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HOW BANKS CAN HARNESS TECHNOLOGY FOR THE BENEFIT OF THE CORPORATE LIQUIDITY MANAGEMENT ECOSYSTEM

EBA Liquidity Management Working Group

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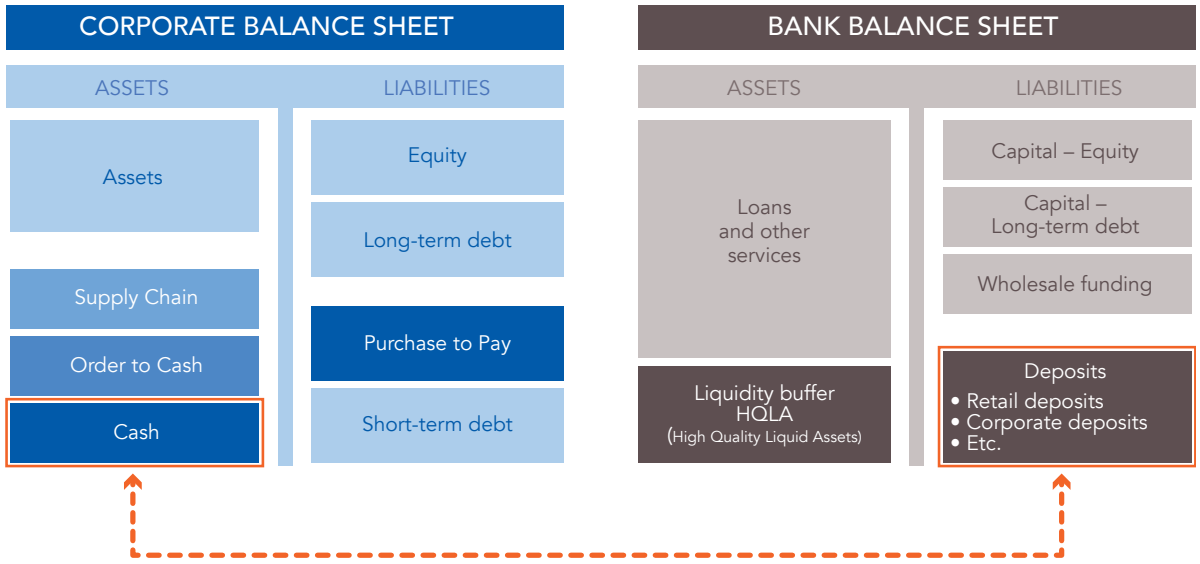
EXECUTIVE SUMMARY

For banks, being able to attract cash deposits from their banking clients is fundamental to their business models. There are a number of ways to do this but, for many, it is the provision of transaction banking services that places a bank at the heart of a corporate client's liquidity management activity. Banks need corporate liquidity management business for a range of reasons – to generate revenues, to retain business relationships, to maintain all kinds of regulatory compliance (e.g. in the form of capital and liquidity ratios) and to remain competitive. In an environment with increasingly new players in the market, banks aim to remain relevant to corporate clients.

The EBA Liquidity Management Working Group's publication on "Managing Corporate Liquidity and Bank Liabilities"[1] discussed the corporate liquidity management ecosystem and explained the core interdependencies between banks and their corporate clients.

The paper concluded by asking whether banks could enhance their corporate client relationships by extending the range of technology solutions they provide. The investment in, and provision of, appropriate technology not only enables banks to stay relevant, but also to build new relationships

1 Managing Corporate Liquidity and Bank Liabilities: The Changing Corporate Liquidity Management Ecosystem, EBA Liquidity Management Working Group, 2018.



within their target corporate client groups, which is instrumental in increasing revenue and gain and retain valuable corporate cash deposits.

Technology is already vital to corporate treasury departments. All companies use bookkeeping and accounting systems, which often extend to fully integrated enterprise-wide resource planning (ERP) systems. Within treasury departments, large and more complex companies use dedicated treasury management systems to support their daily activities. Moreover, companies rely to a significant extent on bank-provided technology and cash management techniques when managing cash, notably when receiving balance and transaction reports (via electronic bank account statements), initiating payment instructions and using cash pooling solutions.

Technology provides operational efficiencies and benefits both for the bank and the corporate side of the liquidity management ecosystem. In the future, corporate reliance on technology is likely to increase across the whole range of liquidity management tasks.

How banks harness technology to retain existing and build new relationships with their target corporate client groups is focus of this paper.

1. INTRODUCTION

As trusted technology partners for their corporate clients, banks are well-positioned to develop new technology solutions that can help to deepen their existing client relationships. For such a strategy to work, banks need to be able to develop one or more realistic technology propositions. A successful technology proposition needs to meet three requirements:

1. Help the treasurer meet one or more objectives

These are outlined in chapter two of this paper: Corporate Liquidity Management Objectives.

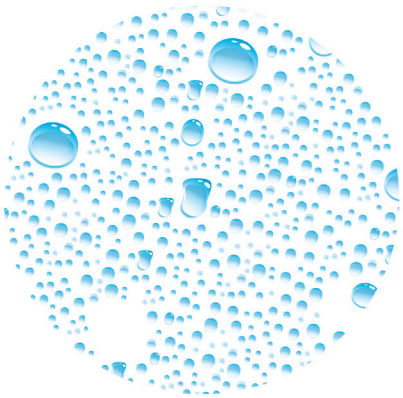
2. Be easy to adopt, use and maintain

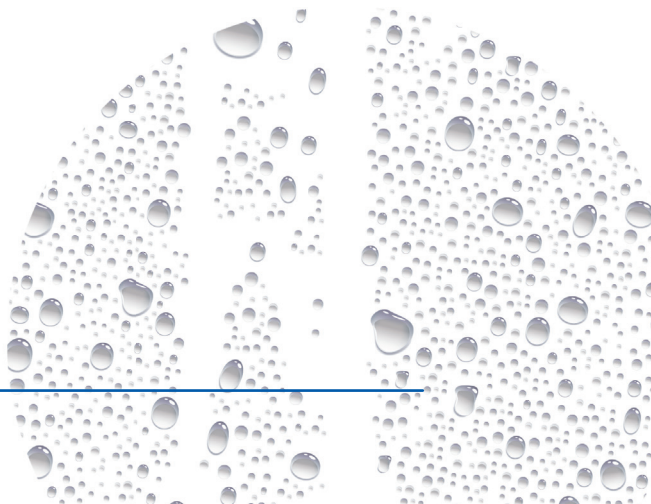
Today's treasurers expect business technology to be intuitive, flexible and customisable. The technology solution should be easy to adapt to the individual demands of each treasury department. Expectations of future treasury technology are outlined in chapter three: Trends in Corporate Treasury.

