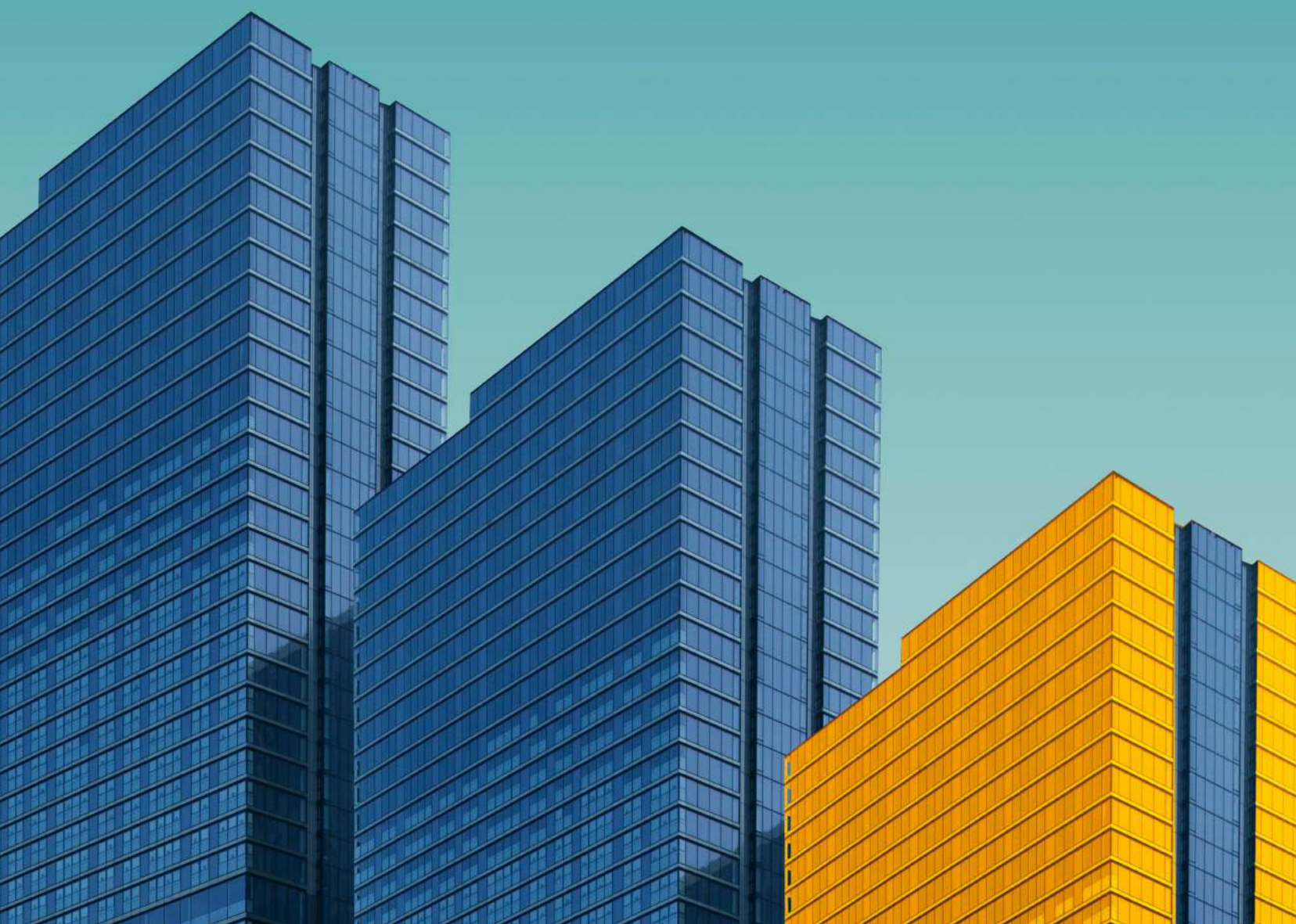
PLUG AND PLAY

The Future of Retail Banking

2024 REPORT



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Introduction

Coupling our presence in major financial centers worldwide, including Frankfurt, London, Milan, New York, Paris, Singapore, and Tokyo, with our tech hub in Silicon Valley, Plug and Play has built the expertise to invest successfully in pathbreaking fintech startups. We also provide innovation consultancy services to over 90 financial institutions globally, including BNP Paribas, CaixaBank, Franklin Templeton, John Deere Financial, Moody's, Raiffeisen Bank International, UniCredit, and Visa. This ensures that we are consistently ahead of the fintech innovation curve and stay abreast of the aspirations and challenges facing existing financial services providers.

