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Citi GPS

Cross-Border Payments 24x7

Faster, Simpler, Smarter

Citi GPS: Global Perspectives & Solutions

October 2024

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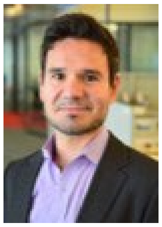

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CROSS-BORDER PAYMENTS 24X7

Faster, Simpler, Smarter

The payments industry is evolving at pace.

Our clients and their end-users increasingly expect payment services that are instant and available 24x7. In our interconnected digital world, moving money seamlessly across borders is vital, whether the payments are big or small.

This new Citi GPS report brings together our latest thinking on cross border payments, looking at how things stand now and how the payments landscape is likely to evolve against this backdrop of rapid-fire technological advancement.

The report is based on findings from the Citi Treasury and Trade Solutions (TTS) survey of about 100 financial institutions from around the world, including banks, FinTechs, and insurance companies. The report also draws on expert insights from Citi's Future of Finance team, our industry leading TTS franchise, and external experts.

The Citi TTS 2024 survey results indicate that FinTechs on average expect to gain c.10% market share in cross-border payments from banks in the next 2-5 years, echoing results from last year's survey, in which 89% of financial institutions' management expect to lose at least 5% market share to FinTechs.

It looks at how incumbents and new entrants can emerge as leaders in the cross-border payments business. Agile incumbents that adapt to newer industry standards and emerging technologies are likely to retain market share.

According to Citi's 2024 survey, nearly half the banks see room for improvement to extract higher FX revenue from their cross-border payments products. This could be achieved by innovative pricing strategies, smarter routing, and using data to enable banks to capture otherwise lost revenue opportunities.

Banks also need to focus on providing alternative payment methods with nearly two thirds of survey respondents seeing a demand from clients. According to the Citi TTS 2024 survey, bank management thinks delivering always-on operations (24x7) is the leading priority for banks over the next 5 years to address the pain-points of cross-border payments.

The report also checks in on latest progress in the G20 roadmap – a collective effort to make cross-border payments cheaper, faster, and more accessible.

Currently, cross-border payment systems use different messaging standards across different markets. The fragmentation represents one of the biggest obstacles to cross-border payments.

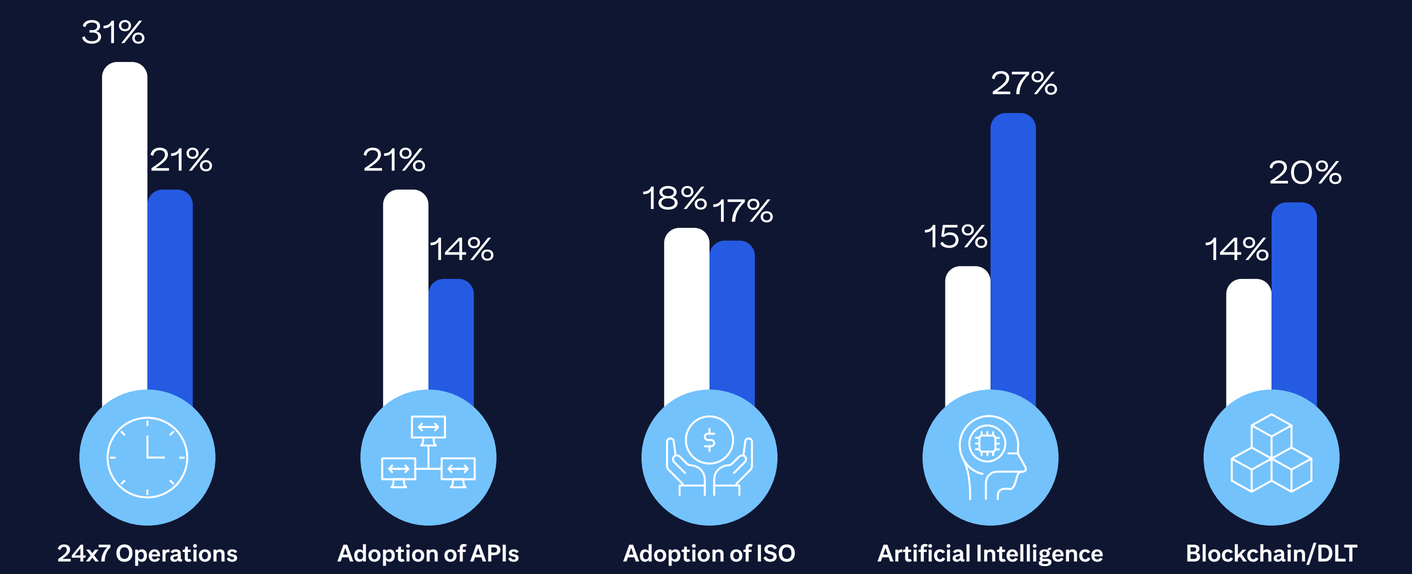
ISO 20022 – a global and open financial messaging standard for financial institutions, set by an independent standard-setting body has been adopted to address these challenges and create a common language for global payments.

The enriched data sets will also promote end-to-end automation through the transaction life cycle and increase machine-readability – enabling faster processing, greater openness, visibility, and interoperability across different regions and financial market infrastructures.

Cross-Border Payments 24x7

Technologies Important to Address Pain-Points in Cross-Border Payments

(% of responses)

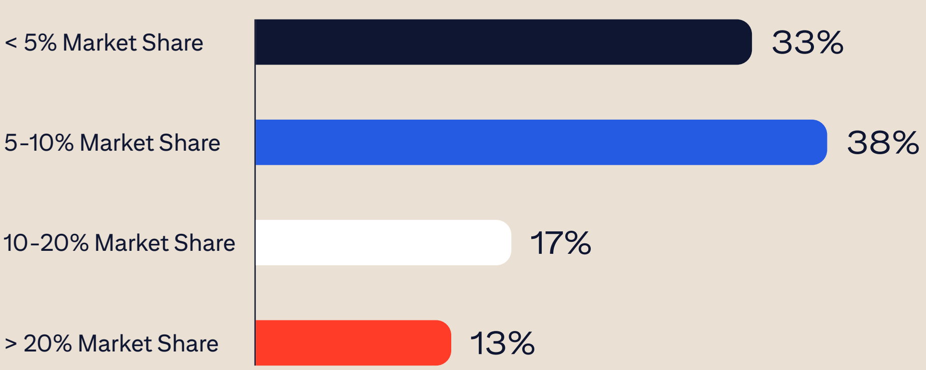


Next 5 Years   5-10 Years   N = 70 bank respondents

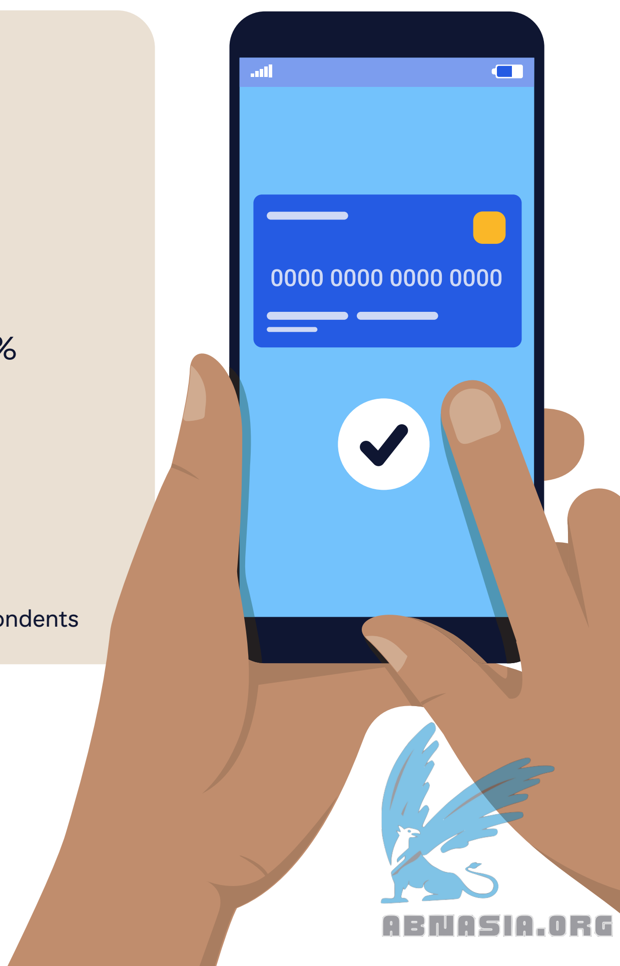
Source: Citi Treasury and Trade Solutions Survey 2024

FinTechs Expect to Gain Market Share from Incumbents in the Next 2-5 Years

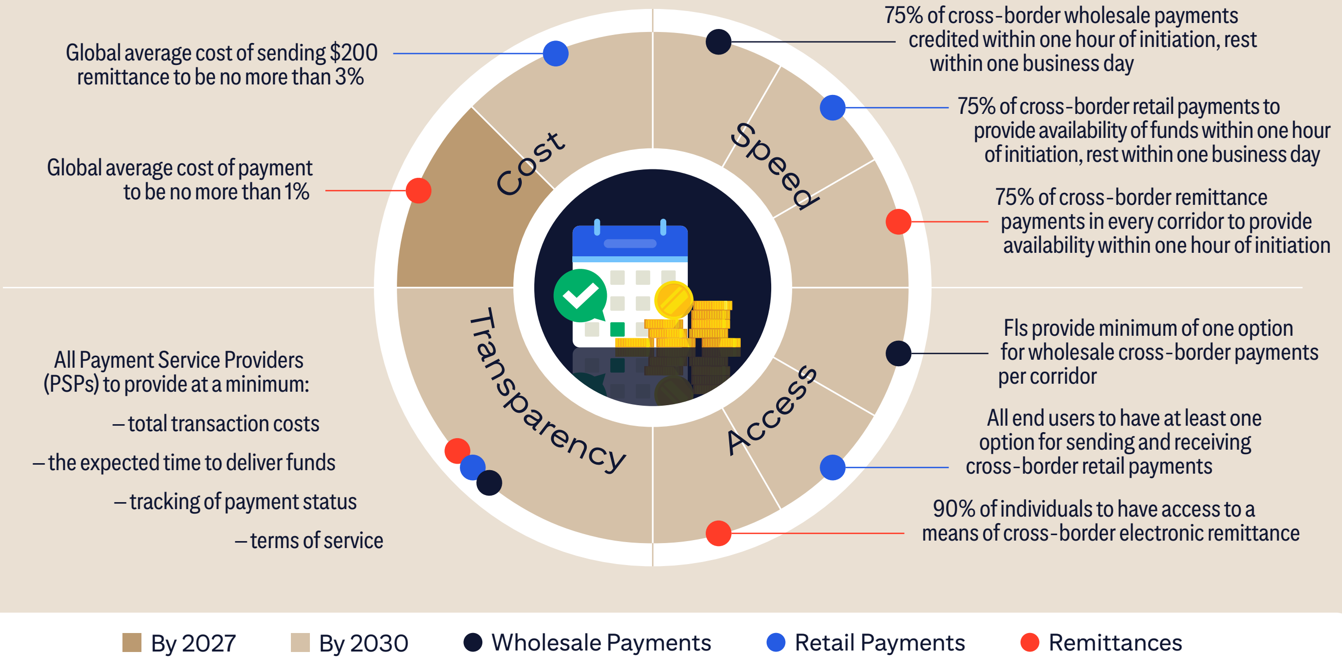
(% of responses)



Source: Citi Treasury and Trade Solutions Survey 2024   N = 24 FinTech respondents

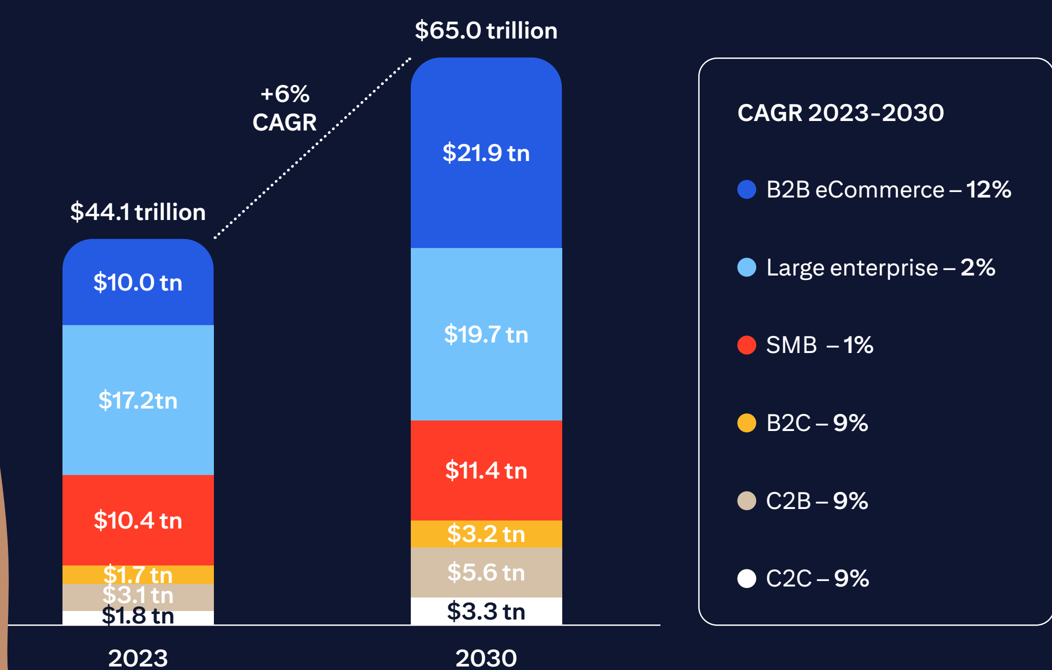


High Level Overview of the G20 Targets



Source: Lammer, T, T Rice (2022): The G20 cross-border payments programme: A global effort. Journal of Payments Strategy & Systems Vol. 16, No. 3 2022, pp. 1–12

Non-wholesale Cross-Border Payments Market Size to be $65 Trillion by 2030



Source: FXC Intelligence – Market Sizing dataset

Contents

Future of Cross-Border Payments

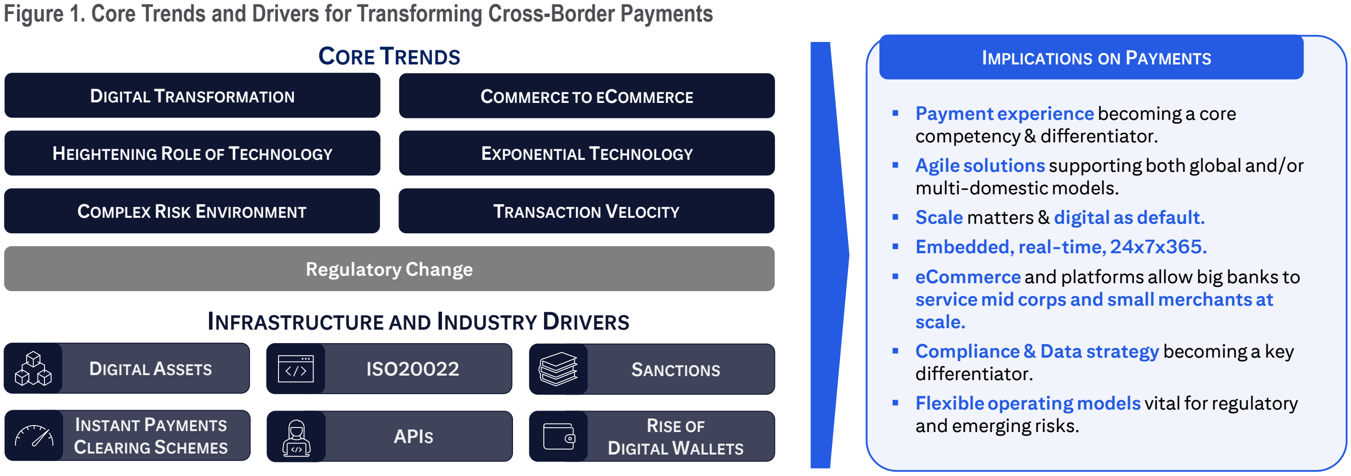
Cross-border payments are being reshaped. The drivers are heightened demand for a real-time seamless experience, rapid advancements in technology and an evolving regulatory and policy landscape.