3. Be sustainable

Treasurers expect a degree of longevity in any solution they adopt. They want reassurance that the provider (and therefore the solution) will be around for the next few years. Clients also want a solution that will continue to be supported and developed to reflect best practice and meet their changing demands. Banks meet that test from a longevity perspective. The challenge is to identify methods of providing and developing technology. This is discussed in chapter four: Keeping Banks Relevant.

This paper identifies how technology is helping to improve efficiency within the liquidity management ecosystem and highlights trends which suggest possible ways forward. It outlines core objectives of corporate treasury and assesses how banks can respond in order to retain their relevance and corporate relationships in a continually changing world of regulation, technology and client demand.





2. CORPORATE LIQUIDITY MANAGEMENT OBJECTIVES

Understanding corporate requirements is a critical first step in developing and providing relevant technology solutions. A solution supported by technology needs to respond to a need and address a particular pain point of corporate treasurers.

Efficient liquidity management is a key part of treasury's fundamental role: to use liquidity to support the achievement of the wider business strategy. What does this mean in practice? With respect to liquidity management, treasurers have to manage three key components:

1. **Incoming cash flows**

   Incoming cash flows can be the result of operational activity, such as accounts receivable. Treasurers may also have to arrange short-term working capital financing to meet short-term borrowing requirements. Sources of funds can include committed credit lines or a commercial paper programme, as well as the redemption of any short-term investments. These flows are often referred to as operational and financial flows.

2. **Outgoing cash flows**

   Treasurers have to make disbursements to ensure their companies meet their financial obligations, such as paying employees and suppliers on time and making interest payments on loans (both short- and longer-term).

3. **Funds controlled by the business**

   Treasurers also have to manage cash in the period between its receipt by the business and its disbursement. Treasurers will try to use any surplus cash (potentially denominated in many different currencies) internally before investing funds externally.

In a perfect world, all these flows would be accurately predicted and matched against actual cash flows in a rolling cash flow forecast that covers all operational and financial transactions in the organisation, both incoming and outgoing. The ideal scenario will also include a reconciliation engine that books all flows against the legal title (such as an invoice) and generates entries for posting to the general ledger (i.e. accounting system). This technology is used by accounts payable, accounts receivable and general accounting of a company.

What do treasurers want to achieve at each stage?

1. **Incoming cash**

   Subject to group (treasury or collections) policy, treasurers will want a collections process that receives cash as efficiently as possible. Efficiency is not defined solely by the speed of the collection of the payment: it is just as important to capture data associated with the payment to support tasks, such as foreign exchange exposure management and reconciliation, and to support future forecasting processes. To minimise cost of funds, any external working capital financing needs to be planned as far in advance as possible.

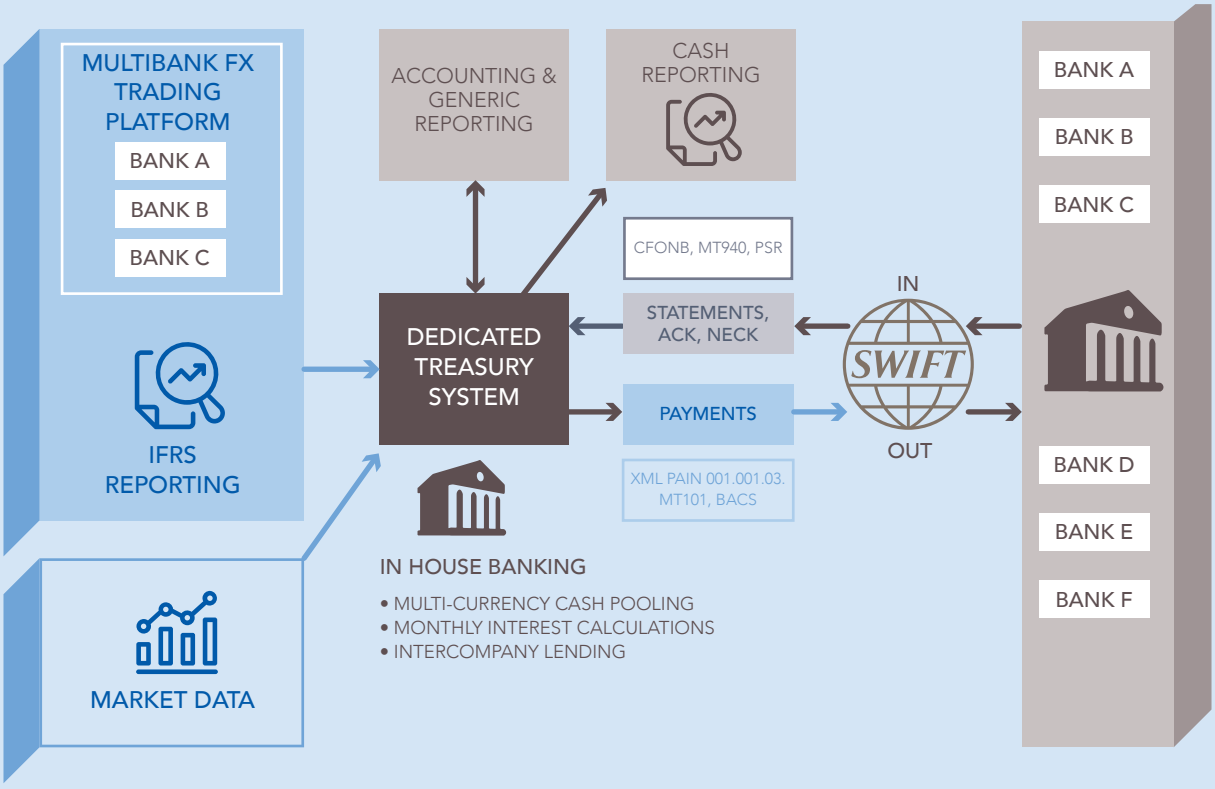
2. **Outgoing cash**

   Treasurers will want a similarly efficient disbursement process, in which outgoing payments are planned and controlled effectively. Where the company expects to have surplus or deficits of cash, whether in single or multiple currencies, treasurers will want to be able to plan investments or borrowing as much as possible.

TREASURY MANAGEMENT SYSTEMS

As an example, many large organisations use treasury management systems (TMS) to manage their core treasury activities (including liquidity management, foreign exchange and interest rate risk measurement and management, bank lending, cash flow forecasting, and acting as a payment and collection factory). In many ways, use of a TMS or a series of technology solutions that replicates a TMS can be viewed as best practice within a corporate treasury environment. TMS are typically stand-alone systems from specialist providers, although the larger enterprise resource planning (ERP) providers also offer treasury management modules for their systems.