Drawing on our corporate and venture experience and expertise, we have crafted a comprehensive trend overview, diving deeper into the key technological trends shaping the future of banking.

Our report is divided into **four sections**:

1. **Introduction to Plug and Play**
2. **Overview of the key trends shaping innovation in banking**
3. **Retail Banking Trends**
    - The Power of Artificial Intelligence in Banking
    - The Blockchain Shift: Banking in a Decentralized Future
    - PSD3 & Beyond: Open Banking's New Era
    - The Future of Banking is Sustainable
4. **Key Investment Trends Shaping Financial Institutions**

The preparation of our report involved three phases:

Phase 1: Research topic identification based on internal capabilities
The first phase assessed various innovation topics we have already worked with at Plug and Play. These topics encompassed the main innovation trends identified during the establishment of our investment theses, which are reflected in our investments, as well as trends identified while working with financial institutions as innovation consultants. Additionally, we interviewed colleagues throughout Plug and Play to gather insights on upcoming trends.

Phase 2: Exploration based on the external capabilities
We conducted market research to gather additional insights beyond our internal knowledge. This involved examining reports from reputable research agencies and their identified trends and engaging in conversations with corporate partners of Plug and Play to understand the most relevant innovation topics they are focusing on in 2024. Through these efforts, we obtained a comprehensive overview of the current trends in retail banking and how startups are helping financial institutions innovate.

Phase 3: Interviews with startups
We asked featured startups specializing in banking innovation to share their perspectives on how their solutions can help banks reduce customer churn and boost revenue. To gain further insight, we also engaged with partner banks from our network to gather their valuable perspectives. The answers provided are included in this report as quotes, representing an external perspective. However, it's important to note that these external perspectives did not influence the original content of our report as prepared by Plug and Play. Our objective was to compare our internal viewpoint with the approaches of startups pioneering in this domain, and the outcome revealed a close alignment in predictions.

Outcome: Report "The Future of Retail Banking"
The combined efforts of the Plug and Play team resulted in a comprehensive trend overview, which follows below.

A huge thank you to Marta, Maximillian, Alex, and Spencer from Plug and Play.

We hope you enjoy the read and engage with us in discussing the future of Retail Banking.

Greetings from Barcelona,
Anna & Philipp

Plug and Play: Pioneering Innovation Globally

Plug and Play is a leading venture capital firm headquartered in Silicon Valley, with over 2,000 portfolio companies and 30+ unicorns (N26, PayPal, Rappi, Dropbox, Blockdeamon, and Honey, among others). We are the world's largest global innovation platform and a key driver of technological advancements. With operations spanning over 50 locations worldwide, we drive innovation across 24+ industries and facilitate connections between corporations and the most innovative startups. Our extensive network comprises 550+ world-leading corporations, 75,000+ startups, and numerous venture capital firms, universities, and government agencies operating in multiple industries.

Our innovation platform

CORPORATE INNOVATION

We supercharge the innovation of **over 550** industry-leading corporations by keeping them at the forefront of industry trends.

VENTURE CAPITAL

We invest in **over 200** companies a year alongside the world's best VCs.

ACCELERATOR PROGRAMS

We run multiple industry-specific innovation programs in **over 60** cities globally.

ALL-IN-ONE SOLUTION

A complete, turnkey infrastructure for startups and corporations to thrive.

The Ongoing Journey of Innovation in Banking

The banking industry is undergoing unprecedented transformation, presenting both exciting challenges and remarkable opportunities. In this dynamic landscape, according to the Global Banking Benchmark Study in 2024, financial institutions are not just adapting — they're fundamentally reinventing themselves, with 32% of customer experience transformation budgets now dedicated to AI, machine learning, and generative AI initiatives[1]. However, it's crucial to acknowledge that not all institutions are evolving simultaneously.

