Technology Tune-Up

New Expectations, Developments, & Trends

Craig Jeffery, *Managing Partner, Strategic Treasurer*

Ernie Humphrey, *CEO & COO, Treasury Webinars*

About the Presenters

Craig Jeffery, CCM, FLMI

Founder & Managing Partner

Strategic Treasurer

Craig Jeffery formed Strategic Treasurer LLC in 2004 to provide corporate, educational, and government entities direct access to comprehensive and current assistance with their treasury and financial process needs. His 30+ years of financial and treasury experience as a practitioner and as a consultant have uniquely qualified him to help organizations craft realistic goals and achieve significant benefits quickly.

Ernie Humphrey, CTP

CEO & COO

Treasury Webinars

Ernie Humphrey currently serves as the CEO of Treasury Webinars and the CEO of 360 Thought Leadership Consulting. Ernie is a proven strategy and financial professional with 20+ years of experience. He has diverse industry knowledge as a seasoned corporate finance practitioner, a leader at the largest association for financial professionals (the Association for Financial Professionals (AFP)), and as a driving force behind the development of what was formerly the largest online community for senior level financial professionals (Proformative). Ernie has a BS and MS in Economics both from Purdue University.

Topics of Discussion

↪ **The Corporate Treasury Situation**

- o *Broad Responsibilities*
- o *Limited Staffing*
- o *The Need for Efficiency*
- o *Treasury turns to Technology*

↪ **What are Others Doing & Experiencing?**

- o *The Current State of Treasury Technology Use*
- o *Future Outlook: Spend Plans & Areas of Focus*

↪ **Top Treasury Technology Drivers & Trends**

- o *Emerging Payments*
- o *Fraud & Security*
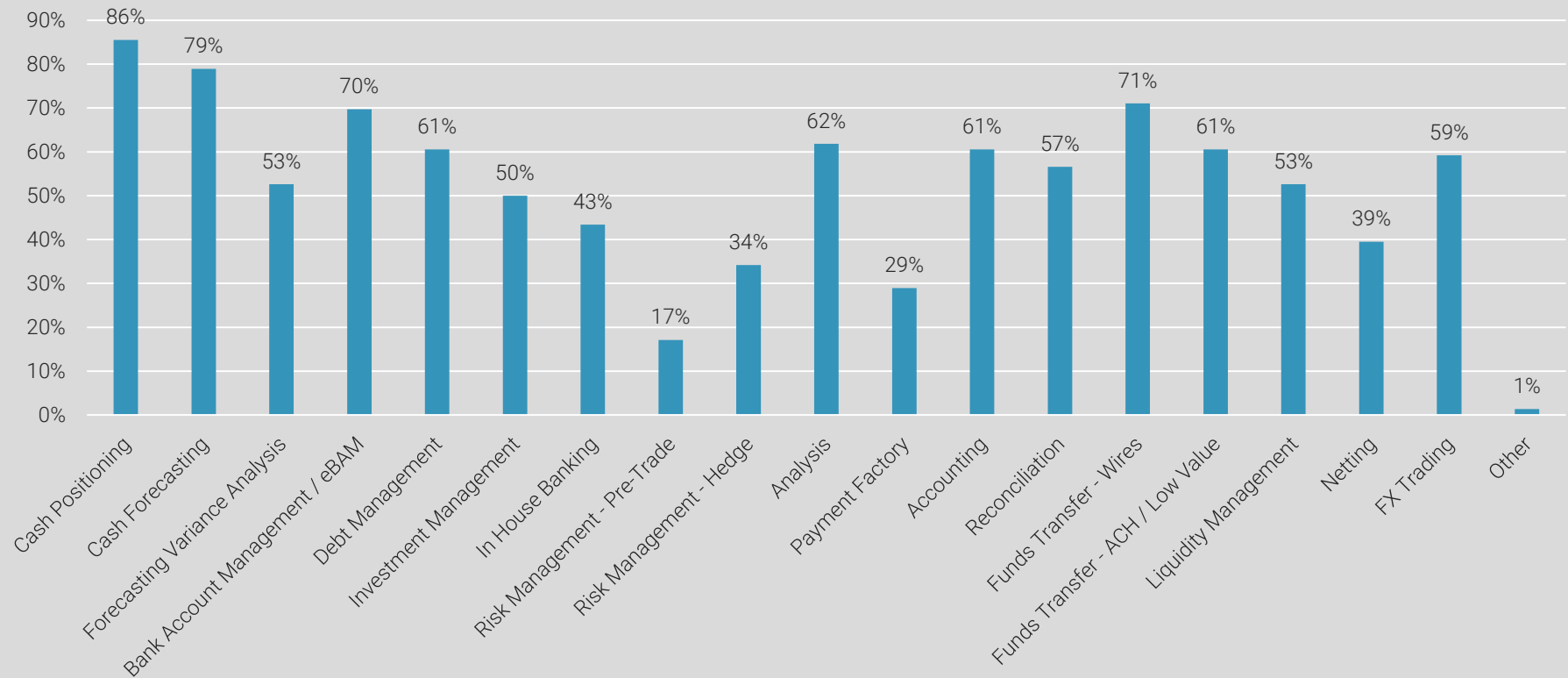- o *Cash Visibility & Bank Connectivity*

↪ **Structuring a Technology Stack**

↪ **Key Technology Considerations for Treasury**

Treasury's Needed Functionalities

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What functions do you use or need in treasury? (Select all that apply)[1]

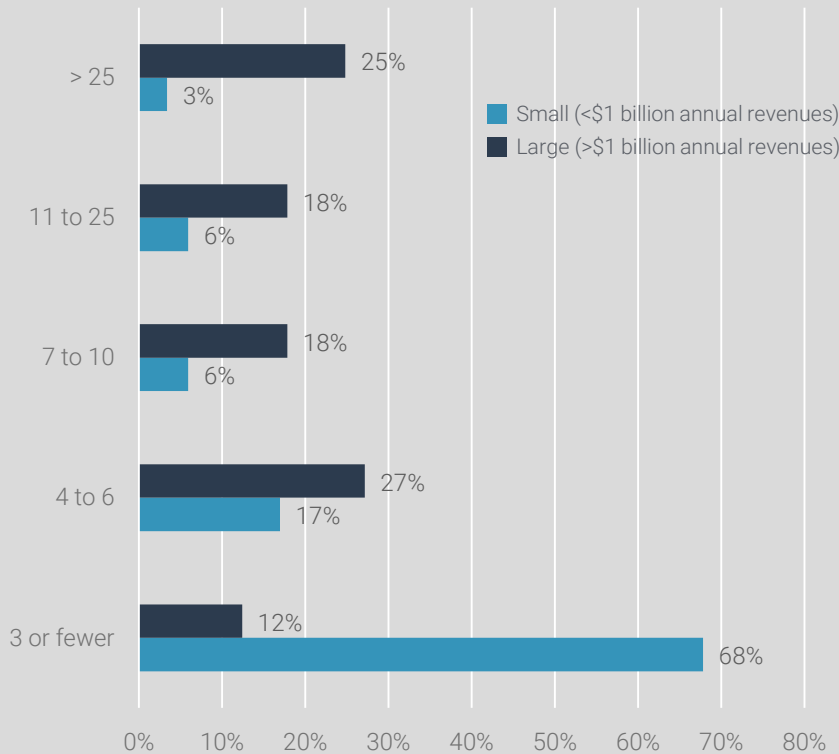| Function	Percentage
Cash Positioning	86%
Cash Forecasting	79%
Forecasting Variance Analysis	53%
Bank Account Management / eBAM	70%
Debt Management	61%
Investment Management	50%
In House Banking	43%
Risk Management - Pre-Trade	17%
Risk Management - Hedge	34%
Analysis	62%
Payment Factory	29%
Accounting	61%
Reconciliation	57%
Funds Transfer - Wires	71%
Funds Transfer - ACH / Low Value	61%
Liquidity Management	53%
Netting	39%
FX Trading	59%
Other	1%

Treasury at the Helm. There are a broad number of responsibilities and functionalities that treasury is held responsible for. Many of these responsibilities extend beyond basic cash and payments management to include FX trading, risk management, accounting, reconciliations, and investment/debt management.

The Issue of Reduced Staff

How large is your global treasury organization, including analysts?[2]

- Small (<$1 billion annual revenues)
- Large (>$1 billion annual revenues)

> 25: 25% / 3%
11 to 25: 18% / 6%
7 to 10: 18% / 6%
4 to 6: 27% / 17%
3 or fewer: 12% / 68%

Are your staffing levels where they need to be now?[3]

Unsure: 14%
No, we are understaffed: 42%
Yes, we are appropriately staffed: 44%

Heightened Responsibility, Limited Manpower. While Treasury's responsibilities are increasing, many departments continue to operate with limited levels of staff, which makes it difficult to manage every area of their operations.
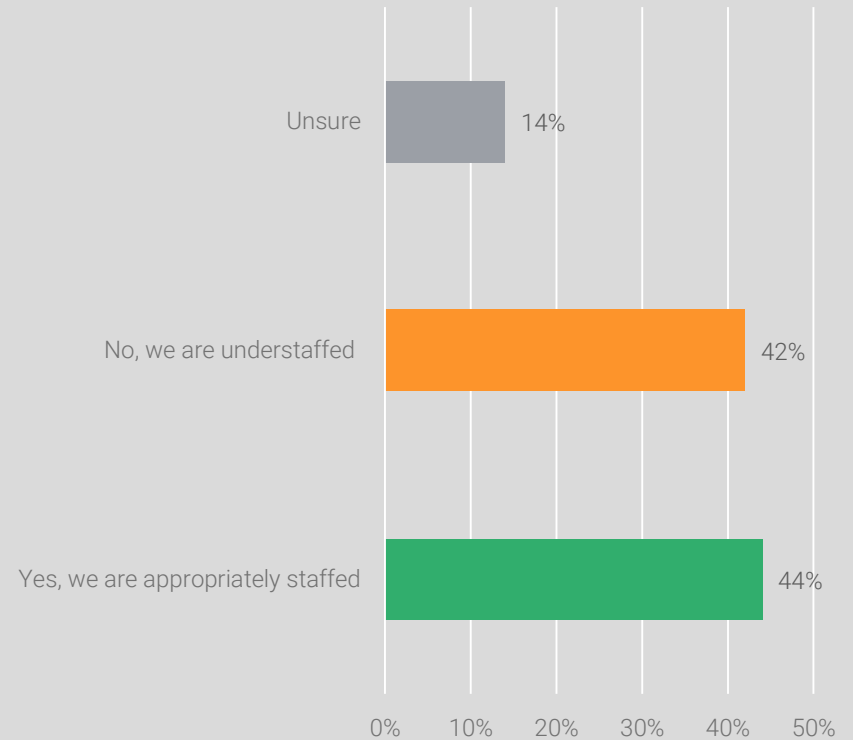
A Struggle to Perform. When asked if their staff levels were where they needed to be, a sizeable portion of respondents to a 2017 survey saw themselves as understaffed. In these circumstances, treasury must turn to technology to increase efficiency.