The diagram below shows how a TMS sits at the heart of treasury activity, connecting to internal systems (general ledger and ERP system), HR systems and to external providers (including banks, data providers, FX and MM market trading platforms and asset managers) via networks (e.g. SWIFT to bypass bank portals) and portals.



Treasury management systems provide treasurers with the ability to manage multiple financial transactions via a standardised workflow. The workflow can track each transaction through its entire lifecycle from initial position measurement, through instrument selection and dealing and reconciliation to the creation of accounting entries and the generation of an audit trail. This functionality enhances operational efficiency, improves visibility of risk and enables treasurers to exercise and demonstrate control over treasury activity. A TMS can also act as a data gatherer, collecting, collating and distributing data feeds, such as MT940 and camt.053 files, from banks and other providers on behalf of all entities within a group. This data processing facility radically reduces the number of external links to banks needed by the group as a whole.

3. Internal cash

Finally, treasurers will want to manage internal cash in such a way that it minimises the need for short-term external funding (especially emergency funding). They will try to time the disbursement of outgoing flows to reflect the pattern of incoming flows to avoid unnecessary borrowing requirements. They will also try to avoid a situation where one group entity is investing cash with external parties, while another group entity is borrowing cash externally, subject to the group's wider liquidity management policy.

Achievement of these objectives needs to be:

- **Operationally efficient**

  As with any department, treasury is under pressure to operate efficiently, which can be code for managing with fewer team members. Standardising and automating workflows reduces the need for manual intervention for most activities, allowing treasurers to focus on managing exceptions.

- **Effective**

  Reducing manual intervention and obtaining access to information of better quality at an earlier point in time gives treasurers the time to plan structures to support the effective use of internal cash and to minimise the need for external financing. Any external borrowing or investing can also be planned in a way that minimises risk.

- **Controlled and compliant**

  Treasurers need to exercise and demonstrate control over all processes from a governance perspective. They also need to attain visibility over positions to be able to identify any risks (e.g. financial, counterparty and operational risks) that might prevent the achievement of their objectives and, where necessary, take action to manage those risks. Finally, treasurers must operate in such a way that the department remains compliant, not only with internal policies and procedures but also with external regulations and legislation, such as tax, anti-money laundering rules and sanctions.

Let's examine this in more detail:

1. OPERATIONAL EFFICIENCY

Corporate treasurers are under pressure to increase operational visibility, transparency, and efficiency. To achieve this, treasurers focus on two things: standardisation and automation.

Standardising processes means that most activities are performed using a common workflow, thereby reducing the risk of error and fraud. Standardised processes may also be automated to remove as much manual intervention as possible. Together, standardisation and automation reduce manual processing and, therefore, the requirement for full-time employees for those activities.

2. EFFECTIVENESS

As well as reducing headcount, improved operational efficiency allows treasury to become more effective by reducing the time needed to focus on day-to-day activities, whether that is arranging short-term emergency funding lines, collating data to build a cash position forecast or managing multiple payment processes.

This in turn results in treasurers having more time to devote to strategic planning and to become more involved in the internal and external financial supply chain. Strategic planning can help treasurers achieve a lower cost of working capital due to a more efficient use of cash both internally and externally:

- With improved information (data of better quality), treasurers can make more efficient use of a group's internal liquidity within the company's legal and tax structure. If a treasurer has accurate cash forecasts for all entities within a group covering longer periods of time (weeks rather than overnight), the use of intercompany loans to finance cash-poor entities becomes feasible. At the same time, if a treasurer can identify major potential efficiencies from the use of internal cash, this can be used to justify investment in a project to automate intercompany loans, perhaps as part of a treasury centralisation project such as the implementation of an in-house bank with or without the support of a virtual account infrastructure provided by a bank.

- Internal efficiency gains can result in the more effective use of cash externally, whether via improved investment of surplus cash or reduced external borrowing costs (depending on a group's overall cash position). If the treasurer has confidence in the accuracy of the forecasts, surplus cash can be invested for longer periods, allowing for diversification and reducing reinvestment risk. Surplus cash can also be used to support the company's own financial supply chain, by mitigating the risk of supply chain disruption caused by an inefficient availability of liquidity. For companies with a net borrowing requirement, effective cash forecasts combined with a more efficient internal use of funds can result in a lower overall external borrowing requirement, the use of which can be planned more efficiently. Access to more accurate information at an earlier point in time allows the treasurer to access lower cost funding, with a similar reduction in liquidity risk. Either way, the improved ability to plan more accurately allows a treasurer to optimise net interest costs.

3. UNDER CONTROL AND DEMONSTRABLY COMPLIANT

Corporate governance rules and other legislation (including anti-money laundering and sanctions) require board members to demonstrate they are in control of often quite distant entities within a group. The ability of central treasury to set treasury policy (steering model) and to monitor business unit activity helps to achieve and demonstrate control, so that, for example, a payment is only made after due diligence covering the business relationship with a supplier. Policy is implemented through the adoption of a series of operating procedures which should ensure group workflows and actual work processes are aligned with treasury policy.

Attaining control via improved cash visibility can also help to minimise the risk that business units are retaining "hidden" pools of cash (e.g. on dormant accounts or accounts run by business units outside of central treasury control), which could be better used elsewhere in the business. This improved visibility also helps treasury, and the wider finance function, meet various targets, whether in the form of key performance indicators or to ensure compliance with lender-imposed requirements, such as the maintenance of certain working capital or other ratios.

Treasury must ensure group cash is managed within an acceptable level of risk. Risk materialises in a number of ways in the context of liquidity management:

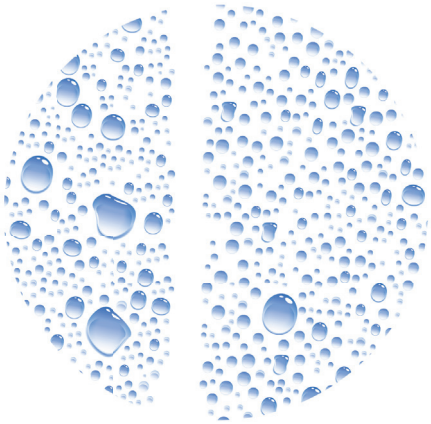
- Treasurers need to **manage counterparty risk** as it arises. Each organisation faces counterparty risk in its supply chain in the form of late and non-payment risk with respect to clients and the risk of non-delivery from suppliers. Treasurers also need to manage the counterparty risk towards their core cash management banks. While SMEs tend