Those banks that actively embrace innovation in this evolving landscape will be able to enhance the customer journey they offer and thus drive growth. This section explores key areas where a focus on technology can empower banks to achieve these goals.

Enhancing the Customer Experience: Key Focus Areas

Banks are presented with a unique set of circumstances in today's financial landscape. To excel in this environment, they must prioritize a digital-first approach and focus on key areas that enhance customer experience, streamline operations, and drive revenue growth.

This involves modernizing systems and exploring cutting-edge solutions that can transform how banks operate and interact with customers. Banks can solidify their position in this evolving market by becoming more agile, efficient, and customer-centric.

A Digital-First Approach: Optimizing Functionality

A critical aspect of the digital-first transformation is ensuring the seamless functionality of digital channels. A recent study by Movizzon estimates that 70% of financial institutions experience "interruptions" during some part of their users' navigation process[2]. These interruptions can be detrimental, as even brief system outages can be extremely costly, impacting thousands of transactions and millions in potential revenue. The performance of digital channels is critical, with disruptions directly affecting customer satisfaction and brand perception.

[1] Global Banking Benchmark Study, 2024: https://www.publicissapient.com/industries/financial-services

[2] Movizzon, 2024: https://www.europapress.es/economia/finanzas

Modernizing core banking systems enables the development of user-friendly and feature-rich online and mobile banking platforms, providing customers with convenient and engaging digital experiences.

For example, BBVA's investment in digital transformation led to a 25% increase in digital customer interactions. Furthermore, automation technologies, such as Robotic Process Automation (RPA), can streamline manual processes, reduce costs, and improve efficiency. RPA implementations have helped banks reduce processing costs by 30-70% while significantly improving accuracy and efficiency. To truly personalize the customer journey, banks must leverage data analytics to understand customer behavior and preferences, enabling them to offer tailored products, services, and recommendations. Within the Global Banking Benchmark Study in 2024, 42% of banks are leveraging personalized customer journeys to improve customer experience.

Evolving with the Market: The Role of Technology and Innovation

The financial services sector is experiencing a period of dynamic growth, with new entrants offering competitive products and services. This competition is driving a significant shift in the market, with neobanks capturing a growing share of new customers. In Spain, for example, according to a Study of the Financial Behavior of Private Individuals in Spain 2024, neobanks now account for 53% of all new banking relationships[3]. This trend underscores the need for traditional banks to innovate and adapt to maintain their competitive edge actively.

To thrive in this environment, banks are focusing on enhancing revenue and deepening customer relationships. Technology and innovation play a key role in achieving these goals. By embracing digital transformation, banks can develop and offer new products and services that resonate with customers and generate additional revenue streams. Simultaneously, technology enables personalized customer experiences that foster loyalty and satisfaction.

[3] Study of the Financial Behavior of Private Individuals in Spain, 2024: https://www.eleconomista.es/banca-finanzas

Innovation: A Path to Continued Success

Innovation is vital for banks to drive growth and remain adaptable in a rapidly changing market. Banks can secure their relevance and success by leveraging technology, fostering collaboration within the fintech ecosystem, and keeping the customer at the center of their strategies.

Partnerships between established financial institutions and fintech startups create a symbiotic relationship: banks benefit from startups' agility and technological innovation, while fintechs gain access to their larger counterparts' resources and expansive customer networks. This collaborative dynamic fuels the exchange of ideas and expertise, accelerating innovation and shaping the future of the financial sector.

Key Technological Trends Shaping the Future of Banking

In addition to the foundational elements of the digital imperative outlined above, several other key technological trends are reshaping the banking industry, presenting both challenges and opportunities for traditional banks:

1. **Artificial Intelligence:** AI is rapidly transforming the financial services industry, enabling banks to automate tasks, personalize customer experiences, and improve decision-making. AI-powered tools can analyze customer data to provide personalized financial advice, detect fraud, and manage risk.

