewal by transforming an organisation's traditional analogue businesses into digital ones and to create new value via the smart use of digital tools, platforms, technologies, services and processes.

Adopting a data culture requires data-shrewd people. Even with the best technology and processes in place, companies are ultimately dependent on the people who work there. Investment in people must be prioritised in the training and hiring of staff to build a new corporate treasury culture built on data, digitalisation and the use of advanced technology.

To enhance their client relationships, banks must educate their client-facing staff to be able to help their clients derive value from the new data insights. Corporate treasurers will need to extend their skills to be able to explain these insights to their colleagues, within both corporate leadership and the business units, helping treasurers to become core strategic advisors to the business.

4.6 MAKE A BUSINESS CASE

As with any major project, organisations are going to have to make a clear business case for establishing a data culture. Sharing non-commercially sensitive data across organisations, such as between a bank and its corporate client, has potential benefits not just for liquidity management but for other parts of the business too. The business case has to be made on a company-wide basis, and by engaging departments across the organisation. Until then, individual departments will continue to prioritise investment in their next department projects, such that any data project will remain one of a number of technology projects competing for limited project funds.

9 Bisson, Peter, et. al., « Breaking away : The secrets to scaling analytics, » 22 May 2018, <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/breaking-away-the-secrets-to-scaling-analytics>

5. CONCLUSION

The use of technology to automate processes already helps to lower the risk of error and fraud today, thereby reducing operational costs for both banks and their corporate clients. Introducing advanced data analytics to the liquidity management ecosystem is a challenge and requires a cultural change, i.e. the workforce needs to be 'data ready' in order to facilitate a successful transition to a data-driven corporate liquidity environment.

Expectations within corporates and banks of the benefits of data analytics, including artificial intelligence and machine learning, are high. Using analytics to develop more accurate forecasts will help companies and banks manage their cash and their balance sheets more efficiently. And, by sharing insights provided by data analytics with their corporate clients, banks will strengthen these core relationships, which, in turn, will help to attract and retain operational deposits from those clients to support the banks' balance sheets.

However, although financial institutions actively welcome the concept of data-driven models and technology, there has yet to be any widespread adoption and development remains at an early stage. But it is not just the requirement for heavy financial investment that is stalling progression. The absence of a data-driven culture is also preventing the adoption of more advanced data analytics.

To change culture, banks and corporates need to implement a digital culture among treasurers which merges liquidity management expertise with technical skills to identify the potential benefits of data analytics, and other techniques.

Data needs to be at the heart of every operation, rather than a sideshow in which a few data initiatives are driven by a small team. An indication of how this change might materialise can be inferred by comparing the Nordic banking industry, where this shift has already begun, to other parts of Europe where less has yet changed. An industry-wide collaborative approach will be essential for delivering the required added value to end users as the move to a real-time and open financial ecosystem continues.

It is clear that, to be able to use data to increase operational efficiency and support decision-making processes in liquidity management, a number of things need to change first.

Further discussion is needed around cultural change and making the workforce 'data ready' in order to facilitate a successful transition to a data-driven corporate liquidity environment.



```
function stopPropagation() {  
    var n = 1;  
    while (n <= this.childNodes.length) {  
        (function (n) {  
            if (n <= this.childNodes.length) {  
                this.childNodes[n-1].stopPropagation();  
            }  
        })(n);  
        n++;  
    }  
}
```