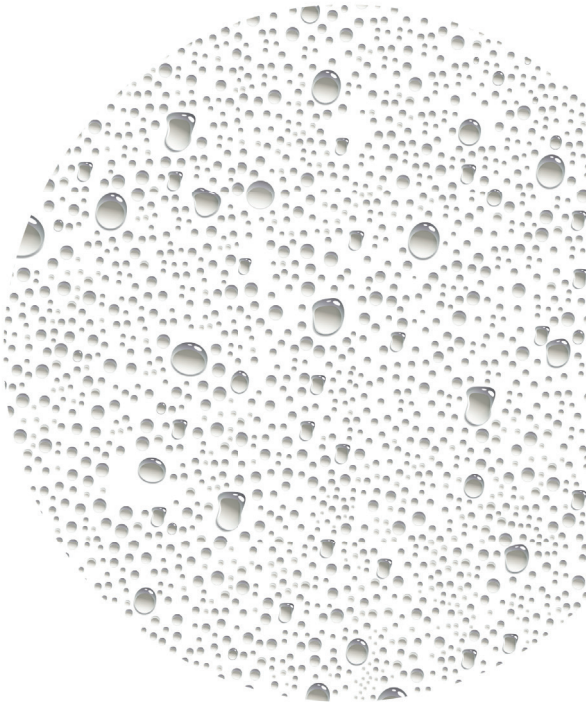
to be dependent on a single bank, larger organisations try to manage a number of banking relationships, either to ensure access to a wider range of products and sufficient financing, or to comply with corporate policy.

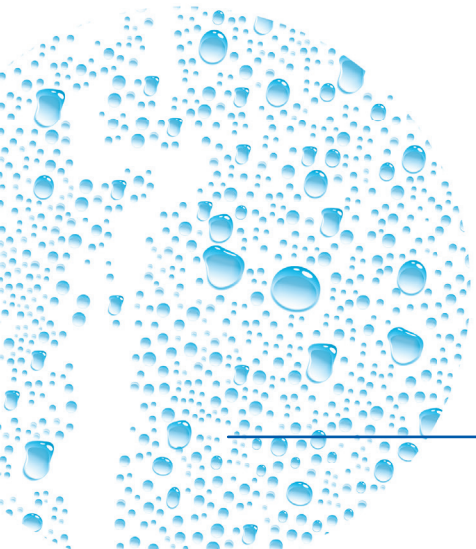
- Treasurers need to understand **foreign exchange, interest** and, potentially, **commodity exposures** in order to manage these positions at an acceptable level. They want visibility of the exposures from the business from the moment they arise. This requires clear risk policies, implemented through technology-supported workflows and processes.

- Treasurers need to retain **access to sufficient liquidity** to fund operations. This means developing forecasts which are sufficiently accurate to anticipate funding requirements, both in the short- and long-term. For net borrowers, cash forecasts help treasurers remain compliant with any loan covenant, reducing the risk of breach and, therefore, the potential for facilities to be withdrawn. At the same time, accurate cash forecasts help many listed companies to create the clear statements on free cash flow they want to provide to their investor communities.

Technology can, and does, help treasurers meet all of these objectives, but only if it is intuitive and seamless. To be adopted by treasury, technology also needs to benefit the treasury organisation as a whole.







3. TRENDS IN CORPORATE TREASURY

All treasury departments use technology to some extent, whether it is just a set of standard spreadsheets linked through macros or a much more complex treasury management system. Treasurers are also becoming increasingly reliant on intraday data feeds from third parties, their cash management banks and from other data providers.

The adoption of technology within corporate treasury is an ongoing process and is impacted by the extent to which each company, and its treasury, follows a centralised or de-centralised approach. Companies and their related entities move at different speeds, depending on the nature of their businesses and operations, the level of resources at their disposal and the functionality and affordability of the available technology. How the use of technology within corporate treasury will evolve is difficult to predict. However, it is possible to identify trends in the way corporate treasurers use technology now and suggest how treasurers might use it in the future.

A. TRENDS IN DAILY LIFE

It is reasonable to expect that treasurers' use of technology in their personal lives will influence their expectations when they are at work. We can already choose to control the heating and lighting in our homes remotely: the number of "internet of things" devices are expected to increase dramatically over the next ten years. We are all aware of cryptocurrencies and of self-driving cars, although both require further development to become mainstream.

The use of devices provides a clear example of how technology is changing: not that long ago, a personal computer was most likely to be a desktop and treasurers would manage their electronic banking via a dedicated terminal in their office. Today, smartphones and tablets are consumers' technology of choice, and treasurers increasingly expect to be able to access information and authorise transactions remotely, using the same technology and devices in the same intuitive way as for other applications and processes.

Technology also affects how we interact. Artificial intelligence (AI), for example, is already helping banks and payment card companies identify and protect consumers against fraud, while chatbot services are increasingly commonplace, typically as an initial point of customer service contact on a website.

The most noticeable impact of technology is its democratisation. There are three key trends:

- First, as predicted by "Moore's Law"[2], as technology becomes cheaper, it becomes more widely available. This applies in the home and at work (cash pooling has moved from a product only available to the most complex organisations to one which is commonly used today).

- Second, technology can replace intermediaries and connect the provider directly to the end-user. In the context of liquidity management, good examples are the development of application programming interfaces (APIs) to manage data connections and the growth of crowdfunding.

- Third, once a standard base technology is widely accepted, more customised solutions are developed as add-ons to the market standard.

2 "Cramming more components onto integrated circuits", Gordon E. Moore, ***Electronics***, Volume 38, Number 8, April 19, 1965

B. TRENDS IN THE WIDER BUSINESS ENVIRONMENT

Looking specifically at the corporate liquidity management ecosystem, it is possible to identify similar trends:

- New competitors in the business environment have forced established organisations, including banks, to work in new ways and to develop new products, such as the development of virtual accounts and the wider use of the platform economy (via services such as WeChat in China). The benefits open banking provides (and required in the EU through the second Payment Services Directive [PSD2]) will have an impact on how companies interact with banks outside their core banking group.

- Changing customer behaviours and expectations result in services being provided in different ways. For example, in the Nordic countries, personal customers increasingly expect to be able to pay invoices by a few clicks on a tablet or smartphone, rather than by entering details into an e-banking tool.

- The adoption of cloud-based solutions across a range of business technologies has altered the role of information technology (IT) support within organisations. From a liquidity management perspective, both banks and their corporate clients have been impacted by this change.

- The development of new, real-time payment systems is at an early stage, but it is already having an impact on current work processes and workflows.