Globalization continues, but is being driven by the flow of e-commerce, intangibles and other next generation factors, not the offshoring of manufacturing as in the 1990s-2000s.

> "The payments industry continues to evolve, led by the accelerated growth of cross-border payments and key trends like tokenization, artificial intelligence, correspondent banking, and embedded real-time payments helping to drive efficiencies at scale. In this new environment our clients and their consumers are expecting payments that are instant, 24x7, and can move across borders, whether the payments are big or small. Therefore it's imperative that financial institutions select the right global partner so they can deliver the best cross-border payments solutions to help future proof their payments business and gain market share as the industry transforms."
>
> – SHAHMIR KHALIQ, GLOBAL HEAD OF SERVICES, CITI

Businesses and consumers are pushing for faster, cost-effective, and more transparent cross-border payments.[1] FinTechs and new entrants are driving change, along with some of the more agile banks/financial institutions. Policymakers and industry bodies are also contributing to the transformation, while balancing innovation with security and compliance.

Figure 1. Core Trends and Drivers for Transforming Cross-Border Payments

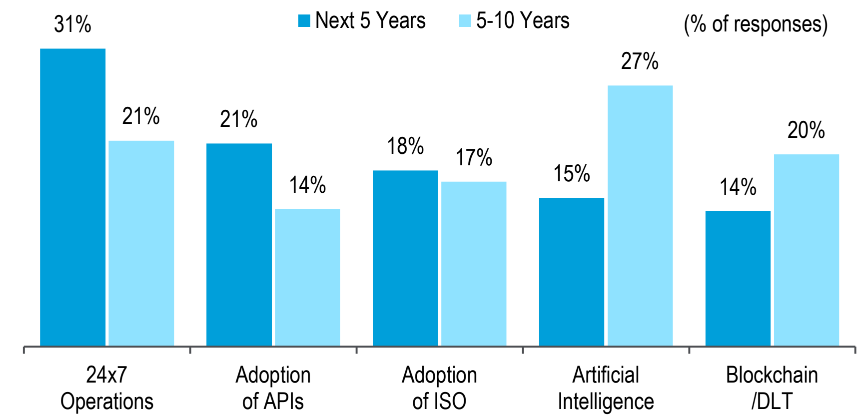


Source: Citi Treasury and Trade Solutions, Citi Global Insights

Delivering always-on operations (24x7) is a leading priority for banks, according to the Citi Treasury and Trade Solutions (TTS) 2024 survey where 31% of the surveyed bank executives globally listed 24x7 operations as their top priority for the next five years. Over the next 5-10 years, the top expected priority remains the deployment of Artificial Intelligence (AI), followed by Blockchain/DLT (Figure 2).

[1] Euro Banking Association, First Findings From EBA Survey on Cross-Border Payment Initiatives, 18 June 2024.

Figure 2. Technologies Important to Address Pain-Points in Cross-Border Payments



Note: N = 70 bank respondents
Source: Citi Treasury and Trade Solutions Survey 2024

Cross-Border Payments Market Size & Growth

Wholesale payments (mostly financial market/securities, but also B2B import-export) represent nearly 90% of cross-border volume[2] and roughly track GDP growth. Projected global trade growth from 2025-2028 will likely be held back by geopolitical uncertainty, with near-shoring and friend-shoring, offset by normalizing inflation and monetary policy.

Despite some of the gloomier big picture trends, hotspots for cross-border transaction growth remain. Business-to-business (B2B) ecommerce, which is the second largest segment, with estimated market size of nearly $10 trillion, is set to grow the fastest at 12% CAGR between 2023-2030, totaling a $22 trillion market size by 2030.[3] The growth reflects the proliferation of marketplaces and platforms, as businesses continue to digitize.

> "The fastest growth segments in cross-border payments are driven by global e-commerce, digital globalization, and remittances. Higher margins in these segments have attracted digitally native players, but banks and financial institutions can compete by offering differentiated services, smarter pricing, strategic partnerships and adopting newer technologies."
>
> – DEBOPAMA SEN, HEAD OF PAYMENTS, CITI

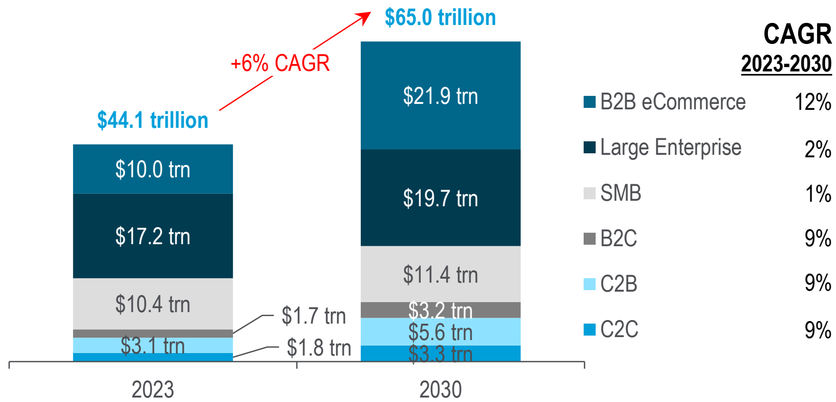
In the consumer segment, payments for travel, healthcare and education remain high-growth segments. Likewise, individual remittances and peer-to-peer payments are expected to be fast growing. Consumer segments – from business to consumer (B2C) to consumer-to-business (C2B) and customer-to-customer (C2C) – are expected to grow high single digits CAGR 2023-2030.

By contrast, corporate and B2B flows, excluding e-commerce, are expected to grow only marginally. Meanwhile, corporates are improving liquidity management by using technologies like DLT to reduce costs and risks across multi-currency

[2] McKinsey & Company, The 2023 McKinsey Global Payments Report, 18 September 2023.
[3] FXC Intelligence, Cross-Border Payments Market Sizing Data, 27 April 2023.

transactions.[4] The wholesale B2B payments segment continues to be dominated by major banks, using the established correspondent banking network.

Figure 3. Non-wholesale Cross-Border Payments Market Size to be $65 Trillion by 2030



Source: FXC Intelligence – Market Sizing dataset

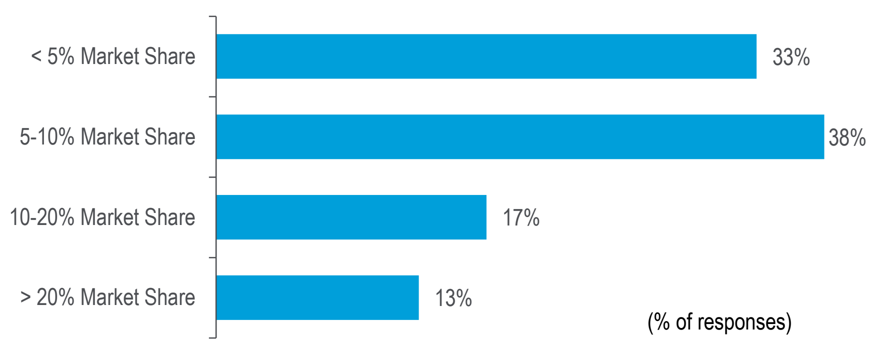
FinTechs expect to gain on average 10% market share from traditional financial institutions in next 2-5 years.

We have seen the emergence of FinTech disruptors in the high-margin C2B and C2C segments, where digitally native solutions have led to market share gains in growing revenue and profit pools. The ongoing mix shifts in underlying macro and sector trends – faster growth in cross-border consumer spending and C2C and C2B payments – tends to play to the strength of new entrants.

Citi TTS 2024 survey suggest that FinTechs expected to gain an average 10% market share from traditional financial institutions in the next 2-5 years (Figure 4).

Figure 4. FinTechs Expect to Gain Market Share from Incumbents in the Next 2-5 Years

Market Share Shifts in Cross-Border Payments



N = 24 FinTech respondents
Source: Citi Treasury and Trade Solutions Survey 2024

Citi TTS 2024 survey results echo findings from the 2023 survey (published in Citi GPS: Future of Cross-Border Payments: Who Will Be Moving $250 Trillion in the Next Five Years?) that highlights 89% of financial institutions expect to lose at least 5% of their share in cross-border payments to FinTechs and disruptors.

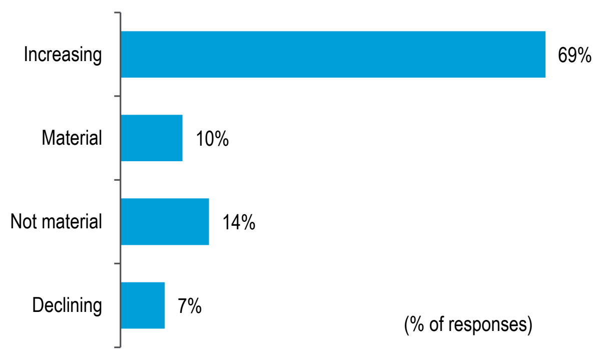
[4] FinTech News Switzerland, Global Cross-Border Payments to Surge by 53% by 2030, Fueled by Digital Innovations, 26 June 2024.

> New technology and consumer adoption of digital real-time services is accelerating, and the cross-border payments landscape is no exception, undergoing unprecedented changes at a revolutionary pace.
>
> The evolving customer demand for cross-border payments that offer speed, cost efficiency and transparency has surged, but many banks often face challenges with meeting customers' needs due to legacy infrastructure and budget constraints.
>
> However, Banks are increasingly viewing cross-border payments as the epicenter for servicing the wider customer relationship and are now placing greater importance on the pivotal decisions around their cross-border payments strategy, realizing these choices can have a lasting impact on their customers loyalty and ability to grow. In short, banks that do not adapt and invest in cross-border payments risk being left behind.
>
> As the world is becoming more fragmented the evolving landscape of cross border payments can be difficult to navigate and the quest for a strategic partner becomes not just important but essential.
>
> – EMANUELA SACCAROLA, HEAD OF CROSS-BORDER PAYMENTS, CITI

In addition to clients demanding better experience, we are seeing increased competition from emerging alternative infrastructures pushing legacy models to evolve. Banks are acutely aware of the disruptive forces reshaping the cross-border payments industry.

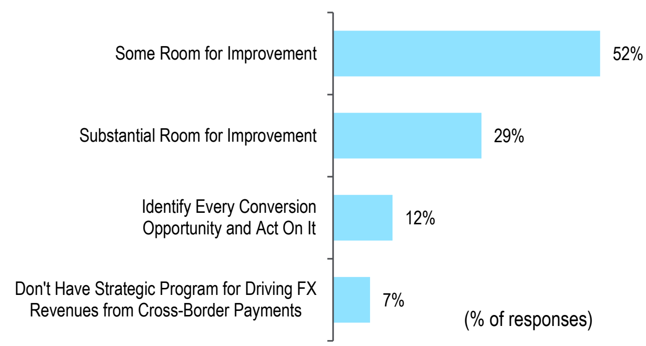
Over two-thirds of the surveyed banks cite increasing demand for alternative cross-border payment methods from clients (Figure 5). Further, nearly half of the banks in the Citi TTS 2024 survey see some room for improvements in extracting FX revenue from their cross-border payments proposition (Figure 6).

Figure 5. Banks Are Seeing Increasing Demand for Alternative Cross-Border Payment Methods from Clients



Note: N = 70 bank respondents
Source: Citi Treasury and Trade Solutions Survey 2024

Figure 6. Banks See Room for Improvement in Extracting FX Revenue from Cross-Border Payments Proposition



Note: N = 69 bank respondents
Source: Citi Treasury and Trade Solutions Survey 2024

What's Changed in the Last 12 Months?

Since the publication of our report on cross-border payments in September 2023 (Future of Cross-Border Payments: Who Will Be Moving $250 Trillion in the Next Five Years?), key changes include:[5]

- **Acceleration of Interconnectivity in Domestic Payments:** The industry is shifting towards multilateral connectivity to achieve scalability and efficiency – see the Bank for International Settlements' (BIS) Project Nexus.

  Advancements in last-mile delivery – from receiving correspondent bank to the beneficiary at another bank – are enhancing the speed of transactions. More than 70 markets are now operational on instant payment systems (as per BIS).

- **Continued Exploration Money and Payment Infrastructure:** Several banks are experimenting or piloting new market infrastructures based on tokenized deposits and Central Bank Digital Currencies (CBDCs) to enhance cross-border payment efficiency through real-time settlement mechanisms. Currently, 66 countries are in the advanced phase of exploration – development, pilot, or launch.[6]

  BIS's Project Agorà (**Page 37**) aims to explore how tokenization can enhance wholesale cross-border payments. The project, structured as a public-private collaboration, is set to begin the design phase and has more than 40 financial firms involved along with a group of central banks.[7]

- **Leveraging Artificial Intelligence (AI) and Data:** AI, and specifically Generative AI (GenAI), is increasingly being explored to streamline cross-border payments. However, access to comprehensive data is critical to achieve meaningful results. As transaction messaging shifts to structured ISO 20022 formats, institutions are also realizing tangible efficiencies in their compliance processes.

Ongoing industry realignment – streamlining correspondent networks, new partners, competing brands and improving market infrastructure.

- **Industry Realignment Continues:** Many banks are streamlining their correspondent banking relationships, opting to work with a reduced number of partners and concentrating their transaction flows to fewer corridors. Some banks are introducing their own brands to directly compete with emerging FinTechs in the consumer-to-consumer cross-border payments space.

- **Exploring Innovative Market Infrastructure:** Public and private sector players are considering new market infrastructures, often based on tokenized deposits and CBDCs to enhance cross-border payment efficiency through real-time settlement mechanisms.

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[5] We express our gratitude to Erin McCune, Partner, Bain for contributing insights to "What's Changed in the Last 12 Months?" section of this report.
[6] Based on Data from Atlantic Council Website, Last Accessed on 30 September 2024.
[7] BIS, Private Sector Partners Join Project Agorá, Updated on 16 September 2024.

Growth Outlook and Emerging Trends – Expert View

Erin McCune
Payments Partner
Bain & Company

Q: Where are the hotspots and risks in cross-border payments?

There are several hot spots where cross-border transaction growth is still robust. Intra-regional trade in Asia Pacific and the Middle East remains strong, buoying the growth outlook within those corridors.

B2B ecommerce is steadily increasing as businesses continue to digitize. Much of B2B ecommerce is dominated by platforms, many of which now facilitate payments, creating attractive new opportunities for banks and non-bank providers.

Digital services (as opposed to trade of goods/commodities) demonstrate strong growth, of which an increasing proportion is cross-border (as opposed to delivered locally through subsidiaries abroad and paid domestically). This in turn increases demand for localization and merchant of record capabilities.