Treasury Turns to Technology
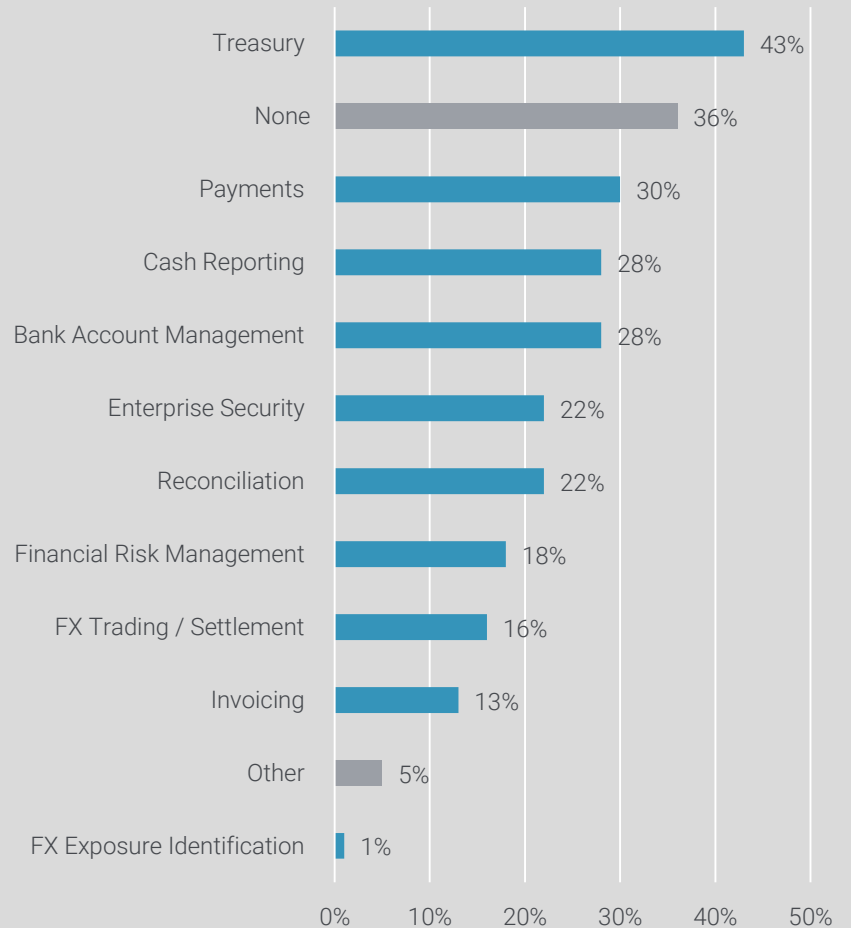
Treasury Technology as an Investment

Treasury's Technology Focus. As the issue of low staff and increasing responsibility continues to beleaguer treasury, investments in IT and financial software are becoming increasingly common.

Democratization of Technology. While treasury technology has historically only been affordable to the largest of organizations, the "democratization of technology" that has occurred due to increased competition in the space is resulting in a landscape where TMS options provide more functionality for a greater number of firms at a lower cost.
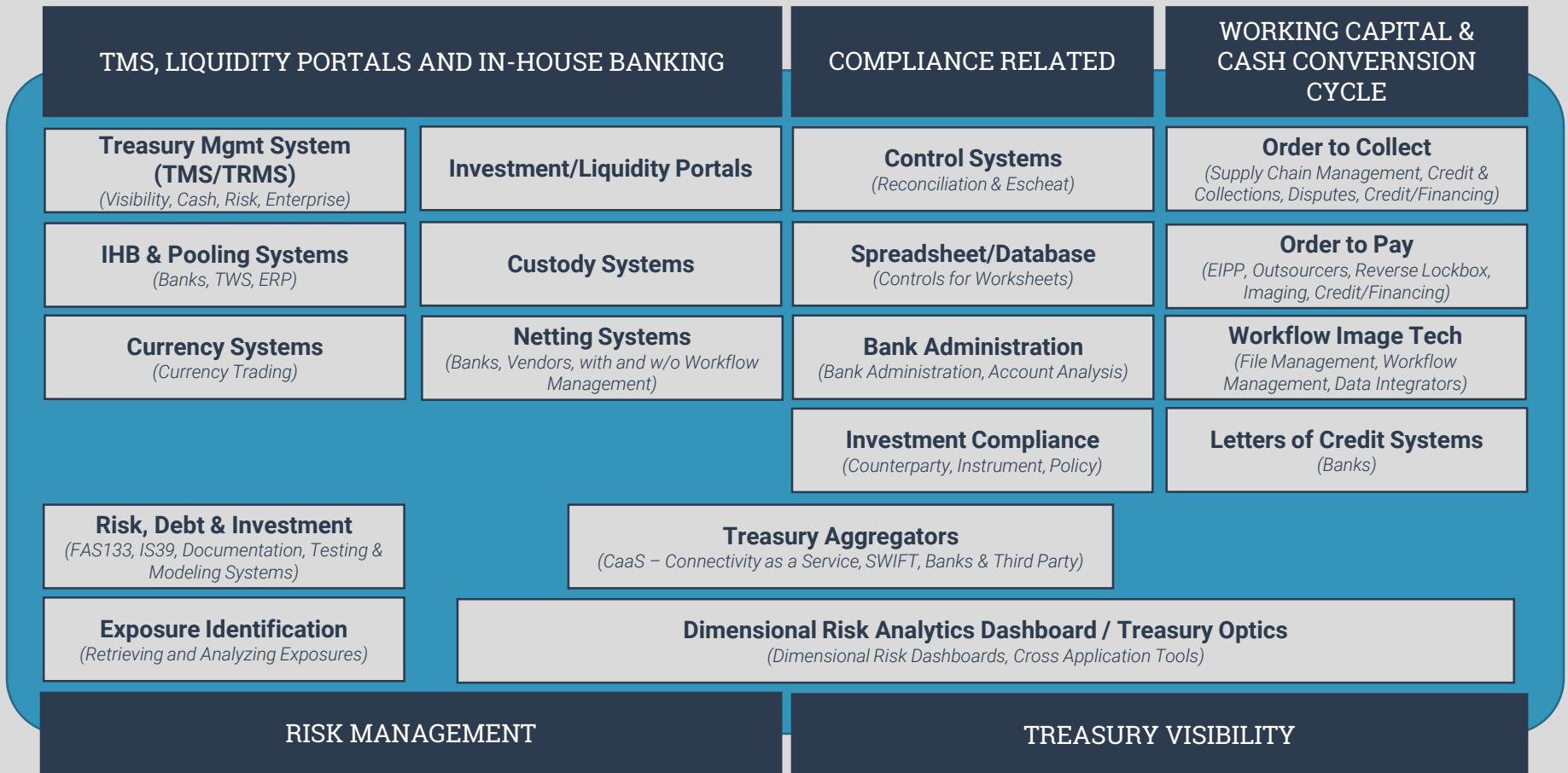
We intend to make significant information technology investments in the next year in the following areas: (Select all that apply)[4]

Treasury	43%
None	36%
Payments	30%
Cash Reporting	28%
Bank Account Management	28%
Enterprise Security	22%
Reconciliation	22%
Financial Risk Management	18%
FX Trading / Settlement	16%
Invoicing	13%
Other	5%
FX Exposure Identification	1%