- Finance and treasury staff are increasingly required to have different competencies such as data analytics and IT skills, rather than a standard finance background.

These changes are all taking place in a post-global financial crisis environment which is characterised by more emphasis on regulation and a continual drive to reduce corporate operating costs.

C. CONSTRAINTS ON TREASURERS' ABILITY TO MEET OBJECTIVES

Despite these advances in technology, most treasury activity is still controlled on spreadsheets, especially in less complex, smaller corporates with a limited number of bank accounts. There are a number of interrelated reasons for this:

- The person responsible for treasury has to present a business case to the CFO or board to justify an investment in technology. This can be difficult because of the role of treasury within most organisations. Treasury is typically seen as a cost centre, with pressure to reduce operating costs (primarily achieved by reducing headcount). In this environment, building a case for investment in technology is a significant hurdle, especially where the potential gains are difficult to quantify.

- Related to this, the overall finance function's role is generally conservative: finance and treasury have to protect group cash and ensure obligations are met. As long as the current processes are effective and do not expose the organisation to excessive risk, the default position is to continue "as is". The finance director may recognise that some processes may be made more efficient through the use of new technology, but it may be difficult to identify which of the many available solutions would work best (or take the risk that the new solution would be less effective).

- Selecting the optimal type of solution can be difficult. Often, there is a choice between a single TMS that does most things well but may

not have the latest technology in the current version, and a "best of breed" selection, which may result in the company implementing a complex series of solutions requiring multiple interfaces for it to work. And again, whatever the decision, treasury will still have to convince the IT department.

- Most importantly, even if funding is available to purchase a solution, treasury simply does not have the resources to implement a new solution and perform regular tasks at the same time. Technology projects are almost always time-consuming and stressful; unless the added value is clearly identified, it can be very difficult to justify the investment.

In many cases, treasurers are stuck in a catch-22 position: they do not have the time to plan a technology project, but they need to implement new technology to absorb the expanding treasury activities which they can only perform when they have the technology in place to create operational efficiency of the existing and new tasks and responsibilities. Banks are uniquely positioned to leverage their existing relationship with their corporate clients and provide technology solutions that will help them overcome this critical hurdle.

HOW CAN NEW TECHNOLOGY SUPPORT CORPORATE TREASURERS? CASH FORECASTING AS AN EXAMPLE

Cash flow forecasting is a good example of the positive way technology can support corporate decision-making.

Historically, cash flow forecasting has been a labour-intensive activity, requiring manual intervention to populate, collate and consolidate data to create a meaningful forecast. For a number of reasons, most companies still rely on spreadsheets, such as Excel, to process the forecast, despite the availability of other solutions: Excel is cost-efficient, flexible and easily implemented.

While forecasting has been an important process for many companies for many years, there has been very little evidence of this focus translating into the adoption of more sophisticated automated processes. Excel is, in other words, "good enough".

Yet this might be about to change. Initially, cash forecasting solutions were developed for large corporates. They were expensive to implement and so did not qualify in a cost-benefit analysis for a less complex corporate. However, over time, these cash forecasting solutions have been scaled down and become more commoditised, meaning they are now more cost-effective for less complex organisations.

This commoditisation of technology applies to a whole range of treasury-specific solutions with the result that banks have extended their product offering from cash pools and forecasting modules to also include financial multi-bank dashboards and in-house bank applications, among others. The range of solutions continues to widen.

4. KEEPING BANKS RELEVANT

Banks need to be aware of these trends and their potential impact on their client relationships. Notably, banks will want to anticipate the impact of any further commoditisation of existing products and respond to any threat of disintermediation. Ideally, banks will want to be perceived as a financial partner not as a, potentially expendable, financial provider. To secure this partnership, banks need to ask themselves the question: how can we become a value-adding partner to our corporate clients?

Banks could, for example, provide services such as:

- Combining customer-specific data (e.g. accounts payable and accounts receivable) with bank-specific data (payments, outstanding credits, trade finance) to bring a more meaningful insight to the aggregate position each company has with a bank.
- Creating alerts and combining these with a range of "bank product-related calls for action". The bank as a "one-stop shop" to solve "issues", e.g. FX exposures and immediate execution capabilities, the maturing of guarantees or instant notifications when companies reach 90% of their credit limits.
- Offering advice on Fintech offerings and helping with the selection. Through their knowledge of their customers and the Fintech ecosystem, banks can help their customers find their way to the "most fitting" Fintech from their "partnership portfolio".
- Offering dedicated and skilled implementation teams. Banks have experience with large-scale implementations which Fintechs often do not have initially.
- Becoming brokers of services and partnerships.
- Moving from being processors of financial transactions to being providers of market places, offering access to a wider range of services, such as cybersecurity risk assessments.

The key to success is the provision of technology that meets a corporate need (or solves a corporate pain point) in a way that does not demand significant corporate resources (whether in time or funds) to implement and use. Yet, for all the arguments that banks are in a strong position to provide this technology, it is important to recognise and understand the parameters within which they operate.

A. BANK POSITION

Banks need to reassess their approach to the corporate treasury market for two primary reasons:

1. First, commoditisation means that traditional bank products, including payments processing and loan financing, are no longer as remunerative as they once were. Lower barriers to entry mean banks are facing increased competition from new entrants, e.g. payments service providers, and possibly disintermediation in the provision of financing. Technological advances also mean services that were traditionally provided by banks, e.g. credit assessment services, can now also be offered by alternative providers, e.g. non-bank lenders.
2. Second, regulation is placing ever greater constraints on banks, notably in the provision of finance. A requirement to manage their balance sheets more tightly means banks need to continually assess the range and level of products and services they can deliver to the corporate market.

These trends mean it has become more important to focus on added value, rather than merely processing transactions and providing financing. Banks need to find out how they can remain relevant for their customers in the liquidity management space.

Banks are expected to meet two objectives:

- A bank has to meet its profitability and liability (deposit gathering) objectives (in the context of the interest environment and the quest for yield), while remaining compliant with the regulatory requirements.