By contrast, nearly 10% of bank SMB cross-border revenues are at risk (representing a disproportionate nearly 30% of profits). The risk is primarily driven by FinTech and software providers offering easier to use, more cost effective cross-border payment as well as revenue shifting to banks that partner with non-bank providers behind the scenes[8].

Q: How will aggregate cross-border volumes grow in the years ahead?

In aggregate, cross-border volumes will be modest in the years ahead and in some segments will even contract. Wholesale payments (mostly financial market/securities, but also B2B import/export) represent 90% of cross-border volume and roughly track GDP growth.

After a precipitous decline during the pandemic, both goods and services trade rebounded with services (dominated by travel and transportation but also financial services, consulting, construction) growing slightly more than goods.

More recently, however, both goods and services growth leveled off, or contracted in certain sectors/corridors, dampened by macroeconomic instability, inflation, and tightening monetary policy in the larger economies.

Global trade will grow modestly from 2025-28. Normalizing inflation and monetary policy tend to encourage growth. But ongoing geopolitical uncertainty, heightened conflict in specific regions, and shifting macroeconomic policies remain risks.

Projected import and export growth for middle- and lower-income countries remains higher than in advanced economies, but as these emerging economies achieve higher living standards, historically high trade growth will not return.

[8] Bain & Company, The Fragmentation of Wholesale Payments Call for Banks to Remake Their Approach, 28 January 2024.

How Can Banks Be Future Ready?

Banks are facing increasing competition. Citi TTS 2023 survey of over 100 financial firms found that over 40% of banks have already lost at least 5% of their cross-border payments flows to FinTechs. Looking ahead, 89% expect to lose a similar share in the next 5-10 years. How can banks remain competitive?

> "Transformation in cross-border payments is driven by customer expectations of a streamlined, transparent, 24x7 experience both domestically and across borders. To future-proof, banks must embrace innovation, taking a client-first approach and adopting new technologies which can help the entire payment chain, including more efficient back-end processes, intelligent use of data improving top and bottom line, and in the end – always-on availability with real-time delivery."
>
> – DAWID JANAS, HEAD OF CLEARING, CITI

- **Improve Front-End and Back-End Processes:** By embracing innovation, financial institutions can meet customers' changing expectations and improve efficiency. This realization is driving increased investment, particularly from incumbents. Initially, much of this investment has focused on the front end, such as online platforms and mobile apps, where FinTechs have excelled.

  However, it is no longer just about the front end. What happens behind the scenes – payment processing, screening, and reporting – has become equally important. Banks are now directing investments towards improving back-end systems to enhance straight-through processing, increase speed, provide transparency, and reduce costs.

- **Strive to Add Value:** Consumers demand better speed and transparency at competitive prices. 24x7 cross-border payments with instant settlement and full traceability can foster stickier customer relationships. As cross-border payment revenues grow, a robust FX strategy across corporate/retail banking is crucial.

  In addition to the FX fees, being a preferred financial institution for payments, can also help banks benefit from associated revenues from deposits, liquidity, and other ancillary streams. While technology can improve payments efficiency, banks must strike a balance between high-tech and customer-centric personalized approach to solve for individual needs.

- **Smarter Pricing:** Cross-border payments are inherently tied to FX opportunities. As many as 80% of banks see untapped potential in extracting FX revenues from cross-border flows, based on Citi TTS 2024 survey. The focus here is not on acquiring more market share, but rather optimizing revenue from current operations. Banks need innovative pricing strategies to compete more effectively.

  Banks could use client data by offering value added services (e.g., transaction insights, post transaction reporting, personalized for individual payment needs) and rethink their pricing models. Smart routing can also help minimize payment deductions by reducing the number of correspondent banks involved in the chain.

  Tools like SWIFT GPI allow banks to track when and where payments are converted into different currencies, providing valuable insights that were previously unavailable. Analyzing this payments data can allow banks to uncover new opportunities to boost FX revenues.

- **Regulation as an Opportunity:** Banks and financial institutions could find efficient ways to meet regulatory and compliance requirements by using technology. For example, sanctions compliance processes tend to be cited as a cause for delays. But some banks are managing them efficiently by using extensive data and fast validations, turning a challenge into an opportunity.

  Accurate data and efficient data structures can help banks focus on critical/ systemically important payments amidst high volume of routine transactions. The new payment standard (ISO 20022) is likely to assist, by enabling payments to embed more information and consequently increase speed/efficiency.

- **Strategic Partnerships:** In a correspondent banking model, banks are not directly connected to local/international clearing systems and rely on partners for access to these systems. This often involves managing multiple currencies and relationships, which can become complex and costly. To streamline operations, banks can partner with institutions offering multi-currency nostro accounts. This can help reduce the number of different relationships banks need to manage.

> "As cross-border payments evolve, both Banks and FinTechs are driving the future of finance. The way forward is partnering with both to deliver the seamless, real-time payment experiences that consumers and corporates now expect. Together, it will shape a dynamic and connected financial ecosystem for the future."
>
> – ASHISH BAJAJ, GLOBAL HEAD OF FINANCIAL INSTITUTIONS SALES, CITI

- **Tapping into Alternative Payment Methods (APMs):** 69% of respondents to Citi's TTS 2024 survey indicated client interest in alternative cross-border payment methods (such as wallets, card payments, and instant payments) is increasing. The demand for such aggregation services is expected to grow.

  To tap into these APMs, banks could work with aggregators of different payment methods to avoid the complexity of connecting with each method individually. Aggregators bundle payment solutions. Partners handle the due diligence for local payment methods, saving the bank time and effort.

- **Embracing the Digital Wallet Revolution:** There is a growing demand for alternative payment methods as highlighted by nearly 80% of bank respondents in Citi TTS 2024 survey (Figure 5) with digital wallets often seen at the forefront. By 2026, it is projected that over 60% of the global population will be using digital wallets.[9] This rapid adoption is fueled by several drivers:

  - **Simplicity:** Digital wallets often enable users to identify payees with just an email address or phone number, eliminating the need for complicated account numbers and simplifying the payments experience.

  - **Speed:** Digital wallet payments are often processed almost instantly, notably reducing the waiting periods associated with traditional banking wire transfers.

  - **Full Value Delivery:** Unlike many traditional payment systems that involve intermediary fees, digital wallets ensure full transaction amount is delivered to the beneficiary. This makes them more cost-efficient to conventional methods.

[9] Juniper Research, Digital Wallet Users to Exceed 5.2 Billion Globally by 2026, August 2022.

  - **Transparency and Trackability:** Digital wallet transfers enable greater transparency and trust among participants due to their near instant payment confirmations and zero intermediary fees.

- **Leverage New Tech:** Innovations such as tokenization/DLT and AI are expected to reshape the future of money and payments infrastructure. According to Citi's TTS 2024 survey, 68% of banks are already beginning to explore AI, recognizing its potential to revolutionize transaction banking.

  Many expect payment and clearing systems will transition to a 24x7 model within the next five years.

  Selecting partners capable of supporting USD movement during holidays and weekends, using technologies such as tokenization, could be a game-changer in positioning banks against competitors.

How Banks Meet Client Demands – Expert View

Bhavna Saraf
Head of Payment Products & Propositions
Santander UK

Q: What are clients demanding in cross-border payments space from banks?

Clients are primarily demanding faster, more cost-effective, and transparent cross-border payments. These expectations stem from advancements in technology, globalization, and a desire for frictionless financial transactions that allow them to focus on growing their own businesses.

Speed and efficiency are essential and nearly 90% of SWIFT transactions are delivered within an hour. Yet, transactions often get stuck in the last mile of execution and application of funds. This is an area where some improvements are needed.

Costs for cross-border payments remain expensive, despite efforts by challenger banks and FinTechs. Then, there is the question about transparency. Initiatives like SWIFT GPI enable customers to track their payments real-time, reducing reliance on customer support. Yet, correspondent banking relationships – necessary for many banks without a global footprint – often adds to the complexity, cost and issues around network access.

And these are not just limited to B2C, but very much top of agenda for B2B flows as well, as liquidity (which may get trapped in settlement cycles) plays a key role in managing working capital, especially for SMEs but also for banks to manage their reserves at the Central banks. Hence wholesale cross-border payments also play a vital role, with ongoing efforts to improve regulatory harmonization and streamline processes to enhance overall efficiency.

Q: How are banks responding to meet this demand?

I am going to take a leaf from the companies who have really excelled in this space, at least from a consumer perspective. When we think about frictionless cross-border payments, a couple of FinTechs come to mind. For banks, the real question is how we bring our personal experiences in this space to our business models.

Banks are responding by modernizing their infrastructure and embracing cloud-native, ISO compliant, API-enabled platforms and using AI and Machine Learning to reduce AML and KYC friction Alongside this, banks are enhancing their capability stack to include features like SWIFT GPI, pre-validation, access to instant payments schemes, and partnerships with Fintechs as necessary. Additionally, banks are rationalizing correspondent banking relationships to reduce costs and enhance service delivery.

The focus as always is on enhancing customer engagement, particularly for high-net-worth individuals and rising metropolitans by enabling international payments through mobile apps for real-time experiences. Banks are looking to provide value beyond basic cross-border payments by offering related services like currency conversion, VAT refunds, accountancy software integration, wallet top-ups, and even eSIM services ensuring customers get tailored. solutions and remain engaged within their ecosystem.

Q: Why are banks often slow to adapt to new changes compared to FinTechs?

In my view, the biggest hurdle banks face relates to their legacy systems. By contrast, FinTechs tend to be cloud native or have much leaner technology stacks, which helps them innovate and adapt at pace.

Most banks also serve wider customer segments from consumers to SMEs, businesses, merchants, and financial institutions – each having completely different demands/expectations. Offering a personalized experience across each segment can be challenging. Meanwhile, FinTechs tend to focus on mono product offerings leading with UX and pricing as competitive advantage and targeting specific customer segments.

Lastly, given their systemic importance in the economy, banks are often subject to extensive regulatory and governance requirements which may impact prioritization of initiatives. On the other hand, FinTechs often operate under more flexible rules, particularly in their early stages.

Q. How is the digital assets space impacting cross border payments? What are the implications of CBDCs and stablecoins for cross border payments and for banks?

What lies at the heart of this digital evolution is blockchain technology. The dawn of DLT brings in its wake, transparency, immutability, programmability, atomic settlement, which can drive down costs in current analogue money – solving the very issues that are associated with cross border payments. Some notable experimentation includes project Jura, project Dunbar, the RLN in UK and soon to be followed by Project Agorà.

Principally, all have proven that different forms of money (commercial bank money, central bank money and e-money) can co-exist in a shared ecosystem through novel innovative technology options, with the potential for making the money more efficient for all stakeholders, delivering better outcomes for customers and that there exists a technical, legal and commercial basis for programmable payments.

The one that I am most excited and hopeful about is new tech enabling ‘financial inclusion’ to truly ignite growth across business segments and global economies.

However, this will need consistent effort ensuring global interoperability, establishing standards, secure infrastructure, and most importantly public and private partnership.

Unlocking New Growth Opportunities – Expert View

Rajesh Mehta
Senior Advisor – Various Companies

Q: What are the key trends and growth drivers shaping the future of cross-border payments over the next 5-7 years?

Instant payments are now available in some form in about 70 countries. Interconnecting these rails across countries to create a more seamless and almost real time cross border mechanism will be a key trend of innovation and investment in my opinion.

There are several initiatives afoot in this space, including bilateral and multilateral agreements by Clearing Providers or Central Banks, whether using traditional or non-traditional settlement mechanisms such as CBDCs.

Separately, we expect to see the development of tokenized payment infrastructure in the cross-border space, which will enable atomic transmission of funds and settlement between different payment networks. This will truly redefine the cross-border payments landscape.

Finally, further Differentiation of individual propositions will be impacted by creative use of Data and AI to reduce friction in the payments process, improving client experience, in Compliance checking and fraud prevention, as well as in insights to improve sales.

On specific flows, Consumer to consumer (C2C) remittances, such as sending money to friends, family, or students abroad, remain a key driver. Additionally, consumer-to-business (C2B) payments, including e-commerce, travel, and healthcare, are also growing. Considerable upside remains in cross-border e-commerce.

By contrast, B2B payments have been historically bank-dominated and driven by macroeconomic factors. Since trade and capital market transactions have finite volumes, there is only limited room for natural growth in the B2B payment space. Nonetheless within B2B, we expect SME flows to fuel growth disproportionately in the next 5-7 years, as these are the new globalizers post geopolitical and supply change shifts.

Q: What are the growth opportunities for banks and payments companies?

In my view, we are likely to see more growth in low-value cross-border payments than in high-value transactions in the future. From a client segment view, growth will be driven by tokenization-led miniaturization of payments as the seamless nature of payments will result in more small-value, pay-as-you-go transactions.

This growth will benefit digitally native payment companies and large banks with global reach that typically handle trillions of dollars in payments daily. However, the increased speed and volumes are also likely to bring challenges of cybersecurity and resilience.

Tech-native commerce and payment companies, with their agility and innovative solutions, are well-positioned to capitalize on these emerging market trends and tap into new markets. However, agile incumbents may also offer stiff competition and retain market share due to their sheer size, customer loyalty and trust/security.

Q: How will blockchain/tokenization shape the future of cross-border payments?

In my view, tokenization will significantly help drive growth in cross-border payments by addressing key pain points such as cost, speed, and transparency. Globally multilateral agencies, central banks, and clearing houses are spearheading efforts to connect payment systems across countries. Resistance to blockchain and similar technologies has notably decreased in the past few years, creating a more conducive environment for innovation. While the existing payment infrastructure is not as fractured as it might seem, the pace of change in the industry needs to be match that of other digital technologies.

Drivers: Regulatory & Industry Standards

G20 Roadmap for Payment Innovation

G20 Roadmap for cross-border payments: faster, cheaper, more transparent and inclusive, while maintaining safety and security.

The G20 made enhancing cross-border payments a priority in 2020. Making cross-border payments, faster, cheaper, and more transparent and inclusive, while maintaining their safety and security, is intended to drive widespread benefits for citizens, businesses, and economies worldwide, supporting economic growth, international trade, global development, and financial inclusion.

The Financial Stability Board (FSB), in coordination with the Committee on Payments and Market Infrastructures (CPMI), other relevant international organizations and standard-setting bodies (SSBs), developed a Roadmap to address these challenges. The G20 Leaders endorsed the Roadmap at their November 2020 Summit.

The Roadmap sets out what 'good' looks like for cross-border payments. It consists of five focus areas and nineteen building blocks that represent the bodies of work to improve cross-border payments. We covered this in our 2023 Citi GPS: Future of Cross-Border Payments: Who Will Be Moving $250 Trillion in the Next Five Years?.