2. **Blockchain:** Blockchain technology has the potential to revolutionize banking by enabling secure, transparent, and efficient transactions. It can streamline processes, reduce costs, and enhance security in areas such as payments, trade finance, and KYC/AML compliance.

3. **Open Banking:** Open banking is transforming the financial services landscape by enabling data sharing between banks and third-party providers. This fosters innovation, competition, and customer choice, leading to the development of new and improved financial products and services.

4. **Sustainability:** Environmental, social, and governance (ESG) considerations are increasingly crucial for banks, driven by growing consumer demand and regulatory pressure. Banks are integrating sustainability into their strategies by offering green financial products, reducing their carbon footprint, and promoting ethical banking practices.

The Power of Artificial Intelligence in Banking

Artificial intelligence is rapidly transforming the banking industry, potentially unlocking significant value and driving innovation. A recent McKinsey report estimates that AI could generate $1 trillion in incremental value for banks annually[4]. By leveraging AI, banks can enhance customer experiences, improve operational efficiency, and facilitate innovation cycles.

JPMorgan Chase and Capital One are at the forefront of AI innovation on a global scale, as indicated by the Evident AI Index[5]. In Europe, HSBC, BNP Paribas, and UBS rank among the top 3 European banks in AI advancement. Accenture's analysis projects that the banking industry stands to gain more from generative AI than any other sector, with potential productivity gains of 22-30% and a revenue increase of up to 6%[6]. This is particularly significant given that generative AI can automate a wide range of tasks, from generating marketing content and personalized financial reports to improving chatbot interactions.

Despite this potential, the adoption of AI in banking is still relatively low. Surprisingly, according to Visa, only 25% of banks have implemented AI solutions for process automation, and only 18% have deployed AI-based chatbots[7]. This presents a significant opportunity for banks to leverage AI to gain a competitive advantage. However, to effectively harness the power of AI, banks need to build a strong foundation, starting with their data.

#1 Building a Strong Data Foundation

To successfully integrate AI, banks need a bottom-up approach that prioritizes a strong data foundation. This involves gathering vast amounts of data and ensuring its quality, security, and accessibility across the organization. Banks must implement robust data governance frameworks and utilize advanced processing techniques like machine learning and natural language processing to extract valuable insights. This foundation enables the development of AI-powered solutions for credit scoring, fraud detection, personalized customer service, and algorithmic trading, ultimately driving efficiency and innovation.

[4] Mckinsey, 2024: https://www.mckinsey.com/industries/financial-services

[5] Evident AI Index, 2024: https://evidentinsights.com/ai-index/

[6] Accenture Banking Trends, 2024: https://www.accenture.com/banking/Accenture-Banking-Trends-2024

[7] Generative AI in Financial Services: Visa, 2024: https://www.thisweekinfintech.com/visagenai/

For instance, in fraud detection, advanced AI algorithms can monitor large volumes of transactions in real time, spotting potential fraud with increased accuracy while minimizing false positives. By leveraging this technology, banks enhance their security measures. BNP Paribas in Luxembourg reports that its AI-powered system has improved detection rates to over 90% while reducing false alerts by 75%. These advancements demonstrate how AI strengthens traditional security protocols, providing a more precise and efficient means of identifying and preventing fraudulent activities.

Furthermore, AI-driven credit decision-making for personal loans is advancing through partnerships between banks and fintech companies. These partnerships utilize sophisticated algorithms to assess alternative data sources, enabling more inclusive lending practices. For example, US Bank's alliance with the financial technology company Pagaya Technologies allows the bank to approve applicants who might otherwise be denied credit, expanding its customer base and loan portfolio. This approach not only deepens relationships with clients and drives revenue growth but also democratizes access to financial services, fostering a more inclusive financial ecosystem.

"With financial institutions losing over $400 billion to payments fraud in 2023, and losses expected to be even higher this year, the need for greater data sharing across the payments ecosystem has never been greater. However, this can't come at the cost of consumer privacy or data confidentiality. At Trudenty, we've built the Consumer Trust Network to enable this data sharing without the risks, delivering personalized fraud prevention and dynamic payment experiences that will set new standards for customer trust and payment security. Through our partnerships with Worldline and Mastercard, we're making this solution readily available to financial institutions globally."
— Lerato Matsio, CEO & Founder of Trudenty

Startup Highlight:

Trudenty is a machine-learning-powered blockchain solution that provides merchants, acquirers, and issuers with 360 consumer fraud risk intelligence to prevent friendly fraud by enabling the identification and differentiation between trusted consumers and friendly fraudsters.