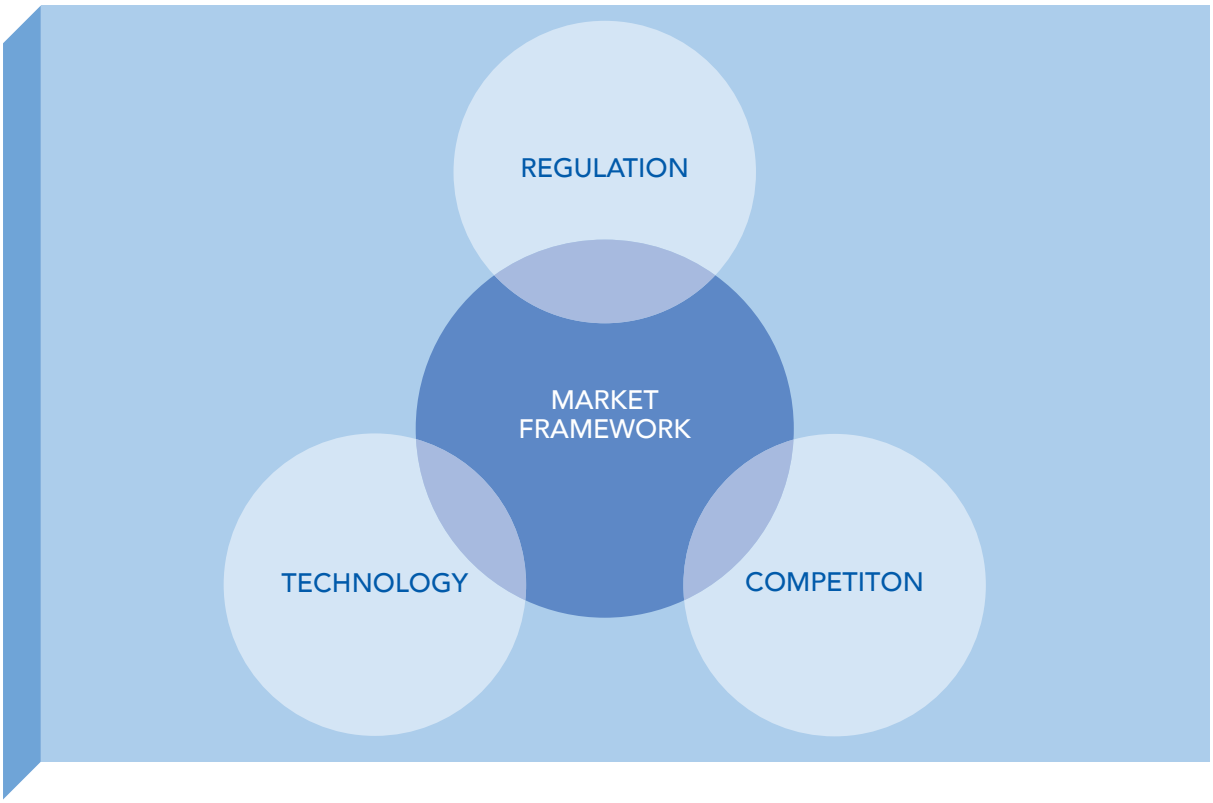
- At the same time, to retain relevance, a bank must meet customer expectations, whether large corporate or SME, in terms of liquidity management across the whole range of activities. These include account servicing, cash concentration, reporting tools, integration of data, delivery of data, the front-end experience and value-added services (e.g. forecasting tools). It is important to bear in mind that this is not a one-time investment but that any solutions have to continue to evolve and improve.

B. MARKET FRAMEWORK

Understanding the pressures banks are under is helpful when framing the debate and identifying the extent to which banks need to develop their propositions. We do this from the angle of regulation, technology and competition.

i. Regulation

Banks have to comply with relevant regulation in order to be able to continue to operate, including Basel III and additional Know-Your-Customer (KYC) procedures, which require banks to allocate resources.



- The Basel rules (as interpreted by the relevant regulator) entail challenges for banks when managing their balance sheets.[3] They have implications for banks when offering liquidity management products, including cash concentration, and taking deposits. At the same time, the International Financial Reporting Standards (IFRS) are not always in line with the CRD IV rules, which, for example, make it difficult for some banks to provide notional pooling with certainty. More generally, banks operating in the same markets can have different regulators, meaning banks may have to comply with different legislation.

- KYC-related requirements for both banks and corporates would benefit from collaborative, industry-wide solutions. For example, the use of technology to power a central repository to support both domestic and global needs could solve this challenge, if it allowed the secure and efficient exchange of KYC-relevant information demanded by both regulators and the wider community in a legally recognised and enforceable way.

Compliance with new regulations could be an opportunity for banks to improve their propositions within a core compliance project. As an example, open banking, particularly the PSD2, requires banks to allow third parties access to their customer data (with customer consent) through APIs, removing monopoly control over that data and, by extension, over their customers. While PSD2 is focused on retail banking relationships, it has an impact on corporate cash management banks. PSD2 is a catalyst for new product development and banks have to invest in new technologies to satisfy customer expectations. That said, open banking and the use of APIs is not just a response to regulation. Both within and outside the EU, the entire market is moving towards the development of new technologies.

3 The impact of new liquidity and capital rules was discussed in more detail in the previous publication: Managing Corporate Liquidity and Bank Liabilities: The Changing Corporate Liquidity Management Ecosystem, EBA Liquidity Management Working Group, 2018

ii. Technology

Banks are an important provider of technology to the corporate sector. Banks provide transaction and balance reporting, as well as the functionality that most companies use to make and receive payments. More complex organisations also use bank technology to operate cash pooling structures and in-house banks (these can be delivered through treasury management systems, although bank-delivered virtual account technology can provide similar results). The capabilities and sophistication of this technology has advanced significantly in recent years, both in terms of access points (from dedicated terminal to internet) and in timeliness (from end of day to real time).

At the same time, corporate use of third-party technology has changed dramatically, largely due to the evolution of Software-as-a-Service solutions. Functionality that was only available to the largest companies with the best resources has now become much more widely available to all corporate treasury departments. “Tech” companies may be seen as intermediaries, e.g. between multiple banks and a corporate TMS.

As with the consumer space, it is difficult to predict with certainty how technology will develop in the corporate market. The development of electronic bank account management (eBAM) is a good example of a promising concept which has not yet materialised due to lack of standardisation of data. It is still possible, however, to identify trends. These include:

- All parties have earlier access to data of better quality and the ability to analyse large volumes of (even unstructured) data more quickly. More information than ever before is available in real time, including transactions and ledgers, at lower cost and, via decentralised ledgers, without requiring trust in a central database.

- The implications of open banking, instant payments and SWIFT gpi are becoming clearer. The availability of real-time information will disrupt the current working practices and processes. If it becomes a continuous process, end-of-day and starting-day positions might be defined differently.

- The role of portals (banks' front-ends) is changing. A portal is used for more than just payment initiation. Through APIs, portals can also be used to support self-management of a range of activities such as bank account opening, track-and-trace functionality and the upload of changes to a corporate database. In addition, large companies may bypass bank portals altogether to link through the banks via SWIFT directly (proprietary systems).