What Gets Measured, Gets Done

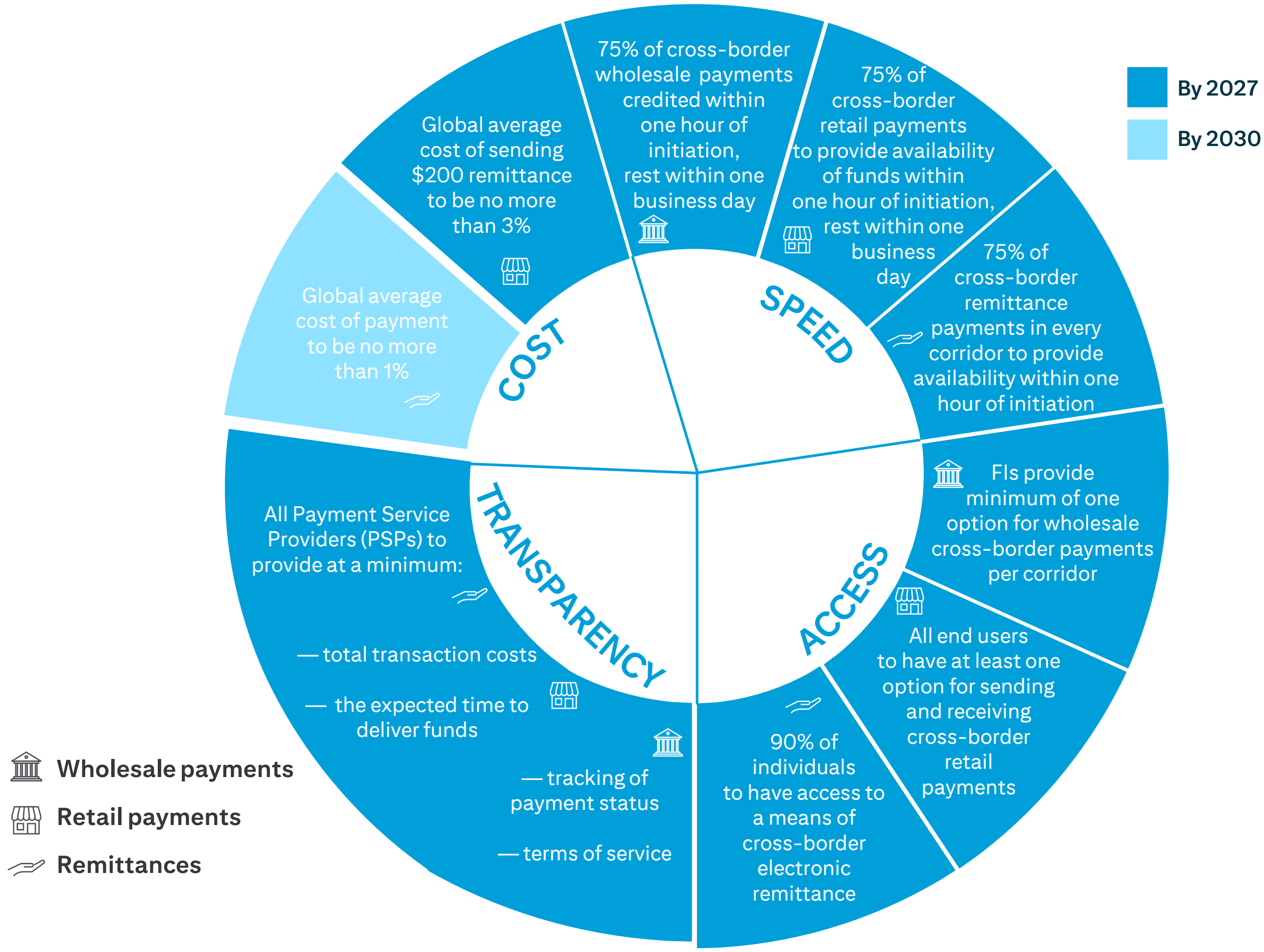
In addition to the Roadmap, the FSB developed a set of targets (endorsed by the G20) to be achieved that further define 'what good looks like' for cross-border payments (Figure 7).[10] To operationalize the targets, the FSB developed KPIs to monitor against delivery.

In an effort to transition from high level vision to implementation, the FSB together with the CPMI and partner bodies came up with three themes organized into fifteen actions for orientating the next phase of the Roadmap (Figure 8). The themes and actions reflect how the payments policy will unfold. We expect consultation papers, discussion papers, projects, and regulatory developments in the coming years.

We are now in the '*what gets measured gets done*' phase. For the first time we have data from the KPIs and we have a picture of where we stand, where progress has been made and where efforts need to ramp up. The results from the FSB and from the CPMI are documented in their respective monitoring reports,[11,12] and there have been various consultation papers that have been delivered on the back of the priority themes and actions. We cover the key takeaways below.

[10] Financial Stability Board, G20 Roadmap for Enhancing Cross-Border Payments, 09 October 2023.
[11] Financial Stability Board, Annual Progress Report on Meeting the Targets for Cross-Border Payments: 2023 Report on Key Performance Indicators, 09 October 2023.
[12] BIS, Committee on Payments and Market Infrastructures (CPMI) Brief No 5, Steady As We Go: Results of the 2023 CPMI Cross-Border Payments Monitoring Survey, June 2024.

Figure 7. High Level Overview of the G20 Targets[13]



Source: Lammer, T, T Rice (2022): The G20 cross-border payments programme: A global effort. Journal of Payments Strategy & Systems Vol. 16, No. 3 2022, pp. 1–12

Figure 8. Overview of the Priority Themes and Actions for Achieving the G20 Targets[14]

Payment System Interoperability and Extension	Legal, Regulatory and Supervisory Frameworks	Data Exchange and Message Standards
1. Central bank operators' community of practice	4. Bank/non-bank regulation and supervision	7. Interaction with data frameworks
2. FPS interlinking across borders	5. Information to end users	8. ISO 20022 harmonization requirements
3. Cross-border payment service level agreements /schemes	6. AML/CFT rules application	9. API harmonization
		10. Legal Entity Identifier (LEI) use

11. Payments Summit	12. Industry taskforces	13. Monitoring and progress reporting	14. Technical assistance	15. Public sector outreach

Source: FSB: Priority Actions for Achieving the G20 Targets (February 2023)

[13] Financial Stability Board, G20 Roadmap for Enhancing Cross-Border Payments, 09 October 2023.
[14] Financial Stability Board, G20 Roadmap for Enhancing Cross-Border Payments, 09 October 2023.

How Did We Measure Up?

User experiences differ substantially across regions. Lower income regions are furthest from cost and speed targets.

The KPIs measure outputs on cost, speed, access, and transparency across different market segments (wholesale, retail, and remittance). As per the findings of the FSB, [15] the key theme is that across all market segments, user experiences differ substantially across regions. Lower income regions are furthest from the cost and speed targets but to the extent this is the case can differ depending on whether the region is the sender or the beneficiary of payments.

Another key takeaway is on FX costs. For the remittance segment other fees tend to be higher than FX costs. In contrast, FX costs are the largest slice of total costs for the retail segments (but as per the report the extent to which this is true, differs across both regions and use cases).

On speed, for the wholesale segment, globally, 54% of payments go from the originating bank to being credited to end-customer's account within one hour and 93% within one day. Most of the time is spent between the beneficiary bank receiving the payment and the end-customer being credited.

Speed is perhaps a more realistic target to achieve for the wholesale segment as the big payment volumes are in well-established corridors denominated in USD. For the retail and the remittance sectors, the numbers are further away from the targets and more work needs to be done.

- Globally the proportion of retail services that make funds available to the receiver in one hour is 42% (quite a way off from the 75% target) and the proportion that do so in one day is 76% (again quite far from the 100% target) with significant differences between regions and use cases.
- Globally, the proportion of remittances that make funds available to the receiver in one hour is 53% (the target is 75%) and the proportion that do so in one business day is 77% (the target is 100%).

On access, most adults and SMEs have an account, but more efforts needed to ramp up transparency.

On the access to account targets, most adults, and micro small and medium sized enterprises (SMEs) globally have an account, and this is not a surprise when most of the central banks surveyed (81%) said that they must provide accounts by law to any customer requesting an account. What is more surprising is that all but one of the jurisdictions that were surveyed have laws in place on the transparency of payments (information on fees, speed, customer rights etc.) but only 56% provide this information. We anticipate implementation efforts to ramp up here.

Another priority action is the interlinking of fast payment systems across jurisdictions. Such interlinkages can potentially facilitate simpler and shorter transaction chains, as well as lower costs and fees. The idea of the interlinkages extends of course to the 24x7 instant payments systems and, if executed at scale, represents a possible enabler for achieving 24x7 instant cross-border payments.

As per the FSB, cross-border payments processed via interlinked fast payment systems are processed within seconds – at most minutes – and thus easily meeting the G20 target on speed. Looking forward we anticipate further interlinking in the short-medium term. Over 40% of the fast payment systems surveyed plan to establish interlinking within two years.

[15] Financial Stability Board, Annual Progress Report on Meeting the Targets for Cross-Border Payments: 2023 Report on Key Performance Indicators, 09 October 2023.

We continue to see global efforts to implement the ISO 20022 messaging standard – another key priority action. Global migration to ISO 20022 could help streamline message flows, harmonize market practices, and help market participants agree on minimum required data models to enhance global interoperability and seamless processing of cross-border payments end-to-end. ISO20022 serves as the key innovation foundation layer that financial institutions will leverage for other things like AML checks, sanctions checks, data, and predictive analytics; so, it is so much more than a compliance requirement.

Finally, there are two policy papers (consultations) that closed in September 2024. They form part of the future policy landscape and correspond with two G20 priority themes in Figure 8: **[1]** cross-border data exchange and message standards; and **[2]** the legal regulatory and supervisory framework. Alla Gancz EY highlight the key points from these papers below and share their perspectives further below.

Data framework for cross-border payments consultation paper.[16] The report offers several nuanced insights:

- **Regulatory Fragmentation:** Harmonizing regulatory frameworks is crucial for smoother cross-border transactions, reducing compliance burdens, and enhancing operational efficiency.
- **Balancing Compliance Obligations:** Balancing AML/CFT obligations with data privacy regulations is complex and requires frameworks that ensure compliance without hindering innovation.
- **Innovation as a Double-Edged Sword:** Technological advancements improve efficiency and customer experience but also introduce new risks and compliance challenges, necessitating proactive risk management.
- **Collaborative Governance Models:** Establishing a Forum for diverse stakeholders can lead to effective solutions and best practices, fostering a more integrated global payment ecosystem.

Overall, as per EY, the report provides a comprehensive examination of the challenges and opportunities in cross-border payments, reinforcing the importance of strategic collaboration and innovation in navigating this evolving landscape.

The supervision of bank and nonbank providers of cross-border payments services consultation paper.[17] High-level insights from the report:

- **Alignment of Regulatory Frameworks:** Emphasizes the need for consistent regulatory and supervisory frameworks for banks and non-banks in cross-border payments to address ML and TF risk management inconsistencies.
- **Focus on Risk Management:** Highlights the importance of managing operational risks, including fraud and cyber threats, alongside ML and TF compliance, to improve regulatory quality and consistency.

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[16] Financial Stability Board (FSB), Recommendations to Promote Alignment and Interoperability Across Data Frameworks Related to Cross-border Payments, 16 July 2024.
[17] Financial Stability Board (FSB), Recommendations for Regulating and Supervising Bank and Non-bank Payment Service Providers Offering Cross-border Payment Services, 16 July 2024.

- **Consumer Access and Transparency:** Stresses the need for transparency in service terms, conditions, and pricing to enhance consumer access and foster an inclusive financial environment.

- **Need for International Standards:** Points out the lack of comprehensive international standards for non-bank PSPs in cross-border payments, questioning the need for such standards to ensure consistent and effective regulation.

It Will Take All of Us

Solving for cross-border payments cannot be done in isolation. Public and private sector as well as countries beyond the G20 need to come together.

What these action plans, progress reports, and consultation papers point to is that solving for cross-border payments is not something the industry can fix in isolation. It will take all of us (public sector, private sector, and countries beyond the G20) to drive forward the delivery of the Roadmap. We saw various encouraging developments over the last year.

- Two new taskforces have been established for public-private stakeholder engagement to achieve the G20 targets, namely the taskforce on legal, regulatory, and supervisory matters (LRS) under the auspices of the FSB, and the task force on payments interoperability and extension (PIE) under the auspices of the CPMI. The LRS taskforce will analyze how differences in legal, regulatory, and supervisory frameworks on cross-border payments create frictions and what can be done to address these. The PIE taskforce covers the implementation of ISO 20022, improving access to payment systems, extension of operating hours and interlinking payment systems across borders.

- Recognizing that the G20 targets are global in nature and will require global participation to be delivered it was encouraging to see the new community of practice established by the CPMI for central banks (over 40 central banks from around the world are included) in their role as payment system operators and the various regional fora set up by the FSB and the CPMI bringing together jurisdictions within the same region to share experiences and to develop common approaches.

- CPMI's ISO 2022 harmonized data requirements[18] developed in collaboration with the payments industry, a key G20 priority, has been delivered. The harmonization requirements should take effect in 2027. However, as they are not rules, it is down to individual entities to implement them. If they have limited uptake, frictions in the processing of cross-border payments will continue to exist.

- To address this challenge and on the back of CPMI's data requirements, the BIS Innovation Hub in London together with the Bank of England (BoE) launched Project Keystone in August 2024. This project will develop a standardized data analytics platform focused on ISO 20022 data. It will address the complexities of handling the IS0 20022 data structure, the associated data storage requirements and provide analysis on the data.

[18] BIS, Committee on Payments and Market Infrastructure (CPMI), Report to the G20 – Harmonized ISO 20022 Data Requirements for Enhancing Cross-Border Payments, October 2023.

What's Next? Key Ingredients for Future Regulatory Framework?

Easier cross-border payments could have wide implications – increased capital outflows, reduced domestic savings, and diversion of foreign capital.

Imagine we have delivered on the Roadmap, imagine we have solved for cross boarder payments – they are easier, cheaper, more transparent etc. Where could the policy discussion go next?

We think it will focus on the macro-economic implications. Easier cross-border payments could drive greater cross-border capital allocations and increase their size and volatility. The trajectory of cross-border payments is set to go in the upward direction across all segments as discussed on **Page 8**.

As per the Bank of England in their approach to innovation in money and payments discussion paper,[19] this could have wide ranging implications such as increased capital outflows, reducing domestic savings or diverting foreign capital that could have been invested domestically or some economic activity taking place in other currencies rather than the domestic currency if this enables more frictionless cross-border transactions. We anticipate these implications will be incorporated in global policy discussions in the future.

Our expert contributors from EY set out their views on the future regulatory framework. It hinges on a regulatory environment that is clear, equitable, and adaptable. To achieve this, EY propose a three-pronged approach:[20]

- **Establishment of a Unified Framework:** The Financial Stability Board (FSB) should develop standardized definitions that capture the full spectrum of monetary forms, including Central Bank Digital Currencies (CBDCs) and cryptocurrencies. This will ensure a comprehensive regulatory approach that accommodates the diversity of payment mechanisms and digital money.
- **Equitable Regulation for All Participants:** Regulations should be activity-based, ensuring that the same risks are governed by the same rules, regardless of the entity type. This principle promotes fair competition and integrity, essential for both traditional banks and non-bank payment service providers (PSPs) operating in the global payment ecosystem.
- **Responsive Regulatory Recommendations:** As the payment sector evolves, regulations must be flexible and inclusive to support the diverse range of PSPs. The FSB's recommendations should be dynamic, promoting innovation and competition while safeguarding consumer protection and financial integrity.

[19] Bank of England, The Bank of England's Approach to Innovation in Money and Payments: Discussion Paper, 2024.

[20] We express our gratitude to Alla Gancz, Partner, Ernst and Young for contributing insights to "G20 Roadmap for Payment Innovation" section of this report.

Navigating G20 Roadmap & ISO 20022 – Expert View

Alla Gancz
Partner
Ernst and Young

Q: Can you share an update on the G20 cross-border payments roadmap? What are the three big problem areas?