0% 10% 20% 30% 40% 50%

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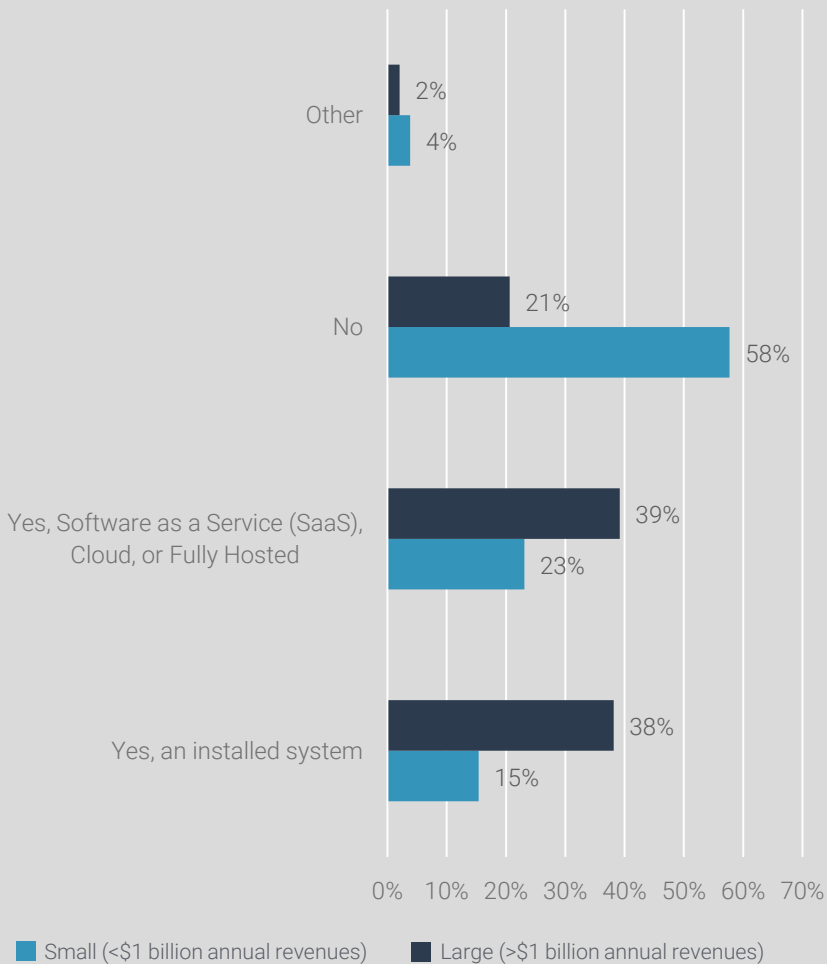
The Treasury Technology Landscape

Understanding the Full Scope of Offerings

- The treasury technology landscape becomes quite complex when evaluating the full spectrum of available functionalities and services.

- While some solutions may only focus on a specific area of functionality, other platforms aim to address multiple needs by offering a broad suite of capabilities.
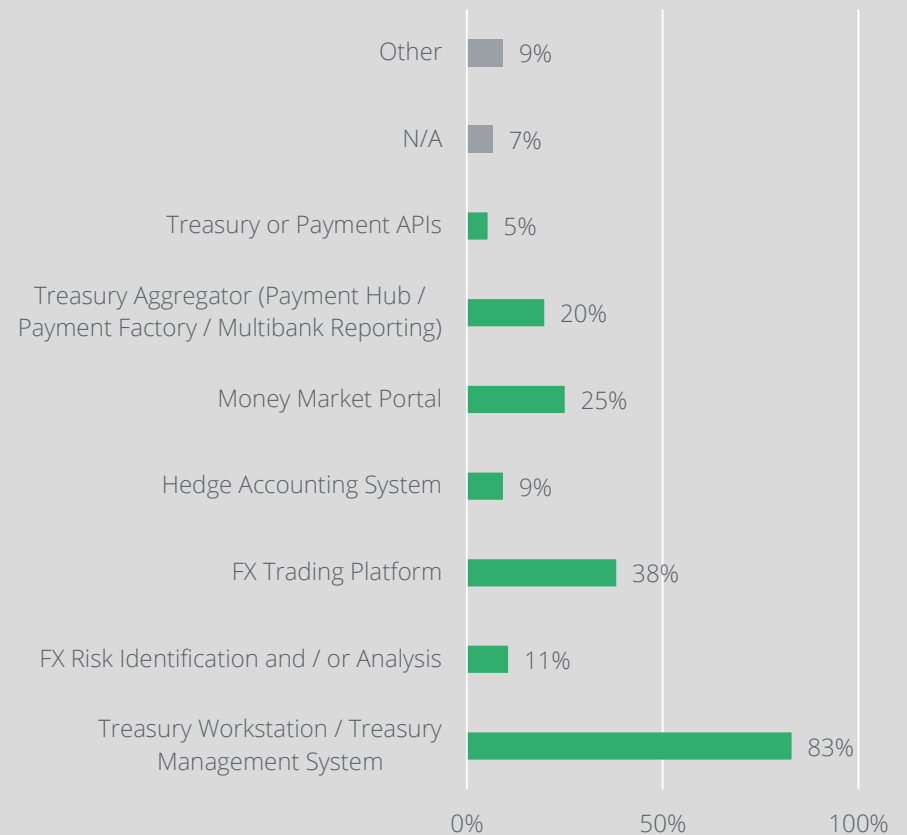
TMS, LIQUIDITY PORTALS AND IN-HOUSE BANKING		COMPLIANCE RELATED	WORKING CAPITAL & CASH CONVERNSION CYCLE
Treasury Mgmt System (TMS/TRMS) (Visibility, Cash, Risk, Enterprise)	**Investment/Liquidity Portals**	**Control Systems** (Reconciliation & Escheat)	**Order to Collect** (Supply Chain Management, Credit & Collections, Disputes, Credit/Financing)
IHB & Pooling Systems (Banks, TWS, ERP)	**Custody Systems**	**Spreadsheet/Database** (Controls for Worksheets)	**Order to Pay** (EIPP, Outsourcers, Reverse Lockbox, Imaging, Credit/Financing)
Currency Systems (Currency Trading)	**Netting Systems** (Banks, Vendors, with and w/o Workflow Management)	**Bank Administration** (Bank Administration, Account Analysis)	**Workflow Image Tech** (File Management, Workflow Management, Data Integrators)
		Investment Compliance (Counterparty, Instrument, Policy)	**Letters of Credit Systems** (Banks)

Risk, Debt & Investment (FAS133, IS39, Documentation, Testing & Modeling Systems)	**Treasury Aggregators** (CaaS – Connectivity as a Service, SWIFT, Banks & Third Party)
Exposure Identification (Retrieving and Analyzing Exposures)	**Dimensional Risk Analytics Dashboard / Treasury Optics** (Dimensional Risk Dashboards, Cross Application Tools)

RISK MANAGEMENT	TREASURY VISIBILITY

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Treasury Technology: Current State

Do you have a treasury system besides Excel?[5]

Other	2% (Large) / 4% (Small)
No	21% (Large) / 58% (Small)
Yes, Software as a Service (SaaS), Cloud, or Fully Hosted	39% (Large) / 23% (Small)
Yes, an installed system	38% (Large) / 15% (Small)

0% 10% 20% 30% 40% 50% 60% 70%

■ Small (<$1 billion annual revenues)   ■ Large (>$1 billion annual revenues)

What treasury systems do you currently use?[6]
(Select all that apply)

(of those respondents that selected "yes" to the previous question)

Other	9%
N/A	7%
Treasury or Payment APIs	5%
Treasury Aggregator (Payment Hub / Payment Factory / Multibank Reporting)	20%
Money Market Portal	25%
Hedge Accounting System	9%
FX Trading Platform	38%
FX Risk Identification and / or Analysis	11%
Treasury Workstation / Treasury Management System	83%

0%   50%   100%

Treasury Technology Perspectives

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Technology Impact: Emerging Payments[7]

Which of the following disruptors do you see as having the greatest impact on treasury functions and payments in the next 2-3 years?
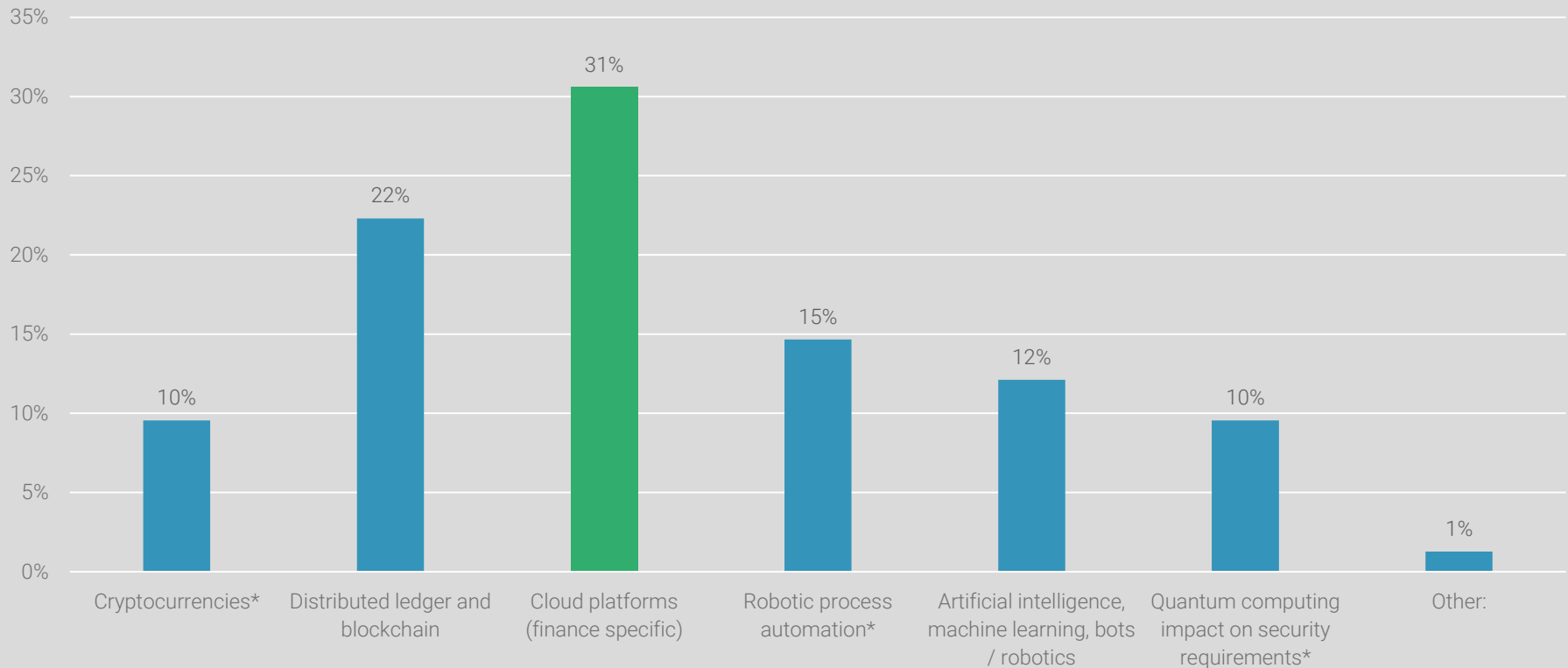
SaaS Applications Dominate Treasury's Technology Focus:

Given the sophistication of today's SaaS applications and the broad suite of capabilities they offer, treasury clearly feels as though the importance of these solutions still top such developments as AI and blockchain, at least for the time being.