- The next wave of automation is likely to be through robotics, although it is not yet clear how this will materialise.

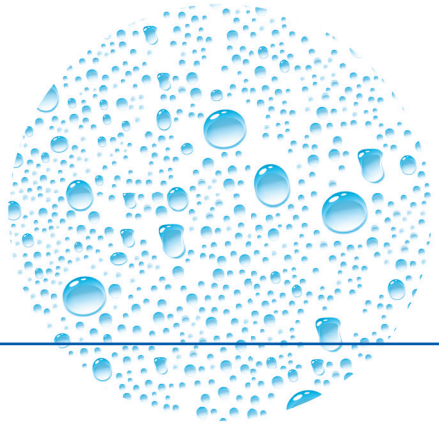
These changes are mirrored by evolving client requirements. Banks must consider how to employ new technology in a way that is most relevant for corporate financial/treasury activities:

- How can technology provide a more effective way for corporates to manage their liquidity? What new insights can it deliver?

- Do different customer bases (large corporates versus SMEs) require different technology? (Bear in mind that functionality developed for large, complex corporates often becomes standard for SMEs over time.)

- How does technology reflect the availability of immediate access to data? How does it support customer expectations and permit them to respond instantly? (Bear in mind the evolving instant payments landscape.)

- How does technology help banks serve their clients? How does it alter the customer experience? Does it support a transition from relationship banking to partnership banking?



iii. Competition

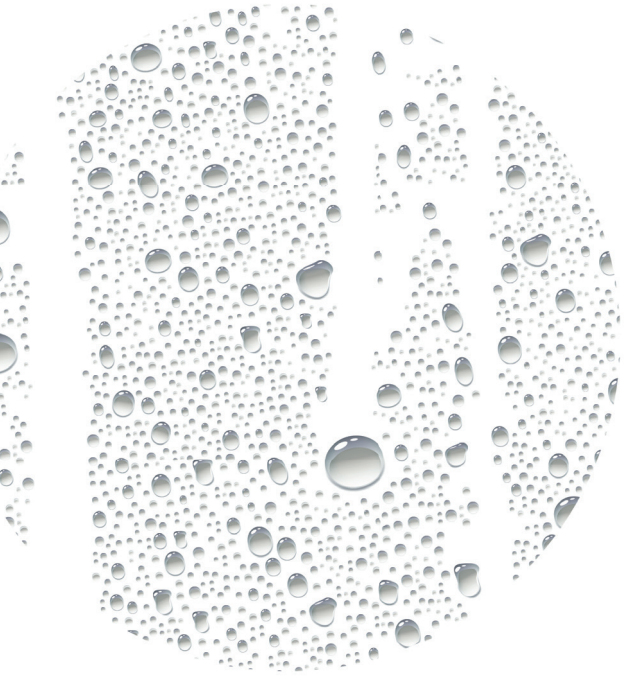
Finally, banks do not operate in a silo. The environment in which banks operate has become more challenging both in terms of the number of players and the range of products they offer. Banks' current and future revenue streams are increasingly conditioned to commodisation, regulation and interest environment. To stay in business, banks will still have to manage their balance sheets to meet their profitability objectives.

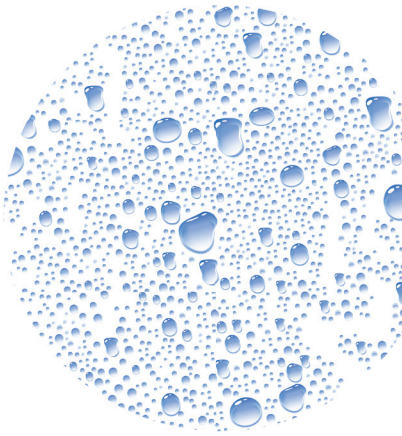
Transaction banks face a dilemma:

- Their core activities have been commoditised. Commoditisation means there is limited scope to grow revenues because of low margins and barriers to entry.

- At the same time, they have to make large investments in technology to remain compliant, meet customer expectations and stay relevant.

Consequently, banks need to offer new services, with sustainable margins, that are relevant to their client bases. Furthermore, other players are identifying specific profitable business streams from existing value chains, develop solutions or alternative niche products in response, and bring them to market at a significant speed. As such, banks need to consider how best to address this challenge. The various options are further described in 5c.





5. HOW CAN BANKS HELP TREASURERS MEET THEIR OBJECTIVES?

There are many examples of how technology supports business requirements and solves industry-wide challenges. Collaboration between banks and their clients becomes much more powerful when it leads to a standardised approach. The following two examples highlight how technology can help to achieve higher efficiency and security:

- **Pre-validation services for API-based payments**
  By using APIs during the payment preparation process, banks can already check if the beneficiary account is valid and if the messaging format matches the beneficiary's bank's requirements. In addition to reduced repair interventions and processing times, this use of APIs may also help to prevent common fraud scenarios.

- **Global KYC platform as an industry initiative**
  The internal processes to comply with KYC requirements is one of the areas that could benefit the most from technological solutions. The availability of a central document repository, with a range of smart features, secure push notifications between counterparties, and a standardised norm would help improve efficiency. Providing the ability to link messages to securely-stored signature lists would open up the possibility to develop additional functionality.

The challenge for banks is to identify the best way to harness the power of technology across a range of activities to deepen relationships with current and potential corporate clients.

A. UNDERSTAND THE CORPORATE PAIN POINTS

The first step is to understand where, why and how corporate treasurers experience difficulties. The first part of the paper outlined corporate treasurers' core liquidity management objectives. Essentially, all treasurers want to achieve a lower cost of capital for their organisations, by using internal funds and managing external funds (whether investing or borrowing) as efficiently as possible. Identifying an optimal point, or even an optimal range, is unrealistic as long as the treasury department is operating on a tactical, rather than a strategic level. To be able to act more strategically, treasurers need:

- an understanding of all the risks which might affect the company's ability to meet its obligations;

- the ability to anticipate how liquidity issues might arise by exercising control over processes and workflows;

- the most efficient liquidity management process. Ideally, activities should be standardised and automated, and apply AI to streamline processes further.

Achieving these three objectives will allow treasurers to identify structures and ways of working which can reduce liquidity and associated risks, as well as operational cost, resulting in a lower cost of capital and greater competitiveness.

Understanding the barriers to the achievement of these objectives is more difficult. Each company is faced with different challenges with regard to its physical and financial supply chains, and its access to resources, whether financial or not.