The G20 Cross-Border Payments Roadmap aims to make payments faster, cheaper, and more transparent by 2027. Key priorities include achieving 75% of payments credited within one-hour, regulatory standardization (AML, CFT), and widespread adoption of ISO 20022.[21]

Challenges include reducing the global cost of payments to 1% (with no corridor over 3%) and lowering remittance fees to under 3% for $200 transfers by 2030. Transparency is targeted through clear disclosure of costs, tracking, and delivery times. These initiatives address historical high costs, slow processing, and lack of transparency; thus, promoting better money flows and global economic growth.[22]

Q: Can you share any insights from the two FSB consultation papers on cross-border payments released in July 2024?

The first report on data framework stresses the need for harmonized regulatory frameworks to reduce compliance burdens and improve efficiency. It highlights balancing AML/CFT with data privacy regulations, managing risks from innovation, and fostering collaborative governance.

The second report on supervision, emphasizes aligning regulatory frameworks for banks and non-banks, addressing money laundering (ML)/terrorist financing (TF) risk inconsistencies, and managing operational risks like fraud and cyber threats. It calls for greater transparency, consumer access, and international standards for non-bank payment service providers, to ensure a secure and inclusive ecosystem.

Q: Where are banks in the run up to migrate their payment systems to the new ISO 20022 messaging standard? What still needs to be done?

SWIFT's migration to the ISO 20022 standard began in March 2023, with over 1 million daily messages exchanged via SWIFT's FINplus platform by August 2024. However, just 26.2% of SWIFT's payment instruction traffic have shifted to ISO 20022 presently, up from 15% a year earlier.[23,24]

Significant organizational efforts are needed before the November 2025 deadline, when full benefits of the transition will be realized. Banks are preparing for the transition to ISO 20022 by upgrading messaging interfaces to handle MX messages and translating between MT and MX standards during the coexistence period.

Banks must focus to increase adoption, pre-validate data to reduce errors; and ensure compatibility across APIs, electronic banking interfaces, and mobile apps. Investments in infrastructure are vital to support MX messages and avoid data truncation. Banks must ensure client readiness by providing detailed payment data.

[21] PYMNTS, G20 Lays Out Cross-Border Payments Roadmap, 29 February 2024.
[22] Financial Stability Board, G20 Roadmap for Enhancing Cross-Border Payments, 09 October 2023.
[23] SWIFT, Highlights on CBPR+, 01 August 2024 – 31 August 2024.
[24] Finextra, ISO 20022: Only 15% of Messages Have Migrated, 22 September 2023.

ISO 20022: New Language of Payments

Payment systems use different messaging standards across markets – this represents one of the biggest hurdles in cross-border transactions.

Currently, cross-border payment systems use different messaging standards across different markets. While this does not hinder domestic payments, the fragmentation represents one of the major frictions in cross-border payments, making it difficult for different participants to communicate with one another in a common language.

The SWIFT Message Type (SWIFT MT) standard drives interoperability across different standards for cross-border payments. However, translations between the SWIFT MT and domestic proprietary standards sometimes lead to data truncation and fragmentation issues, delaying the processing of cross-border payments and driving up costs. The prevalence of unstructured data in the SWIFT MT standard further undermines automated straight-through processing (STP), making cross-border payments slower and costly.

To address these challenges and create a common language for global payments, ISO 20022 was adopted. ISO 20022 is a global and open financial messaging standard for financial institutions, set by the International Organization for Standardization (ISO), an independent, non-governmental standard-setting body.

ISO 20022 will reduce fragmented standards for cross-border payments. It provides rich and structured data with each transaction, enabling enhanced analytics, which is likely to benefit all market participants. The enriched data sets will also promote end-to-end automation through the transaction life cycle and increase machine-readability – enabling faster processing, greater openness, visibility, and interoperability across different regions and financial market infrastructures (FMIs).

How to Leverage ISO 20022 for a Competitive Edge?

Early adopters can develop innovative products, positioning them better in the markets vis-à-vis those implementing it as a mandatory requirement.

While migration to ISO 20022 presents significant challenges and cost, ISO 20022 is seen as the language of payments, providing real opportunities to both accelerate and elevate current processes.

In our view, some corporates are likely to take a strategic approach by implementing the latest ISO 20022 messaging version in line with the SWIFT industry migration. This alignment offers the potential for a future-proof design. In contrast, many slower incumbents may adopt a slower and reactive approach, driven by other technology or regulatory driven priorities.

The differing pace of adoption can create competitive advantages dependent on the strategic implementation by corporates. Institutions that view ISO 20022 as more than a compliance requirement are likely to better leverage the rich data capabilities using deep analytics to enhance customer experiences, improve operational efficiencies and boost revenues.

Alternatively, early adopters who align ISO 20022 with their strategic objectives can develop new innovative products, positioning them better in the markets compared to those who implement ISO 20022 as a mandatory compliance requirement.

Where Are We on ISO 20022 Adoption?

In March 2023, SWIFT commenced the migration of its systems onto the new ISO 20022 standard. In the initial phase, SWIFT has established a co-existence period, where both MT and ISO 20022 messages will be supported. This enables financial institutions to migrate to the new standard at their own pace.

The end date for the co-existence period is set as November 2025. After this, SWIFT is scheduled to decommission its existing MT message standard, making

ISO 20022 the only acceptable standard for cross-border payment instructions, and reporting messages between financial institutions.

Although market infrastructures are implementing ISO 20022 at an impressive rate, actual use by banks and clients' lags. Presently, just 26.2% of SWIFT's payment instruction traffic have shifted to ISO 20022 messages (15% a year ago).[25,26]

Limited, incomplete, or inconsistent implementation by banks and other participants in the cross-border value chain and fragmented data flow will not enable to achieve full potential of standardized data embedded into payments.

What are the Forces Fueling the Change?

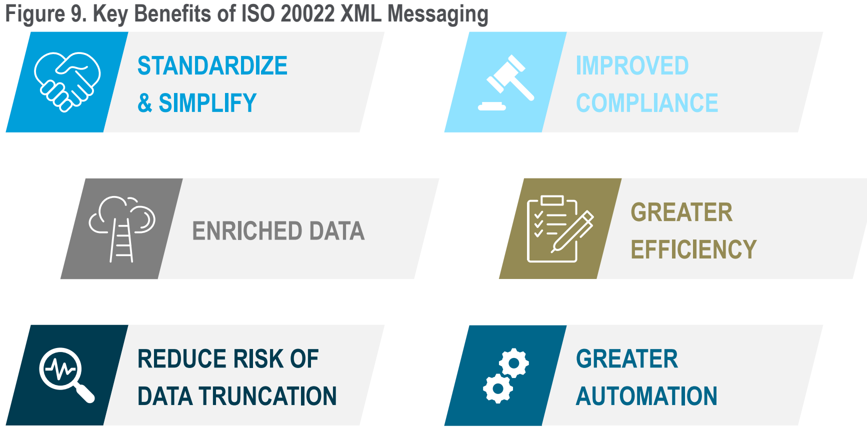
ISO 20022 migration can streamline message flows, harmonize market practices, and help participants agree on minimum required data models.

Globalization has underscored the need for increased interoperability, beyond what is possible under current standards. Client demands increasingly require digital straight-through processing (STP) and reconciliation, which is difficult using current fragmented standards.

Global migration to ISO 20022 messaging standard could help streamline message flows, harmonize market practices, and help market participants agree on minimum required data models. In turn, this could improve operational resilience and back-office efficiencies by eliminating the need for translations between various formats.

Migration to ISO 20022 offers several benefits to all market participants as summarized in Figure 9.

Figure 9. Key Benefits of ISO 20022 XML Messaging



Source: Zanders

Use Case-1: Connect Domestic and Cross-Border Payments

ISO 20022 adoption in domestic payments can create a unified financial messaging standard, enabling seamless communication across the ecosystem.

While ISO 20022 is aimed at cross-border payments, we are seeing an increasing number of domestic payment systems also adopt ISO 20022. This could play a vital role in connecting domestic and cross-border payments, creating a unified financial messaging standard that facilitates seamless communication across payment systems. A common standard is also crucial for driving digital transformation, enabling greater automation, and allowing for more accurate data transmission.

Availability of more structured data can further help improve and accelerate the identification of customer trends, which can present opportunities for the banking

[25] SWIFT, Highlights on CBPR+, 01 August 2024 – 31 August 2024.
[26] Finextra Research, ISO 20022: Only 15% of Messages Have Migrated, 22 September 2023.

community to deliver new and relevant value-add solutions in addition to providing enhanced customer analytics reporting.

Use Case-2: Accelerate Automated Reconciliation Processes

Inclusion of rich structured data within the payment message can facilitate timely/automated reconciliation.

Corporates face challenges in the timely automation of reconciliation processes due to friction, including data truncation, lack of structured data or simply insufficient information. Current processes are often manual, time-consuming, and costly.

A key benefits of ISO 20022 messages is the inclusion of rich structured data supported within the payment message itself. The camt.053 message, for example, is an end-of-day bank statement capturing almost 1,600 fields of information. Similarly, camt.052 intraday statements offer the possibility of intraday reporting – an attractive opportunity for a more automated and accelerated bank statement reconciliation process. ISO20022 XML migration allows the support of up to 9,000 characters within the structured payment remittance information block.

This means key information such as invoice number, amount, and date can be provided by the originating customer, which will be carried through the payment chain to the beneficiary. Thus, facilitating more timely and automated bank statement reconciliation process.

Use Case-3: Enable AML and Sanctions Compliance

Focusing on standardization and data quality can help improve regulatory screening/compliance.

One of the CPMIs (Committee on Payments and Market Infrastructures) main goal is to improve global cross-border payments by focusing on standardization and data quality for a more efficient end-to-end process. This includes meeting anti-financial crime measures such as sanctions, anti-money laundering (AML), counter-terrorism financing (CTF) and more.

As regulators demand increasing transparency, compliance, and security; the need for better quality structured data in payments is important for all stakeholders. ISO 20022 messaging with its rich, structured data elements can offer key information related to beneficiary parties, invoices, address etc., which can be crucial for screening checks.

Use Case-4: Standardize and Simplify Cash Management

Corporate cash management faces friction in the multi-banking space today, owing to complexities and inefficiencies in processes, which often require corporates to support different proprietary bank formats.

The adoption of ISO 20022 promises to help simplify and standardize the multi-banking environment with the added benefit of providing a more portable messaging structure. The new standard can help enhance accuracy of cash flow forecasting and improve working capital through richer and structured data that allows forecasting future inbound and outbound payment flows.

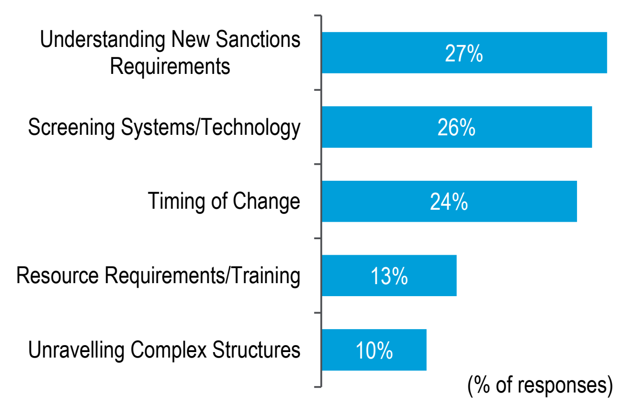
Sanctions: Balancing Compliance & Payment Efficiency

As discussed, the G20 has endorsed the creation of a faster, more affordable, and more efficient international payments system. Sanctions screening reduces risk to the financial system and to clients but can be a key area of friction in the payments ecosystem.

Globally, policymakers continue to increase the use of sanctions to address foreign policy initiatives. As a result, sanctions compliance processes can cause delays and increase costs in cross border payments. Citi TTS 2024 survey respondents find understanding new sanctions requirements and sanctions screening as a major challenge in cross-border payment processing (**Figure 9**).

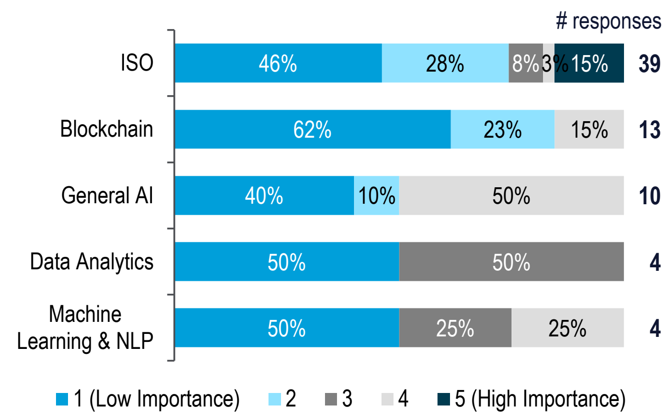
The payments industry is faced with dual priorities. It must comply with applicable sanctions regulations, while striving to deliver a faster, cheaper, more efficient payment experience for clients. The expectation as per Citi TTS 2024 survey is that technology can aid in reducing unproductive volume resulting from sanctions screening processes and reduce certain frictions (**Figure 10**).

Figure 10. Sanctions Understanding & Screening – A Major Challenge



Note: N = 70 bank respondents
Source: Citi Treasury and Trade Solutions Survey 2024

Figure 11. Banks Expect Technology to Aid Sanction Implementation



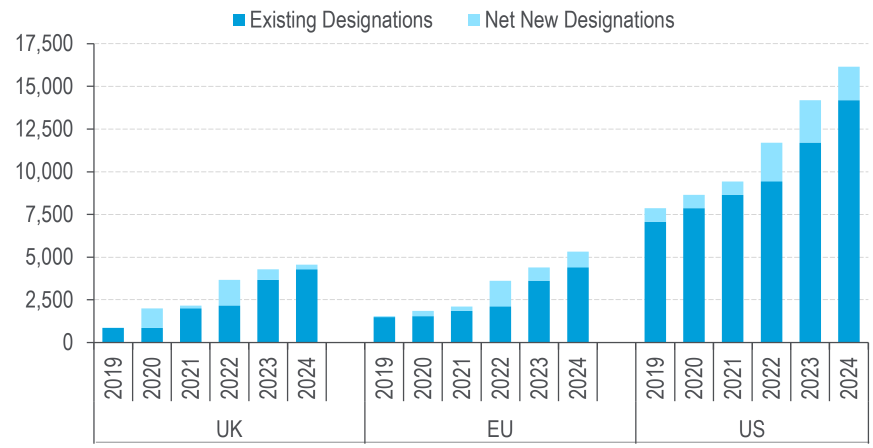
Note: N = 70 bank respondents
Source: Citi Treasury and Trade Solutions Survey 2024

In the section that follows we set out our recommendations for how firms can support these dual priorities, including the establishment of a framework for standardized screening protocols, and explore the role that emerging technologies can play.

How Do Sanctions Impact Cross-Border Payments?

- **Surge in Designations:** Geopolitical tensions have led to a rise in new sanctions designations. In 2023, the US, EU, and UK together added almost three-fold more targets (i.e., 3,898) to their sanctions lists than they did in 2021 (i.e., 1,182). As of October 2024, the UK designated over 100% more targets than the number of 2021 designations, and the EU designated over 150% as many targets as of April 2024 as it had in 2021. Across the three jurisdictions as of October 2024, the number of designations had increased over 90% since 2021.