Payments in 2018

Payments to the Forefront in 2018

Global Payments Development. Across the world, various faster payments and real-time payments initiatives, both cross-border and domestic, are revolutionizing the practices by which consumers and businesses alike transact.

Innovation in the Spotlight. Over the past few years, technologies such as APIs and blockchain and other innovations such as mobile payment applications are showing promise in the ability to more efficiently and securely transfer funds.

Keep Pace or Fall Behind. As the realm of payments progresses, corporate treasurers are realizing that to keep pace with the environment, they must upgrade their payments capabilities.

Corporate Spend Plans: Payments Technology[8]

How much does your company plan to spend on payments technology in the next year? (excluding staff costs and consumer card payments)

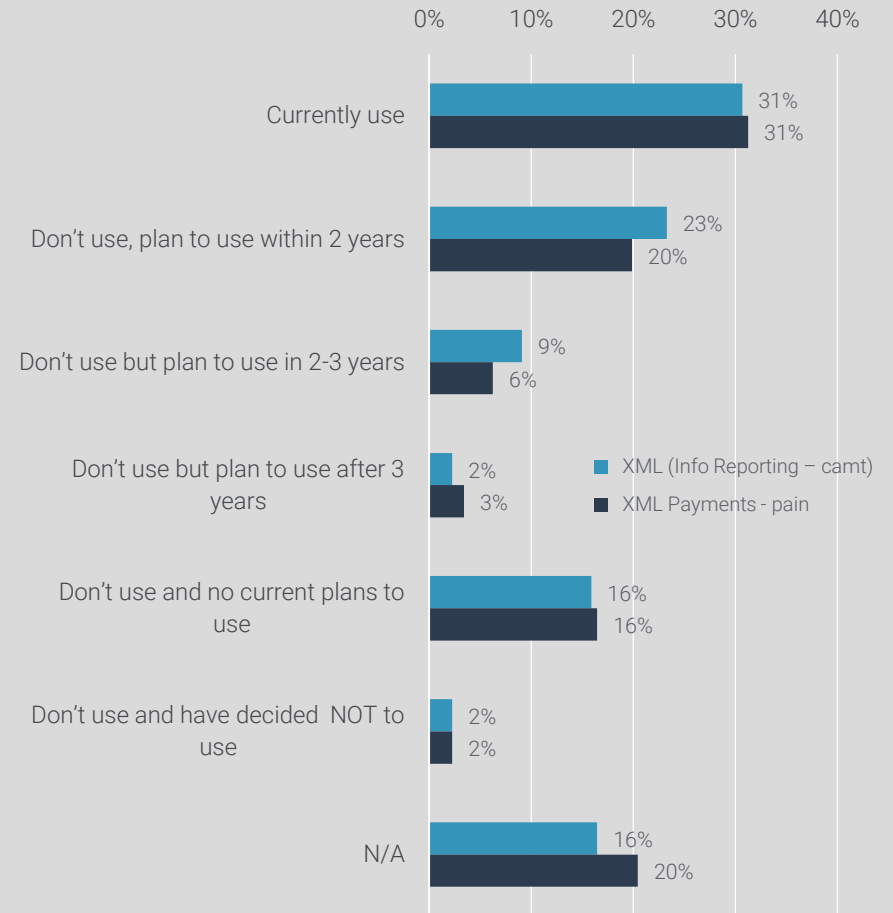| Category	Percentage
Unsure	32%
Less than $50K USD or equivalent globally	18%
Between $50K and $100K USD or equivalent globally	13%
Between $100K and $250K USD or equivalent globally	9%
Between $250K and $500K USD or equivalent globally	6%
Between $500K and $1mm USD or equivalent globally	14%
Over $1mm USD or equivalent globally	8%
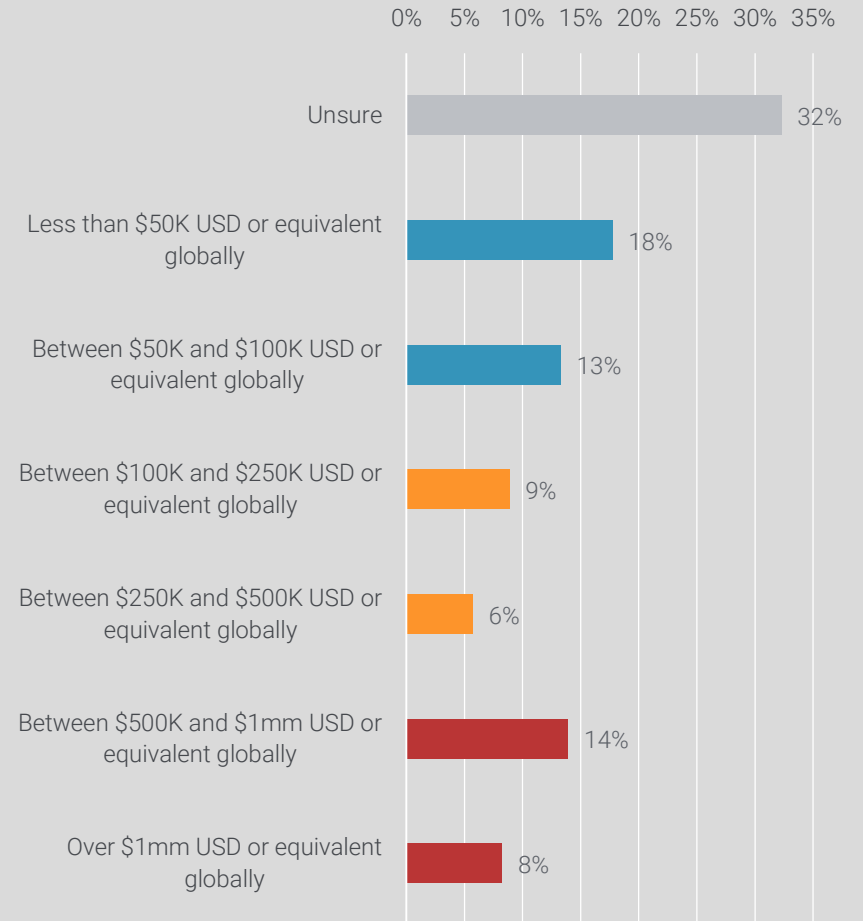
Payments in 2018

Payments Developments Perspectives: Corporates[9]

Which is more important for inbound payments?

- Faster settlement: 36%
- More information for posting: 52%
- Unsure: 12%
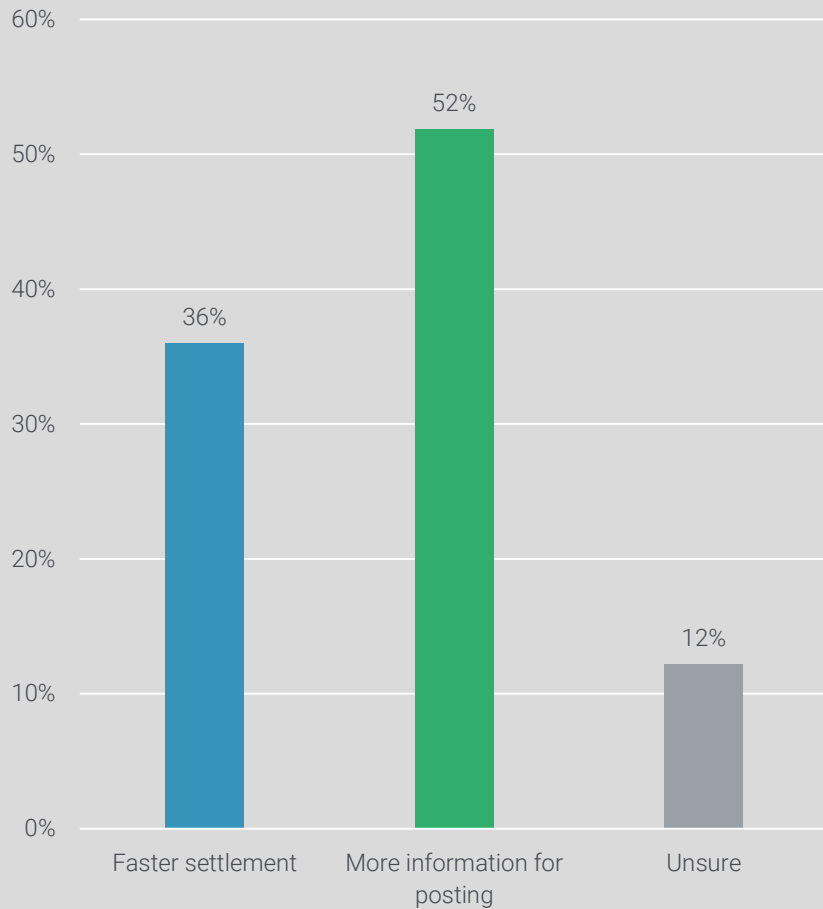
Messaging Formats Used: Corporates[10]

XML – Our status for using XML (ISO 20022) for payments and information reporting is as follows:

Category	XML (Info Reporting – camt)	XML Payments - pain
Currently use	31%	31%
Don't use, plan to use within 2 years	23%	20%
Don't use but plan to use in 2-3 years	9%	6%
Don't use but plan to use after 3 years	2%	3%
Don't use and no current plans to use	16%	16%
Don't use and have decided NOT to use	2%	2%
N/A	16%	20%