#2 Enhancing Security for AI in Banking: The Path to Secure, Responsible Innovation

Incorporating AI into banking presents both incredible advantages and substantial challenges, particularly in ensuring security and compliance. High-quality AI solutions demand not only technical excellence but also robust security measures and adherence to ethical guidelines. As a Visa report highlights, "Successful AI implementation in banking depends on upholding ethical standards and establishing strong data governance." Explainable AI plays a key role in this process, enabling precise, understandable insights into AI decision-making and building transparency and trust with customers and regulators.

The Artificial Intelligence Regulation approved by the European Parliament in March 2024 has significant implications for banks using AI systems. This pioneering regulation prioritizes user safety and requires banks to assess the risk level of their AI applications and comply with corresponding requirements. Financial institutions will need to review and potentially modify their existing AI systems to ensure compliance, which may involve changes in development processes, deployment strategies, and ongoing monitoring. Additionally, banks will have to enhance the transparency and explainability of their AI systems. By proactively addressing these aspects, banks can ensure compliance with the new AI regulations while continuing to leverage AI to improve their services and operations.

Some banks are adopting a cautious approach to generative AI, focusing primarily on internal applications like enhancing agent assistance and automating processes. For example, Citi has chosen not to implement external-facing chatbots due to the risks associated with inaccuracies, known as "hallucinations," which could undermine customer trust. Nonetheless, banks are actively developing and implementing solutions for risk assessment and monitoring of AI applications to ensure that, when deployed, external chatbots are secure and reliable.

"Generative AI represents the largest platform shift since mobile, setting new standards for customer experience and employee productivity. However, it also introduces a new set of security risks with significant reputational and regulatory repercussions, including prompt injection attacks, data leaks, model theft, and resource abuse. At NeuralTrust, we've developed the industry's most advanced red teaming platform to help our banking clients rapidly identify and address vulnerabilities before they materialize."
— Joan Vendrell, CEO & Founder of NeuralTrust

Startup Highlight:

NeuralTrust delivers the analytics and security essential for large companies to integrate generative AI into their products and processes. With the use of their platform, they ensure that AI systems comply with expected behaviors, politics, and regulatory requirements, helping companies leverage the promise of this new technology while minimizing risks and potential harm.

#3 Hyper personalization as a Key Competitive Advantage

Hyper-personalization has emerged as a crucial competitive edge in AI-driven strategies in the financial sector. With access to vast amounts of customer data, banks, and financial institutions are uniquely positioned to analyze and leverage this information to deliver deeply personalized services. The challenge now lies in translating this data into insights that meet each client's specific needs.

To achieve this, banks and fintech companies are increasingly harnessing artificial intelligence to deliver tailored financial solutions. AI's predictive capabilities allow financial institutions to anticipate customer needs, proactively offer solutions, and create an individualized and relevant experience. This goes beyond traditional personalization by providing dynamic and adaptive experiences that evolve with the customer's needs and preferences.

This shift towards hyper-personalization is driven by the increasing availability of sophisticated tools and the rising customer expectations. Over 71% of consumers now expect personalized services from their financial institutions[4]. Banks can leverage these tools to analyze vast quantities of data from multiple sources, including transaction history, online reviews, social media activity, and website interactions. By analyzing spending patterns, savings behaviors, and financial aspirations, banks can create tailored offerings that truly resonate with each customer.

Real-time analysis and AI play a crucial role in this process. Machine learning algorithms can identify emerging trends, predict customer behaviors, and enable banks to adapt quickly to changing preferences. This allows for timely and relevant interactions, such as instant reward programs and dynamic financial advice based on transaction patterns.