Figure 12. Sanctions Designations Across Key Markets



Note: Latest data as of October 2024.
Source: Center for a New American Security (CNAS), European Commission, UK Sanctions List (GOV.UK), US Department of the Treasury's Office of Foreign Assets Control, Citi Global Insights

- **False Matches and Low Value:** Sanctions screening involves fuzzy logic[27] and is subject to periodic internal and regulatory examinations. The enhanced detection is necessary to achieve compliance but can also lead to a higher number of potential and false matches and thus, a relatively low true match rate.

  An industry study estimates that the industry's effective true match rate is below 0.3%[28]. While sanctions compliance is risk based, it is subject to a strict liability standard, with significant penalties associated irrespective of the value of transactions, without a de minimis threshold. Thus, risk-based methodologies over low value payments can be applied but should carefully consider the risk characteristics of the specific flows and the potential impact of non-compliance.

How to Balance Foreign Policy Goals and Payment Efficiency?

Below, we make a few recommendations to improve cross-border payment speed, efficiency, and inclusion without compromising on sanctions compliance and maintaining the overall integrity of the payments industry ecosystem.

- **Harmonize Data and Standards**: Differing standards on data in payments messages and uneven participation by all members of a payments chain increases inefficiencies without strengthening controls.

  Accelerated adoption of ISO20022 messaging standard and the inclusion of Legal Entity Identifiers (LEIs) within those standards, would enable financial institutions to detect and investigate potential sanctions concern more efficiently and effectively, process payments faster, and identify companies more reliably, at a lower cost. The industry would benefit from guidance on how financial institutions may rely on LEIs for sanctions purposes and greater clarity on data privacy laws.

- **Deploy Emerging Technologies**: Financial institutions and many payment infrastructure and screening companies are experimenting with the use of new

[27] "Fuzzy logic" enables name variations beyond the exact match to widen detection of possible sanctions targets.
[28] Global Screening Services (GSS), Re-inventing Sanctions Screening to Address Friction in the Global Financial System, August 2023.

technology, AI and tokenization infrastructure to automate aspects of fraud, AML/CTF, and sanctions control processes.

Examples include the use of emergency technologies to auto-disposition a step in the sanctions review process or to evaluate a transaction prior to screening and determine the level of screening appropriate for that transaction based on its risk profile. The industry would benefit from clear supervisory permission for the use of innovative and emerging technologies.

- **Align Sanctions Screening to Risk**: In 2022, the US issued Sanctions Compliance Guidance for Instant Payments Systems reaffirming that financial institutions can apply a risk-based approach to managing sanctions risks[29]. The industry should seek to develop harmonized best practices for managing sanctions risk in a thoughtful risk management manner for defined categories of payments of lower risk.

  For example, low value retail transactions for certain activities within e-commerce, healthcare, food delivery, and transportation, and payments from certain businesses/consumers that are remittances for subsistence needs could be considered lower sanctions risk. Establishing a unified framework of standardized screening protocols across the industry will help streamline payments while ensuring sanctions remain effective.

[29] https://ofac.treasury.gov/recent-actions/20220930_33

Enablers: Infrastructure Rails & Technology

The trends in real-time payments, real-time cash management and real-time liquidity management are driven by client and market demands influenced by technology led transformations, regulatory changes, and where the broader industry is moving.

These trends collectively contribute to a growing demand for modern, experience-centric, and expedited financial products, spanning areas such as payments, credit, and advisory services. Banks and financial institutions that enable newer technology and infrastructure rails to meet these expectations will be better positioned to meet the evolving needs of their clients.

Real-Time Liquidity for Instant Cross-Border Payments

While implementing real-time cross-border payments especially 24x7, it becomes imperative for banks and financial institutions to adopt real-time liquidity management solutions and to invest in advanced data management techniques.

An always on (24x7) payments necessitates 24x7 liquidity, which could create balance sheet and liquidity risk for banks and financial institutions as they need to anticipate payment needs which could be irregular/one-off. Keeping too much liquidity would be inefficient and has an associated opportunity cost. Whereas, not enabling real-time liquidity infrastructure could pose regulatory and reputational risk for banks leading to potential loss of the customer relationship.

However, the more relevant opportunity for banks in the cross-border ecosystem is that by enabling real-time liquidity to draw and settle payments, banks could establish more stickier relationships with their clients and clients' clients.

Enabling real-time and always on payments is hardly an availability of funds issue but more of having access to those funds at a given time in given market. Banks and financial institutions must invest and adopt financial market infrastructure that enables payment settlement 24x7.

Why Do We Need Real-Time Liquidity Management?

Liquidity management is fundamentally the practice of ensuring adequate sources of funding, such as cash and credit lines, are accessible at the appropriate locations and times, enabling seamless transaction processing and minimizing risk of failure. Effective liquidity management also helps mitigates the opportunity costs associated with excessive liquidity, thereby optimizing financial efficiency for liquidity providers.

In a pre-24x7 real-time payments environment, liquidity management tended to be more passive – ensuring liquidity availability prior to payment cut-offs was generally sufficient to facilitate transaction processing without significant risks.

However, emergence of 24x7 real-time payments made this approach inadequate, posing risk for payment failures due to insufficient liquidity at critical moments and sub-optimal cost management stemming from excessive liquidity.

Consequently, banks/corporates dedicated to managing their payment processes efficiently are increasingly focusing on enhancing liquidity management practices. They are actively seeking innovative solutions to modernize their approaches in alignment with the evolving demands of an always-on, 24x7 financial ecosystem.

How Can Real-Time Liquidity Management Add Value?

Real-time liquidity management is evolving in response to the growing demand from forward-thinking institutions committed to implementing best practices. Solutions such as real-time funding, in conjunction with liquidity sharing, facilitate a comprehensive continuum from real-time liquidity to real-time payments.

Specifically, real-time funding allows an institution to seamlessly deploy liquidity across various accounts and entities by continuously monitoring liquidity availability and addressing any shortfalls instantaneously from designated central funding sources identified by treasury management. Meanwhile, liquidity sharing enables institutions to allocate specified amounts of liquidity shared among participating internal legal entities or bank accounts, thereby optimizing the aggregate liquidity required for operational needs.

Consequently, these solutions and practices enable high degrees of automation creating financial efficiencies and reducing risk. An added advantage of such practices is minimization of administrative overheads and the need for liquidity managers to extended working hours to support 24x7 instant transactions.

For global corporations, it helps further enhance the value proposition of “In House Banks” by centralizing and deploying global liquidity more efficiently, thereby minimizing the total working capital deployed. For banks, it helps minimize the use of credit lines by optimizing and prioritizing the use of available cash.

Banks can enhance payment services for customers by implementing real-time liquidity solutions. For example, consider a bank with multiple branches clearing US dollar transactions round the clock to accommodate customer payments. By deploying real-time liquidity services, the bank can ensure sufficient funding and minimize payment failure risks, all while reducing overall liquidity buffers to support payment activities and the associated human capital requirement.

What are the Enablers of Real-Time Liquidity?

- **Enhanced Data Management:** The importance of real-time data management cannot be emphasized enough to enable real-time cash management. Real-time data management is essential to complete the all-important trifecta together with real-time payments and liquidity management if an institution aims to provide the real-time experience to its constituents.

  Having current information of the financial resources available is essential to facilitating payments in real time. For instance, an institution needs to know what their available cash inventory is before they can take the decision on processing payments or replenishing their cash inventory.

  More timely data can also help provide better data samples and thereby improve accuracy of predictive models such as cash forecasting – an essential practice for any treasury. Similarly, an e-Commerce retailer or marketplace needs to always know when a payment or a refund has been processed to ensure they can provide the most current information to their customers.

- **APIs as an Enabler of Real-Time Data:** Application Programming Interfaces (APIs) serve as critical technical enablers for the deployment of real-time data ingestion and provisioning. Currently, numerous financial services providers, including banks and FinTechs, are offering sophisticated APIs to meet the growing demand for real-time data access.

When combined with advanced open-source technologies, APIs are transforming into a powerful catalyst for real-time data utilization. Furthermore, the rapid adoption of ISO 20022 standards is mitigating the challenges associated with data standardization in financial APIs, facilitating a smoother and more streamlined adoption than ever before.

- **Adoption of Digital Assets:** In recent years, digital assets have been rapidly explored and adopted by financial institutions to enhance liquidity and transaction management. Digital assets can significantly enhance real-time cash management by enabling instant settlements, 24x7 availability and programmability.

Next-Gen Payment Technologies – Expert View

Nick Kerigan
Managing Director, Head of Innovation
Swift

Q: How has the payments sector evolved over the last decade? Where are we today? How do you see this change over the next decade?

Nearly a decade ago, the payments industry was at the early stages of its digitization journey. Consumer and management expectations were low, as many processes were still manual, and paper based. The focus then was on shifting from traditional methods to digital solutions, but the transformation had just started.

Today, we operate in a digitized environment. The digital economy is well established, with services and businesses that are fully digitally native. Major global banks now facilitate digital cross-border payment.

Payment industry leaders will need to focus on delivering value to stakeholders – clients, shareholders, and management – through the trifecta of cross-border payments: speed, cost, and transparency. The primary message for leaders is to heed the well-known advice *"Go where the puck is going and be prepared to pivot the business in that direction."*

Q: What is the role for emerging technologies in cross-border payments?

I like to frame these emerging technologies as "tokens" and "machines" – tokens representing the blockchain and tokenization revolution, while machines symbolize the AI wave.

In my view, blockchain has moved past its initial hype cycle and is now transitioning into real-world use cases. Enterprises are exploring new client applications, including potentially solving for the interoperability challenge. The focus today is not solely on the (block)chain, but on how financial institutions can leverage it.

Tokenization is one such application of blockchain that enables digitization of various assets, from traditional securities to real-world assets, money and even trade documents. There is an exciting potential for tokenization, and we are just in the early stages of adoption.

The rich structured data from standardization of messaging standards coupled with AI can help generate valuable insights that can reduce risks and fraud, as well as improve capital and liquidity management. The potential for AI can be even greater if collaborations are leveraged at an industry level, and this is something Swift is working on in our experiments with several financial institutions. Greater focus is needed on privacy, preserving data sharing approaches such as federated learning AI models.

The adoption of AI is progressing rapidly, and we could expect significant advances over the next five years. with AI being increasingly adopted into Swift products.

By contrast, adoption of tokenization could take longer. Following on from our collaborative experimentation this year, Swift is now at a point with its own trials where our community will be able to run live, controlled digital asset transactions over our network from 2025 – which is a really an exciting milestone.

Tokenization & Payments

Tokenization is likely to play a pivotal role as 24x7 money movement and real-time liquidity become the new norm across wholesale and retail cross-border payments. Building on the momentum established in 2023, digital assets including cryptocurrencies, stablecoins, commercial bank deposit tokens (CBDTs), and central bank digital currencies (CBDCs) are being further integrated into the global financial payment system, enhancing efficiency, reducing costs, improving the customer proposition, and arguably fostering financial inclusion.

With tokenized money layer being standardized and regulated and financial market infrastructure being developed, the ubiquity of tokenized money especially in cross-border payments will increase.[30]

Blockchain enables, via tokenization, real-time instant payments, automated conditional transactions, 24x7 settlements, making this technology a viable alternate (or complimentary) rail for the movement of value, especially cross-border.

Features like always on operability, atomic settlement and programmability embedded into tokenized money can help address cross-border pain-points.

We believe, efficiency features such as always on operability, atomic settlement and programmability could be embedded into tokenized forms of money to address pain-points of cross-border payments i.e., time, cost, and transparency and are not exclusive to blockchain or DLTs.

This “smart” money, in conjunction with the underlying blockchain, is highly composable, enabling product and technology teams to develop robust solutions that can be repurposed as new use cases arise. Smart money and blockchain also enable concurrent transactions within banks’ ecosystems, whereby multiple parties can share and update data, transparently, in real time.

Blockchain or tokenization is also a key solution for liquidity management in enabling the pooling of a client’s or bank’s liquidity buffers, leading to optimized allocation of capital, reduced counterparty risk, and faster settlement times.

However, building parallel infrastructure rails for atomic settlement when existing ecosystem handle trillions of dollars in transaction value does not come as a priority or without significant disruption for incumbents. Embracing these emerging technologies requires a deep commitment on the part of financial institutions. Existing financial payment rails may suffice today, but future requirements will necessitate substantial technological enhancements. Moreover, regulatory clarity is essential and there are encouraging developments happening globally on this front.

CBDCs are a major focus for central banks in 2024, especially in the wholesale payments space.

- **Central Bank Digital Currencies:** CBDCs continue to be a major focus in 2024 as central banks worldwide explore their use in wholesale payment systems. Wholesale CBDCs, designed for financial institutions to settle interbank transactions, are being trialed primarily to enhance the efficiency, security, and operations of large-value payments. The success of wholesale CBDC initiatives will depend on factors such as technical feasibility, regulatory acceptance, interoperability, and market demand. Wholesale CBDCs could potentially impact the competitive landscape of correspondent banking, with the overall goal of improving the efficiency and resilience of the global payment system. Banks should carefully evaluate their strategic objectives and the specific requirements of each initiative when deciding whether to participate.

[30] We express our gratitude to Ricardo Correia, Partner, Bain for contributing insights to “Blockchain, Digital Assets, Tokenization & Payments” section of this report.

- **Tokenized Commercial Bank Deposits:** Commercial bank tokenized deposits promise to significantly impact wholesale banking by streamlining transaction processing, reducing settlement times, and enhancing operational efficiency. Tokenized deposits can enable real-time, 24x7 settlement of interbank transactions, eliminating the need for traditional correspondent banking relationships and associated system and process delays. The creation of new financial products, such as programmable payments, and automated market makers, which can improve liquidity and reduce costs for financial institutions, are exciting developments being explored. Tokenized deposits enable financial institutions to leverage newer technology while maintaining compliance with regulatory frameworks and guidance.

Stablecoins have emerged as a popular instrument for cross-border remittances and wire transfers as they enable instant transactions at low costs.

- **Stablecoins:** Domestic payments embraced "platformification" with FinTech 1.0, led by mobile/internet companies and public digital infrastructure in some cases; cryptocurrency's misdiagnosed problem led the industry to work towards a solution in the form of tokenized platform. However, for cross-border payments and stablecoins, this could be one of the pieces of the puzzle.

  Stablecoins have emerged as an instrument for cross-border payments (e.g., remittances, wire transfers) as they enable instant transactions at low fees. Traditional institutions have emerged as reserve custodians and fund managers for stablecoin issuers (e.g., BlackRock, VanEck, and BNY). Involvement from financial institutions has continued with planned issuances of a fiat-backed stablecoin from traditional asset manager, DWS, among others.

Progressing these efforts is imperative for the creation of the interoperable network required to support a fully digital and connected world. Interoperability is essential for different payment systems and financial institutions to communicate and process transactions. It can enable seamless transfer of funds and information between banks, payment networks, and other financial entities.

At the global level there are emerging initiatives that propose a new Financial Markets Infrastructure (FMI) to enable a system of networks in which central bank money, e-money, and tokenized deposits interoperate. An example of this future network is the Regulated Liability Network (RLN), which explores the conjunction of blockchain technology and the sovereign currency system. In a similar vein, Swift completed their CBDC sandbox phase 2 experiment in January 2024 and experiments continue to draw collaboration between Central banks, commercial Banks and operators of financial market infrastructure.