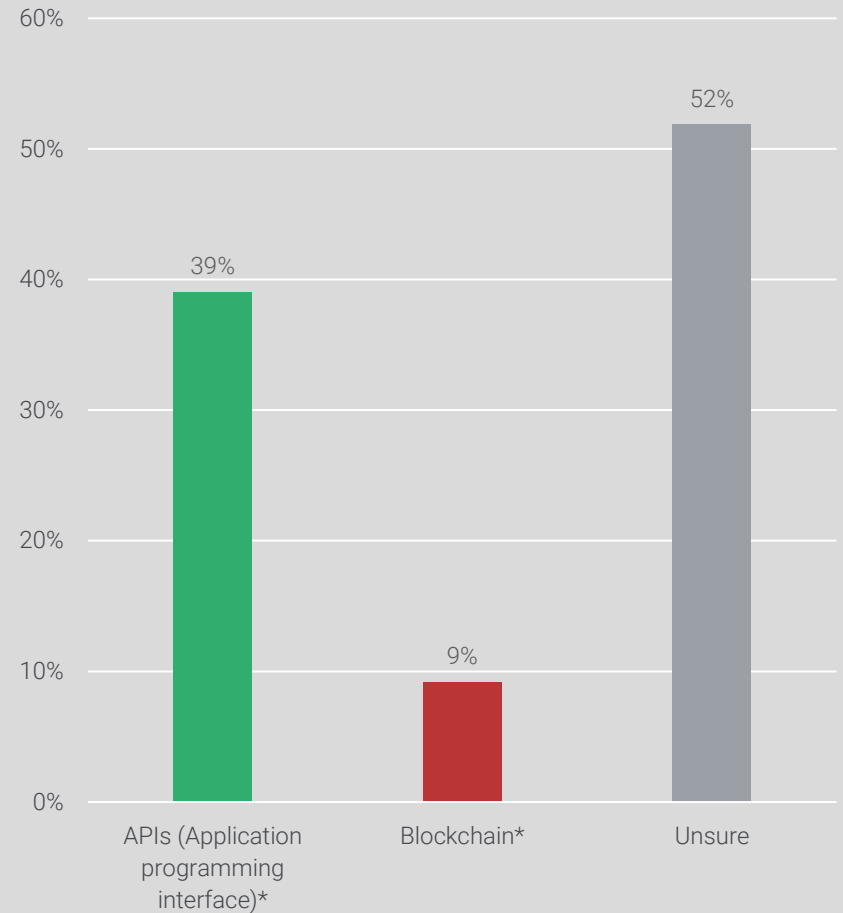# Payments in 2018

Blockchain Bends to APIs

The Rise of Blockchain & Cryptocurrencies. Although the rise of blockchain has been tied strongly to the popularity of bitcoin and other cryptocurrencies, the technology has seen widespread investment by major players in the financial realm.

PSD2 & the Era of "Open Banking". With the introduction of PSD2 in Europe, APIs are looking to play an immense role in linking bank systems with outside parties and other Fintech providers to provide streamlined automation, integration, and STP for payments and information reporting processes.

APIs Grab Corporate Treasury's Focus. When comparing corporate treasury's perceived importance on APIs and blockchain for outbound payments, many practitioners are unsure of which to choose. However, over 4x as many respondents to a recent survey saw APIs as more important.

Payments Developments Perspectives: Corporates[11]

Which is more important for outbound payments?

Bar chart showing: APIs (Application programming interface)* 39%, Blockchain* 9%, Unsure 52%

Payments in 2018

Mobile Payments: A Divergence in Perspectives

Mobile Payments for Consumers. Companies like Visa and American Express, along with major banks, have made major headway in offering mobile payment apps for consumers.
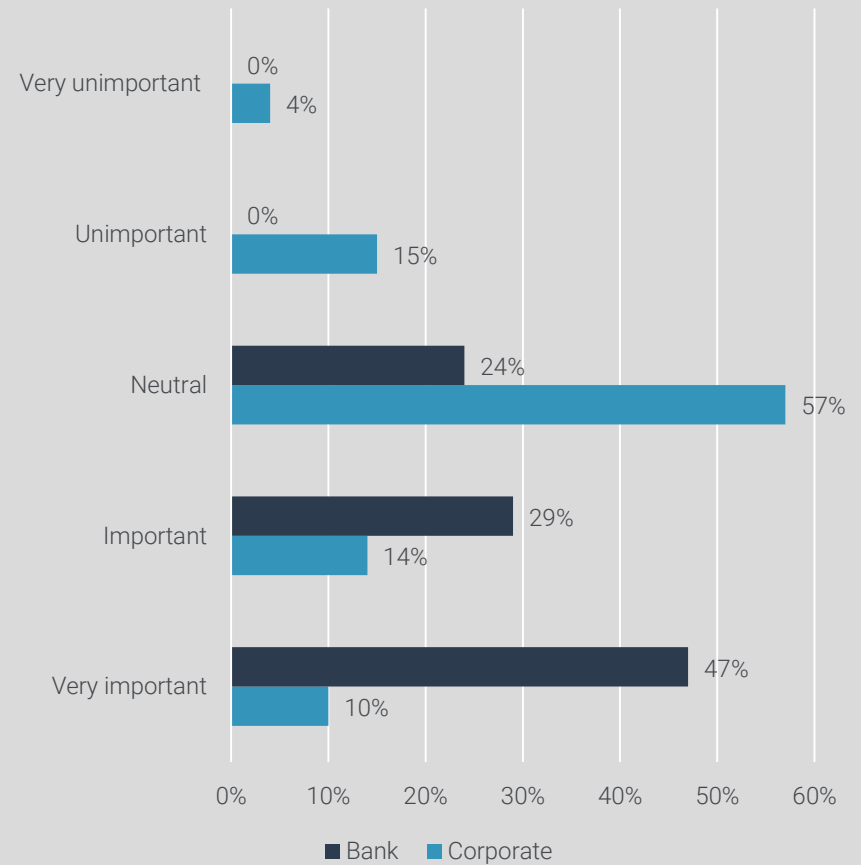
Mobile B2B Pushing Forward. As the popularity of consumer payment apps increases, banks and fintechs are expanding the use of these services for B2B payments, including for treasury funds transfers.

Corporates Harbor Security/Applicability Concerns. However, while corporates have shown interest in the technology and find its continued development important, they have concerns regarding the security of mobile payments and also question their applicability for treasury.

Mobile Payments: Corporate vs Bank Perspectives[12]

In the next three years, how important will commercial mobile banking applications be: for your position (corporates); for your clients (banks)?
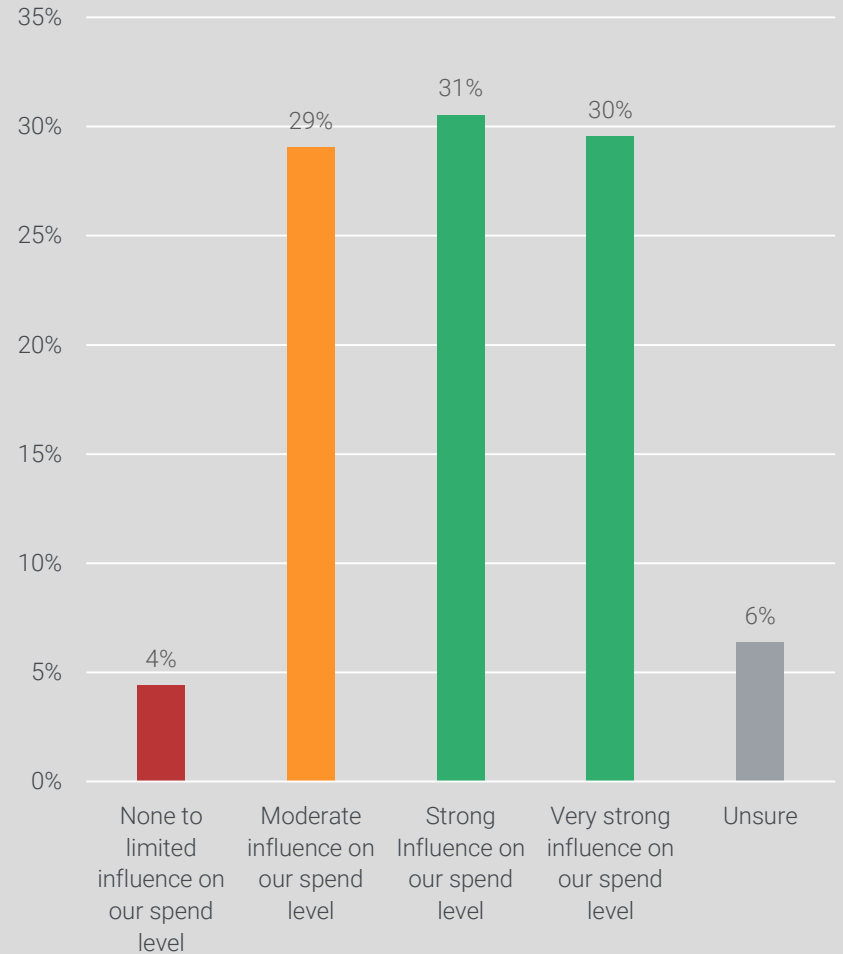
Category	Bank	Corporate
Very unimportant	0%	4%
Unimportant	0%	15%
Neutral	24%	57%
Important	29%	14%
Very important	47%	10%