B. RECOGNISING TECHNOLOGY AS PART OF THE SOLUTION

Banks are in a strong position to help their clients identify solutions as they are typically perceived by treasurers as relevant and trusted partners. As banks work together in the financial services industry, they can be instrumental for clients to provide access to other banks. By doing so, they can provide their clients with improved visibility of their cash flows and positions with different banks. Crucially, they are trusted providers of core technology. Although companies will continue to need banks for their core financing and bank account management roles, they also rely on bank technology for transaction and balance reports, and to process payments and manage cash pools. The latter, while often taken for granted, is often central to a corporate treasurer's liquidity management policy.

But while corporate treasurers recognise that they need to harness technology to support their activities, most do not typically have the time or resources to select providers and manage solutions. Aside from a small number of well-resourced treasury departments that are able to develop their own internal solutions, a corporate treasurer's focus is on efficient liquidity management, not on implementing new technology or managing interfaces between different solutions.

For these reasons, banks are well-positioned to use technology to deepen and extend relationships with corporate clients. At the very least, banks will want to invest in developing APIs that are easy for companies to interact with and integrate.[4] In addition, banks can automatically import and consolidate a whole range of data in a bank-offered solution; to integrate the same information in a third-party solution would be time-consuming and costly.

C. MODELS OF BANK TECHNOLOGY PROVISION

If banks accept that investment in technology will help them retain relevance to their corporate clients, the next stage is to determine how best to provide the technology. Current practice provides some lessons.

There are essentially five models of technology provision used by banks, each of which has its own risk, security and control implications. One model does not fit all, and one bank might use different strategies across various offerings and areas.

1. In-house development

From the bank's perspective, there is no external relationship to manage and thus the bank has full control of its offering, both with regard to operational stability and further development. However, in-house development is costly and potentially bureaucratic, which might increase time to market.

2. Acquisition

When time to market is critical or access to competency is a scarce resource, acquisition may be a preferred solution. It takes time to

4 In Europe, the revised Payment Services Directive (PSD2) stipulates access-to-account requirements which may be achieved via a base API layer. For more details see: EBA Opinion Paper on exploring the Digital Customer Services Interface, EBA Working Group on Electronic and Alternative Payments, 2015

integrate an acquired entity, and thus potentially costly operational mistakes may occur. Once acquired, operational stability and errors will be the bank's sole responsibility.

3. White or grey labelling

As an alternative to acquisition, banks may choose to integrate a third-party solution into its own technical environment. While the bank may be able to customise the solution to its own requirements, the bank has no direct control outside its contractual terms. Any operational instability will affect the bank's customers and, if white labelled, any system failure may also affect relationships towards customers. The integration may still be costly, and the bank may also incur further development costs.

4. Referral

One established practice is for the bank to refer its customers to a selected third-party provider for one or more services. The referral places the bank's reputation at risk, even though the contractual relationship is between the customer and the third party. Customers often perceive a referral model as cumbersome, as it can involve multiple counterparties. On the other hand, banks may provide access to their systems, given the appropriate guidelines and agreements with the third parties, and, potentially, may offer on-boarding tools to enable integration of the tools into TMS- and ERP-solutions being used by larger corporate groups. This openness (and integration) could help to strengthen the client relationship and ensure growing transaction volumes. A referral model will imply that banks have performed due diligence on the Fintech provider. This could then be extended to allow the client to contract with the provider through the bank.

5. Platform

A bank can participate in cloud-based platforms giving customers access to a range of services provided both by the bank and third parties. Platforms based on new technology will be able to bridge new and "old" infrastructure, bypassing legacy infrastructure. However, development could be costly and may not result in gaining greater access to clients' cash. One solution is to develop a (or use an existing) platform on top of third-party solutions.

These alternatives are not mutually exclusive. A bank may decide to adopt a combination of models of delivery, depending on the nature of the solution and its customers' requirements. It is likely that any successful model of delivery will place the corporate-bank relationship at its heart. At the same time, banks will need to understand the legal and regulatory implications of the different models.

Depending on future developments within the industry, banks may be faced with different possible scenarios and scope for action. In the current environment, banks and Fintechs each have their core competencies: banks in client relationships and their balance sheets; Fintechs in technology stacks and agility. A cooperation model between the two has the potential to play to both parties' strengths by combining access to bank-specific data, client relationships and project management experience with Fintech agility and time to market. However, we may see greater competition in areas where their competencies overlap, especially payment initiation and account information. A clear focus on identifying opportunities to support clients is therefore critical for any cooperation model to be successful. In essence, banks have to understand and appreciate the dynamics of start-ups and start-ups have to do the same for banks.

6. CONCLUSION

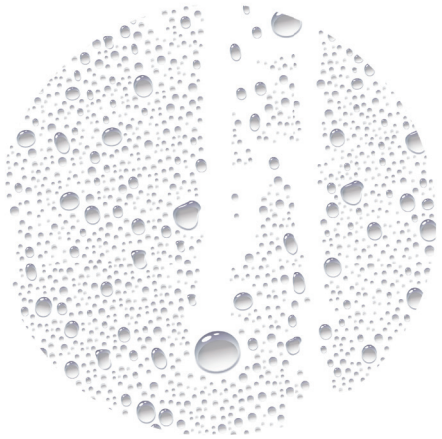
The emergence of new technology and non-traditional players, combined with changes to the regulatory framework, is forcing established banks to rethink their business strategies and plan how how to best take advantage of the business opportunities these changes bring.

As trends suggest that technology and customer demands are evolving exponentially, reducing time to market becomes ever more important. As a result, it is likely that banks will increasingly choose to partner with third parties on various niche offerings. At the same time, they will have to extend their product offering beyond traditional services which may be slow, inflexible and less client-centric to more innovative solutions. Banks will need to adjust their risk frameworks and internal processes and adopt a more agile way of developing new products and solutions and bringing them to market.

Banks may decide to collaborate with Fintechs (which can be long-established technology firms or newly incorporated start-ups) to test new ideas or technologies, or they may decide to establish in-house innovation and development teams (ideally with people from Fintechs who understand the technology market) to do so. At the same time, banks should further engage with their clients to ensure they fully understand how they use technology and to identify where their clients need help.

To be able to harness the opportunities from new technology effectively, banks will need to think more carefully about how they want to position themselves in the market and, consequently, the strategy and investment (specifically investment budget for innovation) required to achieve that. With different banks responding differently, we are likely to see some significant changes in the market in the near future.

Technology already plays an important role on both sides of the liquidity management ecosystem. Importantly, it forms the basis of current relationships between banks and their corporate clients. As technology continues to advance, so too will the expectations of corporate treasurers. Banks need to determine how to best take advantage of the opportunities that technology offers, to deliver value to their corporate clients, strengthen existing relationships and develop new ones.



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