The Tokenization Thesis – Choosing Best of Both Worlds

– Tony Mclaughlin, Emerging Payments & Business Development, Citi

Traditional financial system and the world of tokenization in their own ways ensures unambiguous record of ownership in a human-readable interface. Financial institutions have been experimenting with blockchains for some time and there are several implementations in live production. However, there has not been market-wide adoption of blockchain technology in finance.

Some aspects of Distributed Ledger Technology such as anonymity and proof of work mechanisms are either not appropriate or unnecessary for regulated financial services, while other aspects create the potential for always-on, multi-asset, programmable infrastructures that could deliver meaningful industry progress.

A world of tokenized financial instruments will require such a scale of adoption, but this can only happen if there is broad industry consensus on what we are solving for. And, choosing any closed-looped private fiat-denominated tokenized money option could only create negative network effect.

The Regulated Liability Network (RLN) is the concept of a next generation Financial Market Infrastructure that hosts both Tokenized Bank Deposits and tokenized central bank money in the same venue. This shared environment would enable the real-time and programmable transfer of value with finality of settlement.

Moreover, tokenized bank deposits reinforce and strengthen the existing two-tier monetary system and maintains the singleness of money. Such an infrastructure, which is contemplated by both the RLN and Project Agorà offers the potential for correspondent banking to be re-imagined.

Why are Digital Assets Going Mainstream?

Efforts by digitally native players and traditional financial institutions to draw wider acceptance are helping digital assets go mainstream.

The stablecoin ecosystem has becoming more mature, partly due to efforts from digitally native players and traditional financial institutions to draw wider acceptance for the newer assets. However, wider adoption will likely be slower than expected driven by uncertain nature of liability, and operational, regulatory and market risks.

Stablecoin issuers are focusing on increasing compliance and risk management protocols in partnership with regulators to enforce KYC/AML standards. Moreover, more comprehensive digital asset regulatory frameworks with guidance on stablecoins, including requirements for licensing and a focus on protecting retail investors, have recently emerged. For example,

- **European Union:** Markets in Crypto Assets (MiCA) Regulation went into effect in June 2024 and is the first cross-jurisdictional regulatory and supervisory framework for crypto-assets globally. It includes regulations for stablecoin issuers of fiat (e.g., USD) and asset (e.g., gold) backed stablecoins and other crypto asset service providers (CASPs). MiCA requires 30% of stablecoin reserves to be held as deposits at banks – 60% if the stablecoin is deemed "significant" – and has banned the issuance of algorithmic stablecoins within the EU.

- **United Kingdom:** Financial Services and Markets Act (FSMA) created requirements for fiat and asset backed stablecoins and requires issuers to register as Digital Settlement Asset (DSA) service providers. FSMA has additional restrictions on interest bearing reserve assets and requires deemed "significant" stablecoins to be regulated by the Bank of England with reserve assets required to be 100% central bank deposits.

- **Singapore:** MAS's Payment Services Act (PSA) takes a same risk, same regulation approach and provides a licensing regime for MAS-regulated stablecoins to distinguish stablecoins that meet tighter regulatory criteria from other digital payment tokens (DPTs). The PSA framework applies to single currency stablecoins pegged to the SGD or any G10 currency, that are issued in Singapore. Stablecoins that are not in scope of PSA are still required to be licensed under the existing DPT regulatory regime.

- **United States:** By contrast, there is no formal regulatory framework for stablecoins in the US; however, congress is in the process of introducing a comprehensive Stablecoin Bill. A state-by-state approach is currently taken with stablecoin regulations with issuers requiring state dependent licensing (i.e., NYDFS) to provide digital asset services such as stablecoin issuance and custody. Stablecoin issuers must comply with federal Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) regulations.

Project Agorá (meaning '*marketplace'* in Greek)

The Bank for International Settlements (BIS) along with seven central banks announced (April 2024) to join forces with the private sector to explore how tokenization can improve the functioning of the monetary system. In September 2024, 41 private players consisting of banks, financial market infrastructure companies, payment companies joined Project Agorá to explore how tokenization can enhance wholesale cross-border payments.

Project Agorá is a significant cross-border payments experiment as it envisions a unified ledger that would contain both central bank money in the form of wholesale CBDC (wCBDC), and commercial bank money represented by tokenized bank deposits.

Those involved in Agorá will investigate how tokenized commercial bank deposits can be seamlessly integrated with tokenized wholesale central bank money in the newly created platform.

The idea is further explored in the BIS working paper "Finternet" which articulates a vision for the future of the financial system, that leverages tokenization and unified ledgers to improve speed and quality, reduce cost and create a platform for further innovation.

This could enhance the functioning of the monetary system and provide new solutions using smart contracts and programmability, while maintaining its two-tier structure. BIS also stated that smart contracts can enable new ways of settlement and unlock types of transactions that are not viable or practical today, in turn offering new opportunities to benefit businesses and people.

End State: Project Agorá aims to go beyond proof-of-concept stage and deliver a prototype to test range of potential current and future use-cases.

All Tokenized Form Factors of Money Have Risks & Challenges

- **Stablecoins:** Fiat backed stablecoin claim to hold highly liquid government securities in reserves as collateral but lack transparency around the quantity and quality of reserves/collateral. Scrutiny in the past has revealed that some major fiat stablecoin issuers were holding a substantial portion in short-term/unsecured debt.

  Furthermore, in several instances where stablecoins have de-pegged or faced mass withdrawal, there has been a lack of clarity as to whether the claim is on the collateral or the issuer. Regular reporting/audits and regulation of the stablecoin ecosystem could enhance issuer and reserve credibility.[31]

Underlying reserves for Money Market Funds (MMFs) and stablecoins are very similar. For example, BUSD, USDP and USDC are backed by Treasury securities and repos – like Government MMFs; USDT is backed by commercial paper/certificates of deposits – like prime MMFs.

In a classic flight-to-safety dynamic, times of stress have seen these instruments prone to run-risks and can cause a contagion effect on other stablecoins and the traditional finance ecosystem. For example, in March 2023, there were mass redemptions in USDC triggered by news of Silicon Valley Bank's failure.

- **Tokenized Deposits:** Presently, tokenized deposits exist in the form of individual bank coins as a closed-loop network. Thus, they lack interoperability, leading to fragmented liquidity, limited scalability, and adoption.

- **CBDCs:** Some sceptics find CBDC transactions will not be anonymous, unlike traditional cash transactions. Many CBDC projects faced criticism citing potential surveillance and curbs on freedom.[32] Risk of excessive surveillance and loss of privacy of citizens' transactions are often cited as a risk and have witnessed a political pushback.

  Lack of customer demand for CBDCs and unavailability of technological infrastructure (e.g., internet, smartphones) in remote areas has led to slower than expected adoption of CBDCs. Potential challenges for broader access to CBDCs might stem from operational and technical aspects of the ecosystem. Additionally, there is also an unwillingness from customers and merchants to adopt newer money formats for payments.[33]

To stay competitive, banks need to embrace disruption and focus on building a better ecosystem rather than just expanding in size. Market trends indicate growing demand for solutions enabled by blockchain technology, driven by evolving client needs focused on "direct to consumer", always-on, dynamic solutions.

The history of the banking and financial markets network growth taught us that market leaders often have the power to set the rules and define the foundation for new solutions. The emergence of digital asset technology will be no different; early adopters will unlock enhanced revenue streams more readily than their competition, while meeting the evolving needs of clients.

[31] Wall Street Journal, The Shadow Dollar That's Fueling the Financial Underworld, 10 September 2024.
[32] Forbes, Nigerian Election and Naira Crisis is Fueling Bitcoin Adoption, 01 March 2023.
[33] The Deep Dive, Bank of Canada Abandons Digital Currency Plans After Years of Research, 23 September 204.

Digital Dollarization via Stablecoins – Expert View

Miriam Kiwan
Vice President, Middle East & Africa
Circle

Q: How do stablecoins create a new payment infrastructure? What are the implications of this for the US dollar?

Over the last few years, open blockchain networks have begun to power a new form of money that redefines how people and businesses exchange value globally. These blockchains – including Ethereum, Solana and many others – represent a new layer of financial technology that makes it possible to send value directly through the fabric of the internet, just as we send email, text, and other data.

Blockchain settlement makes it possible to reduce the costs and friction that are deeply embedded in traditional payments, while increasing speed. They enable us to reimagine what is possible when exchanging value, whether sending digital dollars across-borders or interacting with tokenized versions of other traditional assets – especially for almost billion people in the world who have access to the internet yet lack access to a bank account.

Stablecoins could bring the benefits of blockchain to mainstream commerce, payments, remittances, and other economic activity. Regulated dollar stablecoins combine the strength, trust, and network effects of the US dollar with the benefits of internet settlement outlined above. The growth opportunities are significant and could create outsized impact, driven by the dollar's dominance in global finance.

Based on the critical role of the dollar, a regulated digital dollar innovation in terms of stablecoins not only increases access to dollars as a store of value, but also use cases that accelerate responsible financial services innovations.

The economies of the MEA region, and the UAE in particular, stand to benefit from the novel digital asset and FinTech sectors by serving as a veritable hub of regional activity, investment, and rules-based innovation. For example, USDC is already widely used, with more than $16 trillion in all-time transaction volume since its launch in 2018.[34] It is also fueling significant growth and rapid maturation of the digital asset economy throughout the Middle East and Africa.

Q: Can you elaborate use-cases of stablecoins, especially in underbanked regions?

Stablecoins originally grew in popularity in digital asset markets, where they remain widely used as a base currency in digital asset trading pairs. Today, the Middle East and Africa make up the world's sixth largest crypto economy,[35] highlighting the important role of digital assets and stablecoins in the region – especially in countries with high inflation.

With approximately 85 million adults in the Middle East unbanked[36] and nearly 60% of Africans unable to access a bank account,[37] stablecoins are emerging as an alternative way for people left behind by traditional finance to send, spend and store value. More local FinTechs are building new, blockchain-based apps and services that can fuel further adoption. Such services can start bringing these population

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[34] Based on Data Available on www.usdc.com, Last Accessed on 22 September 2024.
[35] Chainalysis, Middle East and North Africa: Crypto Takes Hold as UAE Leads the Way in Promoting Regulatory Clarity, 26 September 2023.
[36] Fast Company Middle East, Millions in the Middle East are Unbanked. Can FinTech Platforms Change That?, 04 August 2022.
[37] BPC and Fincog, Digital Banking in Sub-Saharan Africa, 2022.

segments into the formal economy, spurring growth, development, and even participation in cross-border payment ecosystem.

Remittances and peer-to-peer payments sent home from migrant workers are a critical near-term opportunity. The UAE (90% of its residents are expatriates) is the second largest market for remittances globally, trailing only the US.[38]

Considering the size of the market and the 6.35% average global cost[39] – often borne by people who rely on remittances for basic household expenses – more of these payment flows could begin shifting to parallel payment infrastructure to meet the trifecta needs of cross-border payments – cost, speed, and transparency.

Beyond remittances, there are several other mainstream use-cases for stablecoins that are growing across the region, all driven by the enhanced utility of accessing/settling in dollars almost instantly and at low cost. Plugging stablecoins into these money flows can help enhance competitive landscape.

Cross-border payments, long plagued by interoperability challenges, also represent a significant growth driver for stablecoin, which solve these challenges by traveling on unified, global ledgers instead of the fragmented correspondent banking system.

[38] PCMI, How the UAE's Cosmopolitan Population Helped It Become a Global Remittance Hub, January 2023
[39] The World Bank, Remittance Prices Worldwide. Last Update on 06 July 2024.

Artificial Intelligence Meets Cross-Border Payments

The north star of cross-border payments continues to be solutions that can make cross-border payments immediate, cheap, secure and universal at the same time. Can we reach the north star in the next 5–10 years?

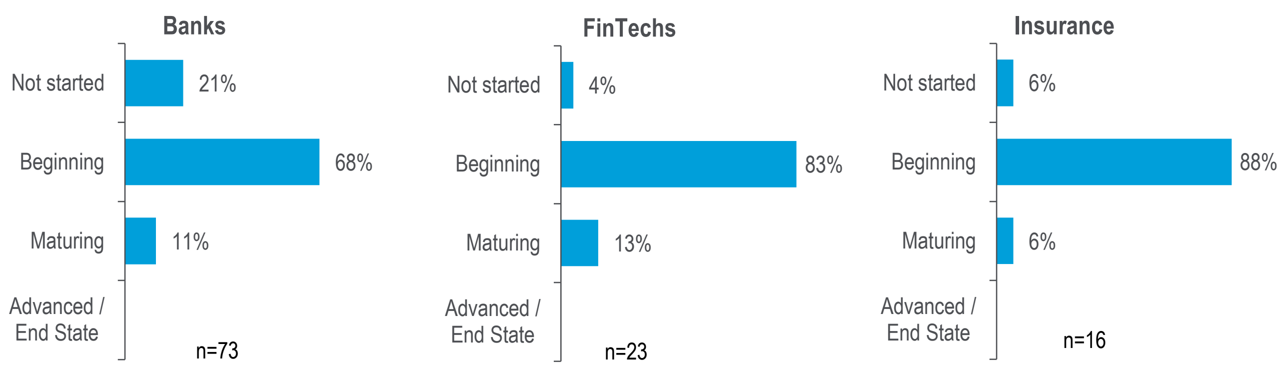
AI, and particularly GenAI, promise to transform the payments landscape – from personalized experiences to voice activated payments and real-time authentication. AI solutions can help automate payment processes, improve fraud detection, and enable more personalized customer experiences.

Banks have been slow in adopting AI technology and are still in the very early stages of their adoption journey.

However, as we elaborated in our recent report (Citi GPS: AI in Finance: Bot, Bank and Beyond), we are still very early in the commercialization of GenAI in finance, including payments, with most projects still in pilot or proof of concept stage. Significant benefits in cross-border payments are unlikely to be felt for some time.

These views echo the results of the Citi TTS 2024 survey which underscore the slow adoption of AI by many banks. Nearly a quarter of banks have '*not started*' on AI adoption yet. In contrast, this number stands significantly lower at just about 5% for FinTech and insurance clients. Furthermore, 68% of respondent banks are still only in the '*beginning*' stages of their AI journey (Figure 13).

Figure 13. Banks Are Playing Catch Up in the AI Arms Race

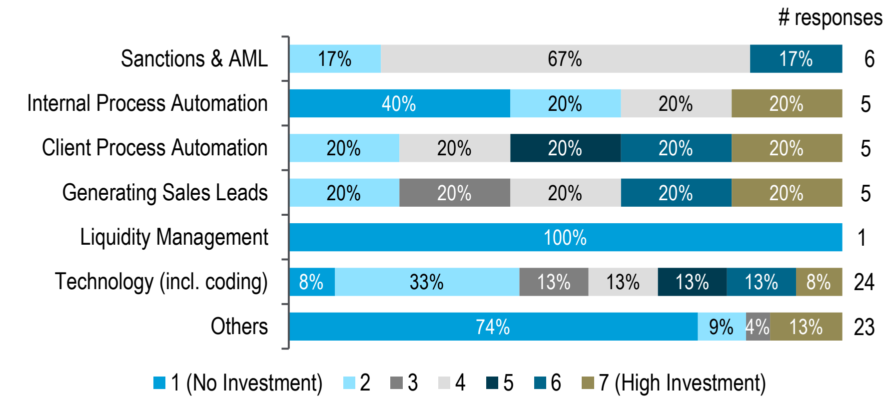


Source: Citi Treasury and Trade Solutions Survey 2024

In the medium term (3-5 years), Citi TTS 2024 survey suggests most impact of AI to be on internal facing tasks and improvements in productivity rather than lots of new products and sales generation. Incumbents will focus on improvements in areas like software and coding, transaction monitoring and compliance (Figure 14).