■ Bank ■ Corporate

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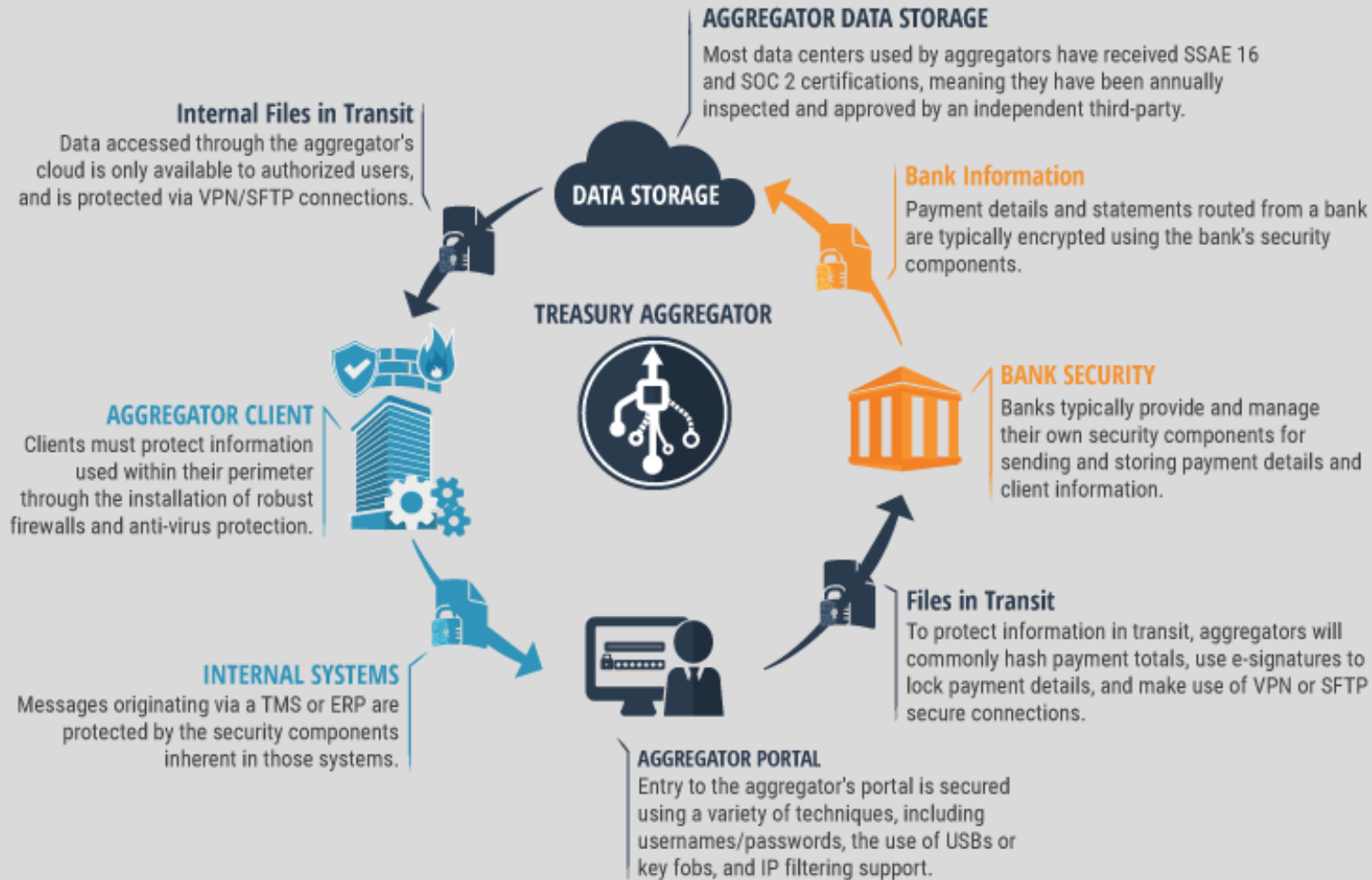**Treasury** Webinars

Fraud & Security

Our current payment security concerns, as compared to the prior year, are:[13]
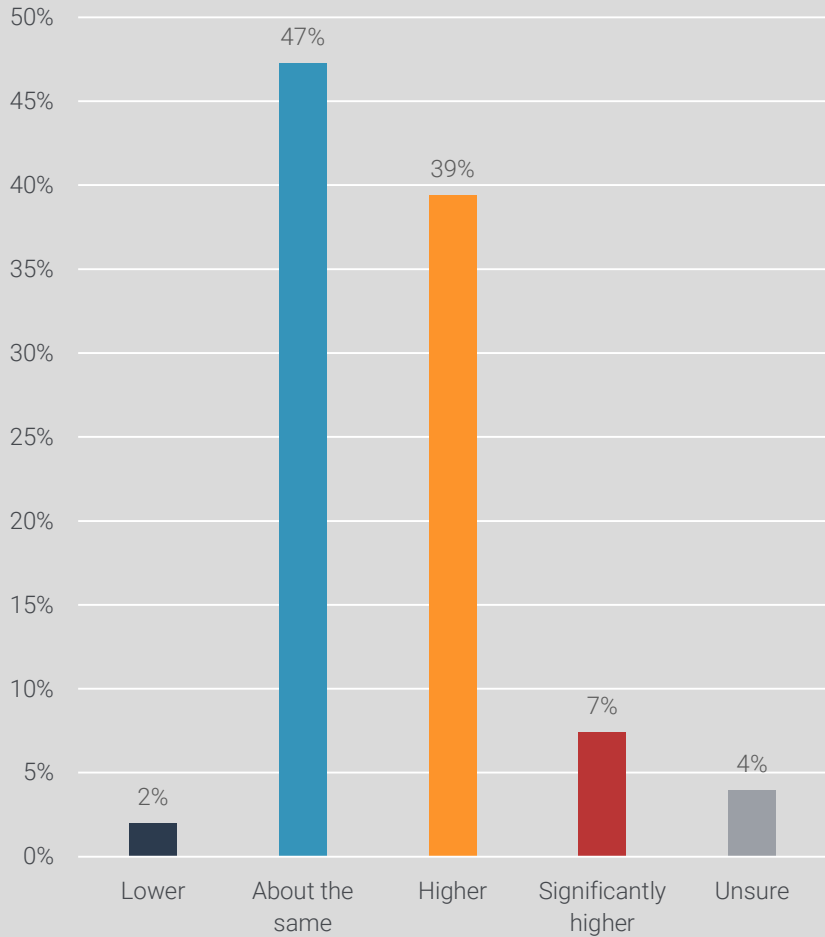
What influence do security concerns have on your current or planned technology spend?[14]

Fraud & Security

Sample Technology Security Framework: Treasury Aggregator

AGGREGATOR DATA STORAGE
Most data centers used by aggregators have received SSAE 16 and SOC 2 certifications, meaning they have been annually inspected and approved by an independent third-party.

Internal Files in Transit
Data accessed through the aggregator's cloud is only available to authorized users, and is protected via VPN/SFTP connections.

DATA STORAGE

Bank Information
Payment details and statements routed from a bank are typically encrypted using the bank's security components.

TREASURY AGGREGATOR

BANK SECURITY
Banks typically provide and manage their own security components for sending and storing payment details and client information.

AGGREGATOR CLIENT
Clients must protect information used within their perimeter through the installation of robust firewalls and anti-virus protection.

Files in Transit
To protect information in transit, aggregators will commonly hash payment totals, use e-signatures to lock payment details, and make use of VPN or SFTP secure connections.

INTERNAL SYSTEMS
Messages originating via a TMS or ERP are protected by the security components inherent in those systems.

AGGREGATOR PORTAL
Entry to the aggregator's portal is secured using a variety of techniques, including usernames/passwords, the use of USBs or key fobs, and IP filtering support.

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Security Technology in 2018

Biometrics

- Biometric security recognizes a unique feature of a person, such as a fingerprint, as validation for their authority over payments activity/information.

- Biometrics are considered a robust form of security because it is extremely difficult to duplicate/mimic someone else's genetic composition.

Encryption

- A process for securing sensitive information in transit (i.e. being passed between a bank and corporate), or for safeguarding information stored on mobile devices, computers, servers, etc.

- Takes sensitive information, such as bank account details, and converts information into an encoded format. In order for anyone to "decode" the encrypted information, they must possess a unique key.

Multifactor Authentication

- Multifactor authentication requires employees to provide multiple approvals/passwords before payments/activity can be carried out.

- For instance, a treasurer may be required to enter in two passwords and use a unique key fob (i.e. USB Drive) before they are able to gain entry to the payments system.

Tokenization

- Using tokenization, an organization's private payment information is replaced with a series of randomly-generated numbers, which is called the "token."

- These tokens can then be passed through the internet or the various wireless networks needed to process the payment without actual bank details being exposed. The actual bank account number is held safe in a secure token vault.
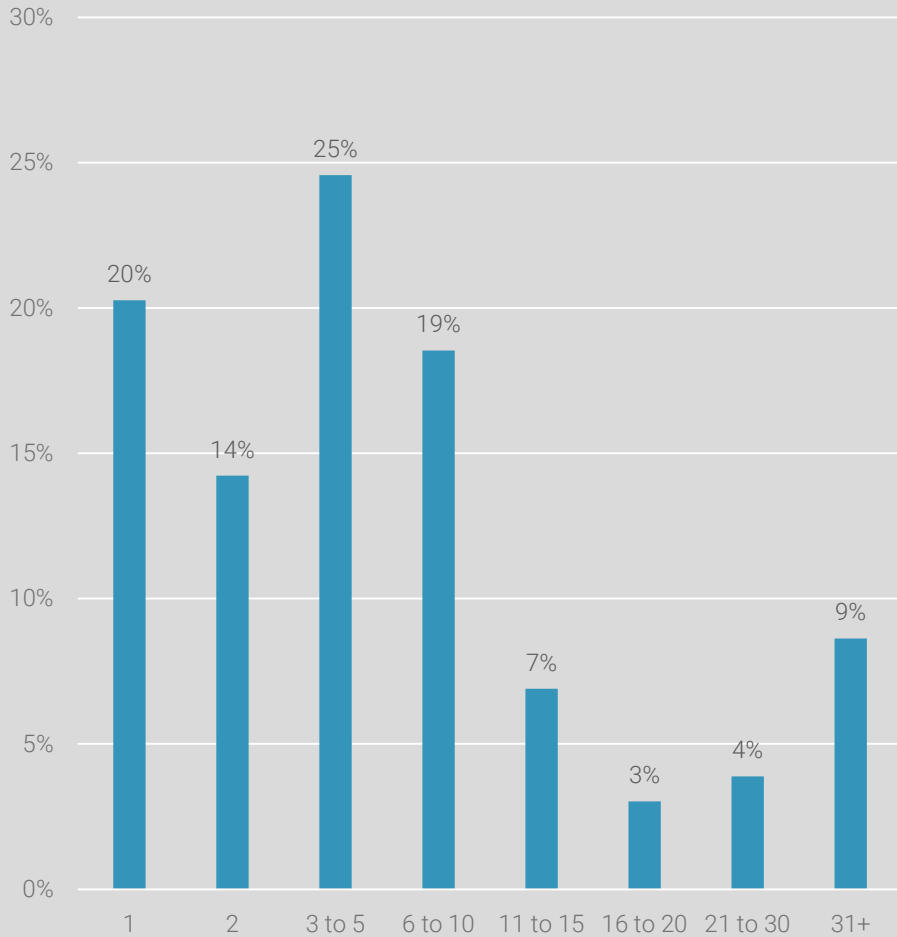
Strategic Treasurer *Consultants in Treasury*