While there are numerous use-cases for the technology, there are good reasons why Banks and others are cautious in adopting GenAI at scale in the short term (see section Risks and Challenges of AI in Cross-Border Payments).

Figure 14. What are the Areas of Focus for Banks' Investment in AI Over Next 3-5 Years



Source: Citi Treasury and Trade Solutions Survey 2024

Cross-Border Payment's Future Power Play?

Several companies (incumbent financial institutions and FinTechs alike) are working on long-term projects involving GenAI, either as a primary focus for customer service/sales or streamline tasks through automation. However, current cross-border payments application of AI, especially GenAI, is limited.

Benefits will likely accrue from improved operational efficiencies using AI; but there is greater near-term focus on the shifting of payments and clearing systems to 24x7 operations. After all, business models need to adapt, regulations need to be introduced and/or updated, client behavior and employee skills need to evolve, to see the real transformative impact of AI.

In the back-office, AI can automate document verification, data validation and reconciliation for cross-border payments. It can improve KYC (Know Your Customer) and AML (Anti-Money Laundering) processes by enhancing the ability to assess compliance and reputational risk associated with clients in real-time, conduct due diligence on transaction counterparties, and detect anomalies.

In the front-office, use of AI is likely to focus on customer-facing activities such as processing payments, resolving client queries and facilitating seamless experiences with personalized products/services. We detail some of these use-cases below.

How Can We Unlock AI Opportunities?

Implementation of AI in cross-border payments can improve efficiency, security, and customer engagement, resulting in faster, cheaper, and more transparent transactions.

- **Payment Routing Optimization:** Traditional cross-border payments are typically routed via multiple intermediaries, causing delays and extra cost. AI tools can dynamically optimize payment routing across borders by selecting the most efficient path for processing the transaction based on favorable exchange rates, network availability and processing fees.

AI can deliver faster, cheaper, and more transparent cross-border payments with smart routing, innovative products/ services, AI-powered customer support and enhanced fraud detection.

- **Payments Reconciliation**: AI tools can process unstructured data fields within payment transactions and related documentation to improve the accuracy and efficiency of reconciliation. By analyzing patterns and making suggestions, AI can help automate reconciliation, reducing manual efforts and the likelihood of errors.
- **Autofill for Operational Efficiency:** AI-driven tools can auto-populate transaction fields and standardize formats using contact details and supporting information. This minimizes manual intervention, reducing both the time required and the chance of errors in processing transactions.
- **Automate Customer Transaction Setup:** AI can assist the operations team in automating the setup of customer transactions by generating code (e.g., XML) required for specific transaction types. This can accelerate onboarding processes and reduce complexities in configuring transactions for automated processes.
- **Personalized Customer Experiences:** AI tools can enhance customer satisfaction by providing personalized experiences with tailor-made products and services based on user location, spend patterns and preferences. For example, AI tools can provide customers real-time exchange rate comparisons/predictions, offering users greater convenience and more cost-effective solutions.
- **Innovative Products/Services:** Innovative solutions leveraging AI, such as hands-free voice-activated payments and AI-based biometric authentication can help provide frictionless e-commerce experiences.
- **AI-Powered Customer Support:** AI chatbots can assist customers in different languages on transaction queries, statuses and troubleshooting 24x7, providing immediate support. By automating routine customer support tasks, AI-powered chatbots can free up human agents to focus on more complex issues.
- **Fraud Detection:** AI tools can help identify deviations from historical patterns, flagging potentially suspicious activities for further investigation. Using AI tools, payment providers can analyze vast amounts of structured and unstructured data including transaction amounts, frequency, and location, detecting unusual behavior indicative of money laundering or fraud.

A key component to unlocking potential benefits from the above is access to data, state-of-the-art GenAI models, the right skills and supporting infrastructure/ technology stack.

Incremental AI or Game-changing AI Opportunities?

Individually, the opportunities listed above are not new to the payments industry and the gains could be considered incremental if implemented in silos. In fact, the payments industry has been using AI (pre-GenAI techniques) for a while now (see section: *How Mature is the Use of AI in Payments?* By Erin McCune, Payments Partner, Bain & Company). However, GenAI has the potential to change these incremental opportunities into game-changing advantages, especially when implemented in parallel.

Veterans in the payments space may feel they have been here before. That these opportunities have always existed but never fully realized. We believe GenAI has the ability to make possible, what was until recently, unachievable. If organizations can address the challenges and mitigate the risks, then these individual opportunities can become game-changing as a whole. Remember, access to your proprietary data will be key to unlocking this value.

A key component to unlocking many of the benefits from the opportunities listed above is access to data, state-of-the-art GenAI models, the right skills and supporting infrastructure/technology stack.

How Mature is the Use of AI in Payments?

By Erin McCune, Payments Partner, Bain & Company

The use of traditional AI is mature. Payments companies have historically been advanced in innovation, with many already using robotic process automation (RPA) and machine learning (ML) throughout the transaction lifecycle. These RPA/ML tools will remain valuable, especially when used in combination with GenAI's ability to synthesize unstructured data.

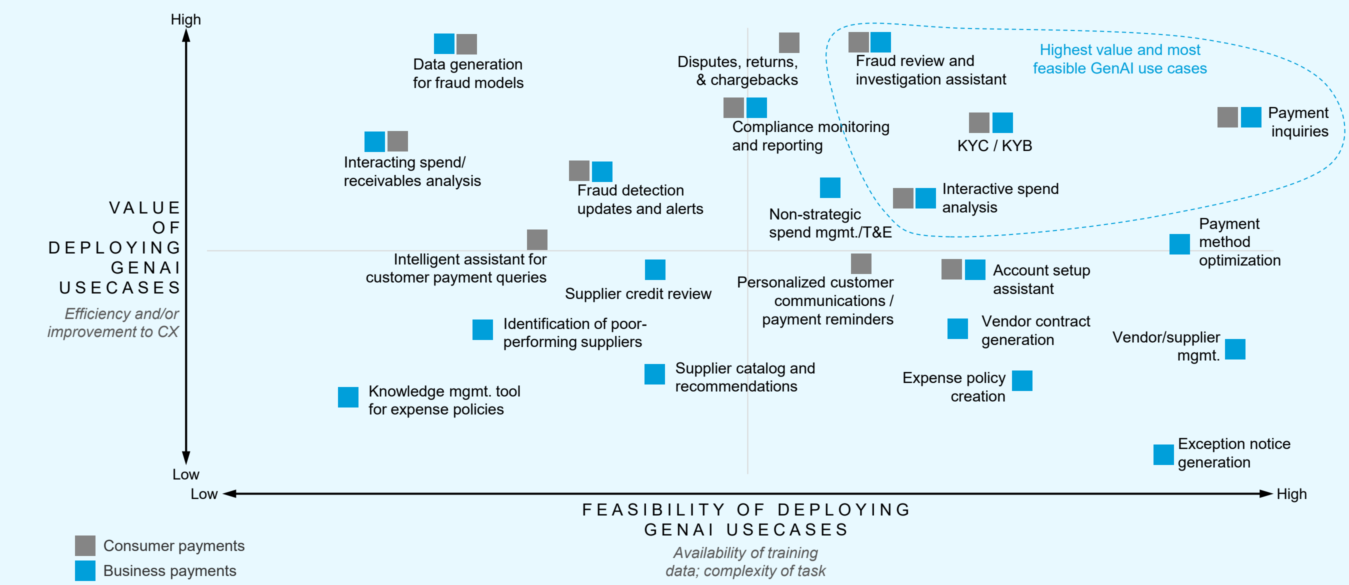
GenAI continues to evolve rapidly, and financial institutions/payment providers are moving quickly to build competence. Within payments, GenAI will have a significant impact in onboarding, payment and reconciliation, fraud, and analytics.

Processes that interface with end users (consumers or businesses), are most likely to be exposed to unstructured data, presenting the biggest GenAI opportunities. However, payment industry players will benefit from implementing GenAI at different points in the payment lifecycle, based on their role in the value chain.

- Banks and payment service providers are embedding GenAI within merchant/ customer onboarding processes and using it to provide merchants and consumers with interactive spend analytics.
- Software solutions that interface with businesses and their suppliers, present opportunities to implement GenAI to improve user experience like invoice/ vendor contract generation, interactive analytics, and payment method optimization.
- Payment gateways and card schemes function deeper within the value chain, with less direct interaction with consumers and businesses, however, they are using GenAI to enrich fraud-detection models and boost authorization rates.

The highest value and most feasible use cases for GenAI in payments relate to fraud, spend analytics, Know Your Customer (KYC)/Know Your Business (KYB), and payment inquiries (Figure 15). In addition, all payments players will benefit from implementing GenAI to drive productivity/efficiency in customer service and contact centers, as well as internal functions like HR, legal, finance and software development.

Figure 15. GenAI Use Case Value and Feasibility



Note: Examples cited in the figure above are illustrative and not exhaustive
Source: Bain & Company

SWIFT Initiatives: AI to Combat Cross-Border Payment Fraud

In May 2024, SWIFT launched two AI-based experiments in collaboration with its member banks aimed at harnessing the power of AI in the fight against cross-border payments fraud.

Frauds cost the financial industry $485 billion in 2023 alone. This poses a growing challenge for market participants, particularly with the advent of real-time payments and can also lead to reputational damage. New AI tools are poised to play a pivotal role in reducing risks, whilst also helping increase speed of cross-border payments.

Of the two pilots initiated by SWIFT, the first one aims to enhance existing Payment Controls service, which helps financial institutions detect anomalies. The model uses historical patterns of activity on the SWIFT network and screens financial institutions' outgoing payment messages for potential fraud activities.

The second pilot aims to test the use of advanced AI technology to analyze anonymously shared data from different sources. The pilot will be based on a federated learning model, where the AI model is trained on multiple locally held datasets, enabling financial institutions to exchange relevant information with strong privacy-preserving controls.

Risks and Challenges of AI in Cross-Border Payments

Despite the benefits, AI also poses some risk/challenges – talent availability, regulatory complexities, legacy system hurdles to name a few.

While AI holds immense potential in cross-border payments, it also brings significant risk and challenges that must be carefully addressed. These concerns range from the rise of cybercriminals leveraging AI to orchestrate sophisticated scams, data privacy, challenges in integrating AI within existing systems and more.

- **Availability of Talent:** The shortage of skilled AI talent can be a significant barrier to the widespread adoption of AI across the financial sector. Talent wars are not over. Humans are still in demand. As most organizations are struggling to find the right AI talent, many are looking to balance the demand-supply gap by upskilling, reskilling, and redeploying talent internally or from within the industry.

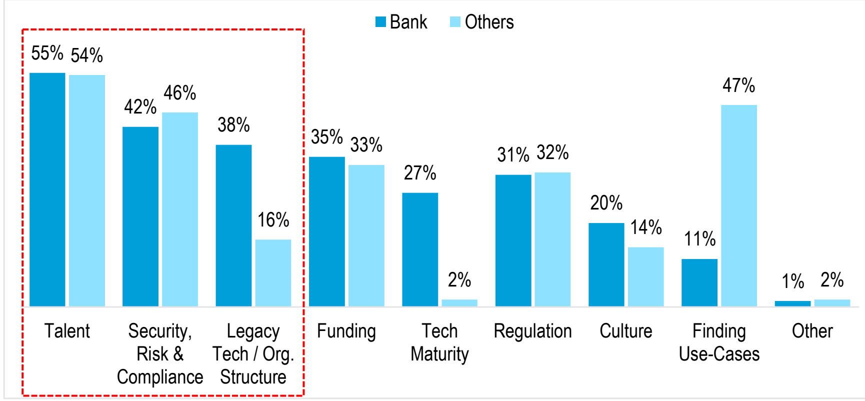
- **Regulatory Complexities:** AI adoption in cross-border payments could struggle with regulatory complexities as different countries may have varying standards for AI use and data privacy. This could hinder global adoption of AI-driven payment solutions and/or slowdown AI integration and innovation.

  Data localization measures that mandate certain types of data, especially sensitive financial or personal data be stored, processed, and sometimes even accessed only within the border of the country in which they originate may hinder effective implementation of AI in cross-border payments.

- **Legacy System Integration Hurdles:** Integrating AI solutions into existing legacy payment systems can often be costly and technically challenging. However, without a smooth integration, AI's benefits may be limited, and could lead to disruptions in payments operations.

  In the Citi TTS 2024 survey, lack of availability of the right (AI) talent was cited by 55% of the responding banks as a primary barrier in their AI journey, followed by risk and compliance (42%) and legacy technology (38%).

Figure 16. Right Talent, Risk & Compliance and Legacy Tech is Major Barrier for AI Adoption



Note: N=71 bank, and 57 other respondents. Others include asset managers, FinTech, insurance companies
Source: Citi Treasury and Trade Solutions Survey 2024

- **Data Privacy Concerns:** AI systems rely on vast volumes of structured/unstructured data. An organization must ensure its proprietary data is available for GenAI systems. However, given the regulated nature of the financial industry, companies must exercise extreme caution to ensure data security and privacy whilst dealing with sensitive customer data.

- **Amplifies Scams and Frauds:** Advancements in AI have ushered in a new era for frauds and scams – from chatbots that mimic human interactions to voice synthesis and deepfakes. We believe AI-powered scams, frauds, and threats are likely to rise – in volume, sophistication, and potential losses – as cybercriminals discover novel ways to access customers' personal and financial data using AI. In May 2024, a British engineering company was made victim of a deepfake fraud as an employee was convinced to send US$25m to criminals using GenAI.[40]

- **Biases, Misinformation and Lack of Transparency:** AI algorithms are only as good as the data they are trained on. Algorithms can perpetuate and amplify societal biases as well as contribute to the spread of false information or misleading content at scale and manipulating public opinion. Further, AI systems can be opaque, obscuring the decision-making process and underlying logic. This poses a challenge as humans cannot comprehend how the AI system arrived at its conclusion, leading to distrust and resistance to adoption.

[40] The Guardian, "UK Engineering Firm Arup Falls Victim to £20m Deepfake Scam," 17 May 2024.

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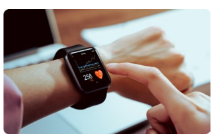

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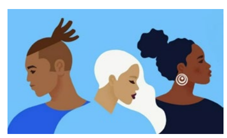

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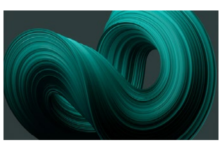

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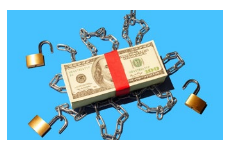

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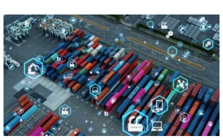

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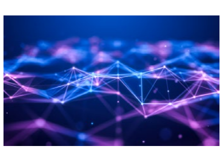

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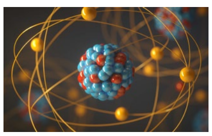

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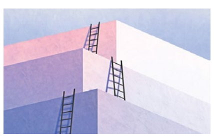

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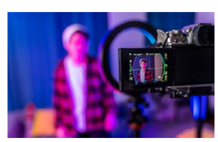

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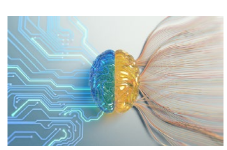

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