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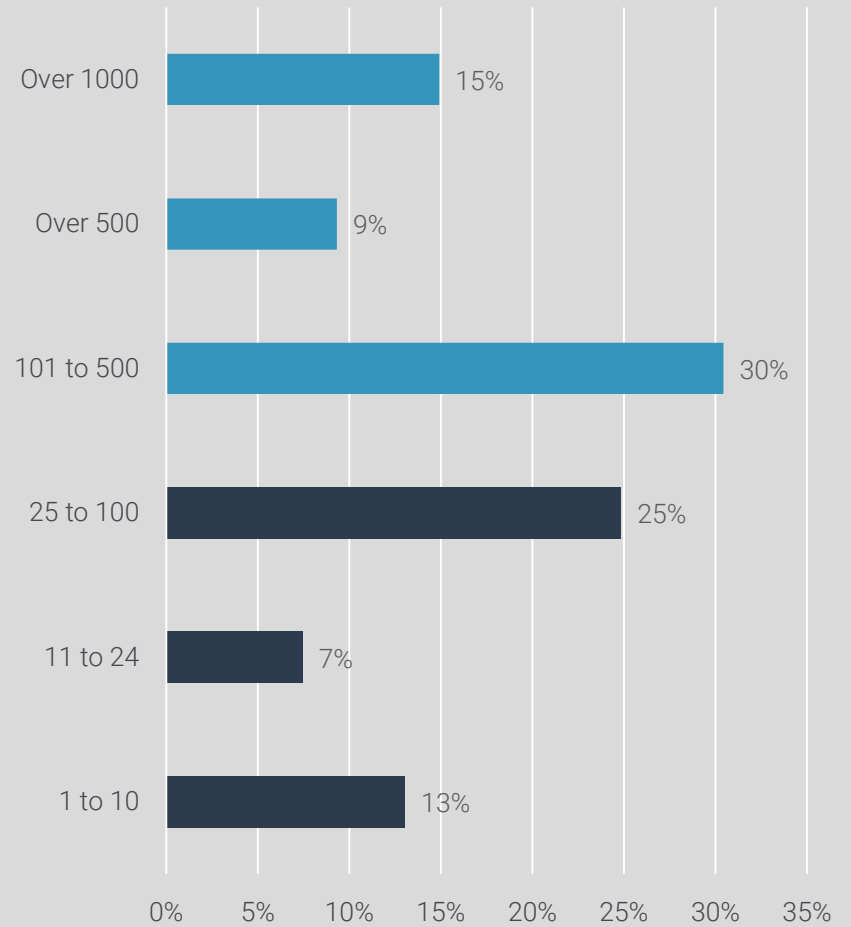# Cash Visibility & Bank Connectivity

Payment Origination: Banks[15]

How many banks do you originate payments with?

Number of Bank Accounts in Use Globally[16]
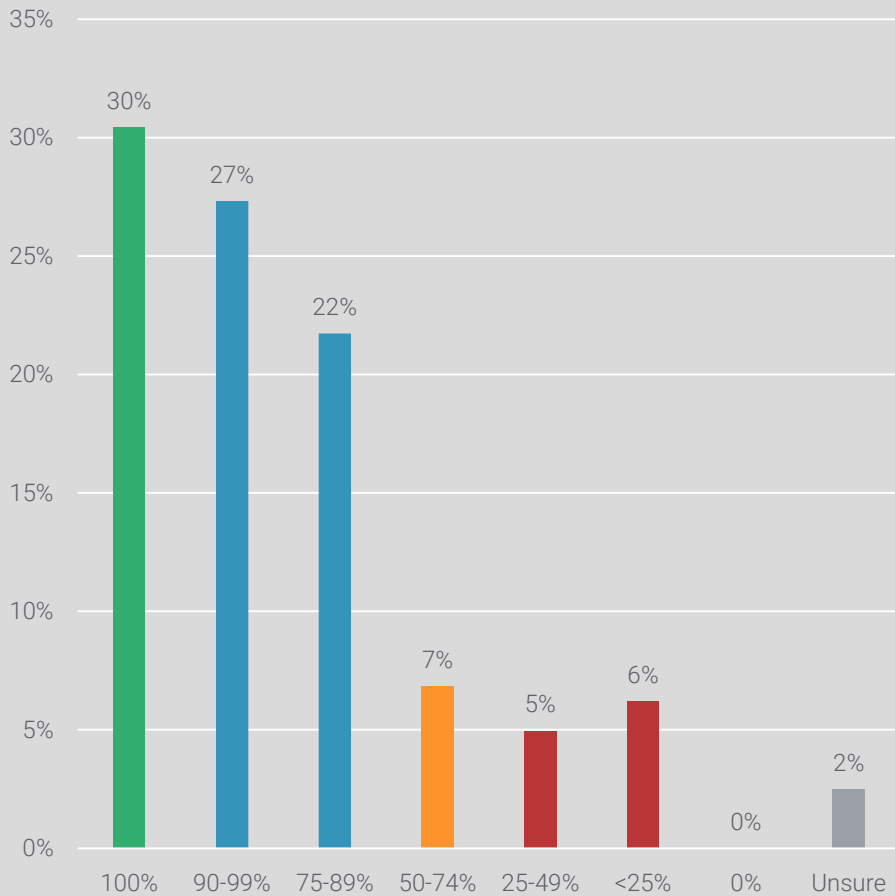
How many bank accounts do you have?

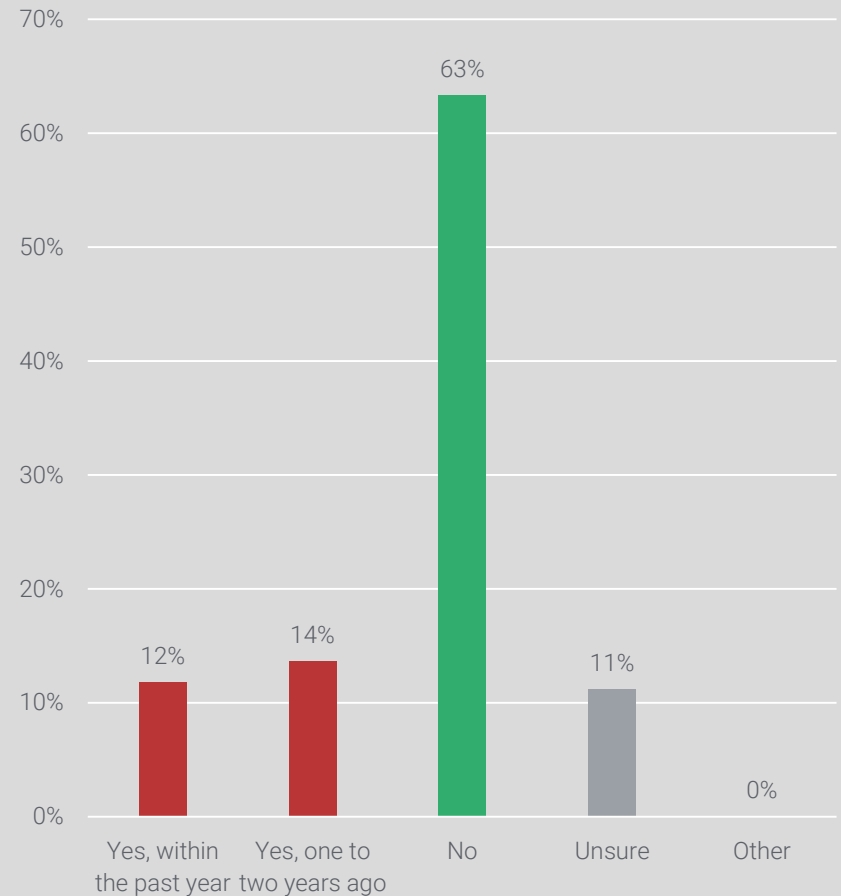# Cash Visibility & Bank Connectivity

Daily Bank Account Visibility[17]

What percentage of your operating bank accounts do you have visibility to on a daily basis?

Bank Account Visibility: Discovering Accounts[18]

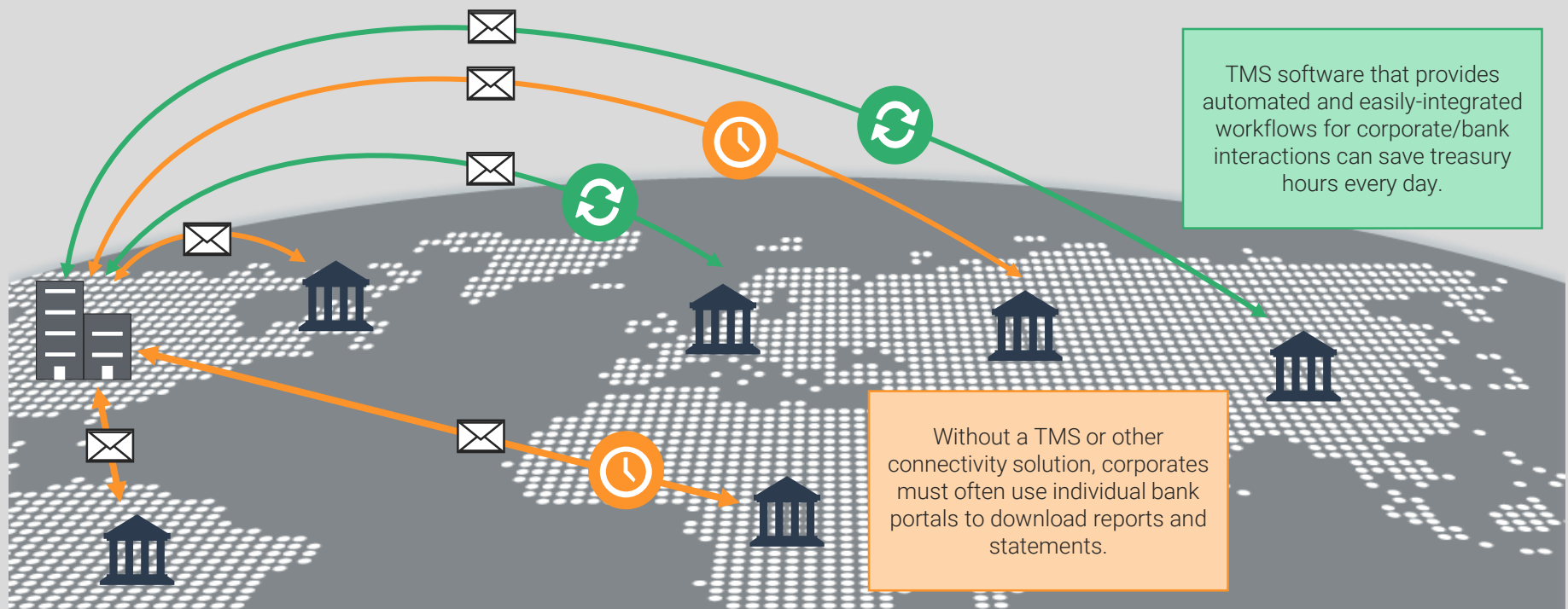Have any active bank accounts been discovered that were previously unaccounted for by treasury?

Cash Visibility & Bank Connectivity

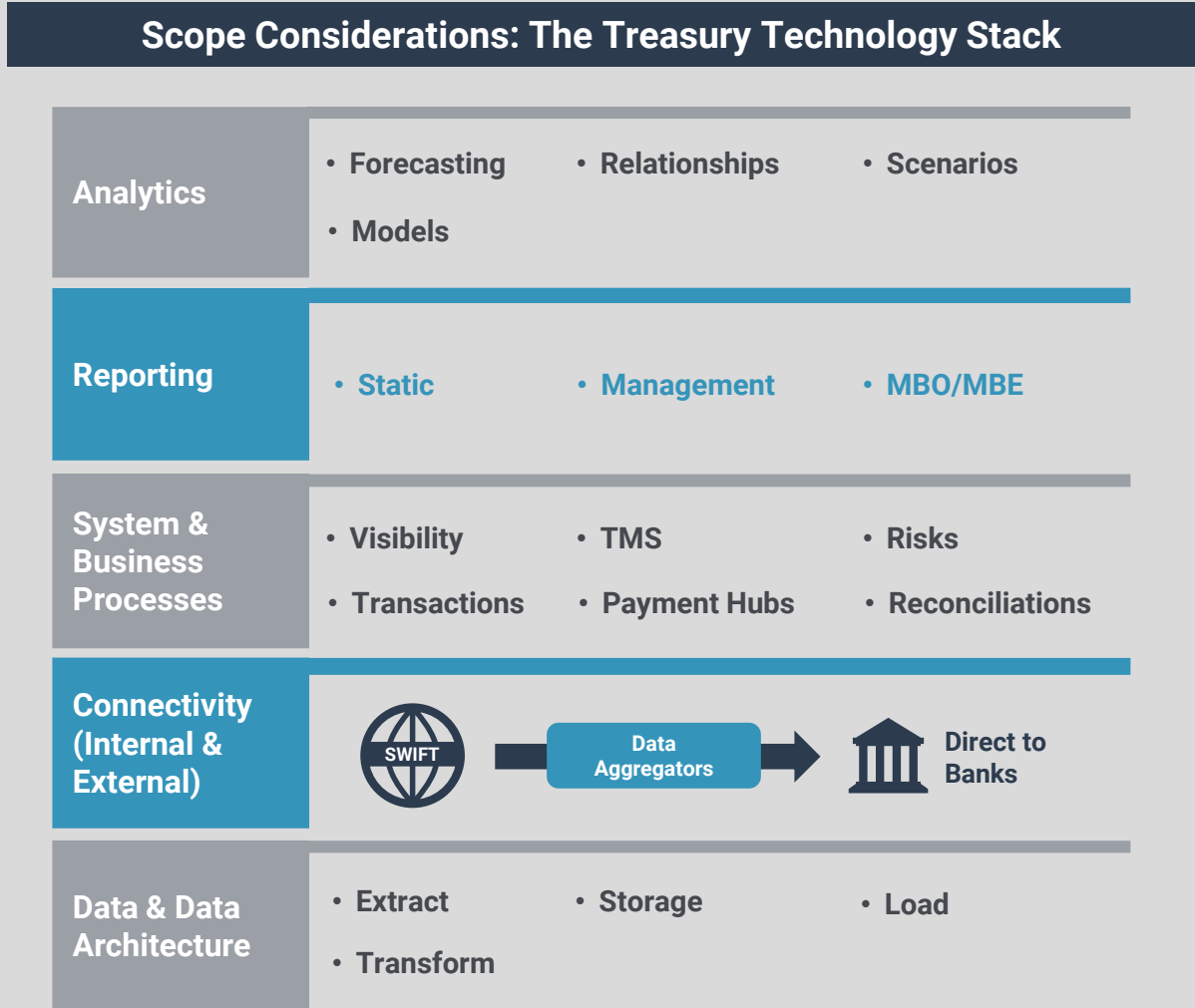## Avoiding Redundancy: Bank Portals vs TMS Integration

- Corporates often have banks dispersed globally that they must interact with to gather data on cash positions/balances.

- Many banks have legacy systems or outdated tech infrastructures that make data transformation difficult and overly manual.

- While some corporates continue to leverage individual bank portals to export statements and balances, many of today's TMSs can integrate with bank systems to automate this process and aggregate balance/transaction information from all bank partners in real-time or near real-time.

TMS software that provides automated and easily-integrated workflows for corporate/bank interactions can save treasury hours every day.

Without a TMS or other connectivity solution, corporates must often use individual bank portals to download reports and statements.

Structuring a Treasury Technology Stack

Change Management

- The demands on Treasury increase dramatically during times of transition.

- This is compounded by structural change within an organization or when a company finds itself with new requirements and expectations.

- Responding to new requests or analyzing various exposures must be done rapidly. The historical approach to technology has not kept pace with these expectations.

- In order to architect newer technology properly, technology components need to be examined with a current view of what is available in the market.

Scope Considerations: The Treasury Technology Stack

Analytics	• **Forecasting** • **Models**	• **Relationships**	• **Scenarios**
Reporting	• **Static**	• **Management**	• **MBO/MBE**
System & Business Processes	• **Visibility** • **Transactions**	• **TMS** • **Payment Hubs**	• **Risks** • **Reconciliations**
Connectivity (Internal & External)	SWIFT → Data Aggregators →		Direct to Banks
Data & Data Architecture	• **Extract** • **Transform**	• **Storage**	• **Load**

Key Technology Considerations for Treasury

Evaluate Internal Processes. Develop a full blueprint of how your internal technology stack is structured. Determine the number of systems used, who uses them, and how they interact with one another and with external/3rd party systems.

Benchmark your Position. Analyze the technology positions of the landscape at large, but with a focus on other firms operating in the same or similar industries and geographies, and with similar revenues and complexity (staff size, etc.).

Identify Potential Shortcomings. During the course of your internal evaluations and subsequent benchmarking, be sure to monitor for any shortcomings in your processes. Maybe you rely too heavily on spreadsheets, or utilize more financial solutions than is necessary.

Stay Abreast of Tech Developments. There is a lot happening within the industry, and developments are occurring at a torrid pace. It is pivotal that treasury keep up with these developments and understand their applicability to financial operations.

Consult Experts & Partners. If there are any developments that treasury thinks could significantly impact them, do not hesitate to contact banking partners, Fintech providers, or 3rd party experts for additional advice and guidance.

Don't Allow Yourself to Fall Behind. While not every new tech development is a revolutionary breakthrough, treasury must be careful not to dismiss every new innovation, as they risk allowing themselves to be leapfrogged by more sophisticated solutions and systems.

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4. 2017 Strategic Treasurer & Bottomline Technologies Treasury Fraud & Controls Survey

5. 2017 Strategic Treasurer & Bottomline Technologies Treasury Fraud & Controls Survey

6. 2017 Strategic Treasurer, Bottomline Technologies, & Bank of America Merrill Lynch B2B & WCM Strategies Survey

7. 2017 Strategic Treasurer & Bottomline Technologies Treasury Fraud & Controls Survey

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