[4] Mckinsey, 2024: https://www.mckinsey.com/industries/financial-services

BBVA, for example, employs AI algorithms to enhance customer financial management. Their app lets users monitor their spending patterns, forecast future expenses, and make informed financial decisions. The bank's virtual assistant, Blue, serves as a personal finance management tool that analyzes expenditures categorizes transactions, and predicts future costs based on historical data. It provides personalized notifications for unusual and recurring transactions, offers tailored recommendations, and adapts through continuous learning from user interactions.

Ultimately, by effectively turning data into actionable customer insights, banks can create deeply personalized experiences that meet evolving customer expectations while maintaining a competitive edge in the financial sector.

Navigating the Future

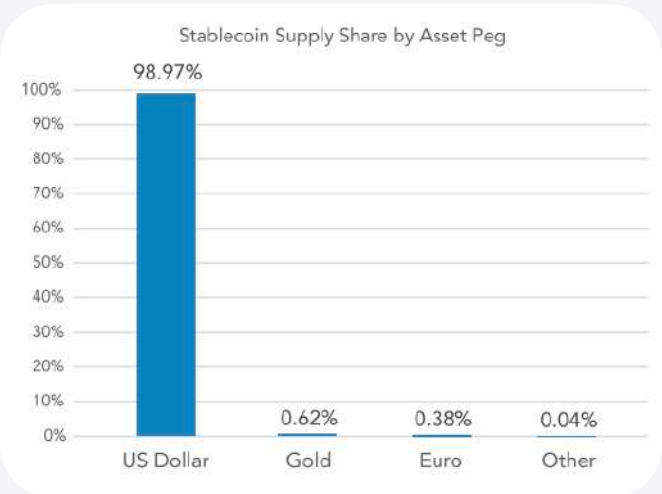
The banking landscape is changing, and banks need to change with it. To stay ahead, banks need to embrace AI-driven strategies that will help them optimize efficiency and improve customer experience.

Despite the numerous advancements and potential benefits, integrating AI in banking is not without its challenges. Ensuring data accuracy is crucial, as any inaccuracies can lead to flawed predictions and unreliable outcomes. Additionally, integrating AI technologies with legacy systems often presents a significant hurdle for financial institutions. Furthermore, the upcoming EU AI regulation raises important questions surrounding compliance and the potential return on investment for AI initiatives. Banks must also address the potential for bias in AI algorithms and ensure fairness in lending and other services such as external chatbots.

All in all, the upcoming years are pivotal for the banking industry, with generative AI playing a transformative role. Banks that successfully adopt and integrate generative AI while addressing the associated challenges will be well-positioned for growth and innovation in the future.

The Blockchain Shift: Banking in a Decentralized Future

Blockchain technology is poised to revolutionize the financial industry by increasing efficiency, transparency, and security across all banking transactions. Drawing parallels from AI's projected $1T potential value unlock for banks annually, blockchain technology presents similar transformative opportunities, particularly in the key area of stablecoins for money movement. In recent years, stablecoins have emerged as a powerful tool for moving funds across borders with unprecedented speed. Moreover, as they are primarily pegged to a commodity, a fiat currency (usually USD, as shown in the graph below), or have their supply regulated by an algorithm, stablecoins are designed to maintain a consistent price, thereby providing stability to the user across borders and transactions.



Key Opportunities for Banks

1. **Direct Merchant & Consumer Connections**: Blockchain enables banks to offer direct payment solutions, bypassing card networks and payment processors. This strengthens banks' positions as primary transaction gateways, fostering closer relationships with both merchants and consumers.

2. **End-to-End Transaction Control**: Managing transactions from initiation to settlement on blockchain eliminates the need for clearinghouses and other third-party verifiers, improving transaction speed, reducing costs, and enhancing data transparency/security.

3. **Back Office Efficiency Gains**: Blockchain's transparent ledger technology simplifies reconciliation, automates compliance, and reduces back-office processing needs, allowing banks to handle more of the transaction infrastructure directly

4. **New Revenue Streams Through Payment Rails**: Blockchain enables banks to introduce value-added services like smart contract-based payments, automated compliance, and programmable money solutions, monetizing the payment rail without intermediary fees[8].

By embracing blockchain, banks can reshape their role in the financial landscape, reducing reliance on external processors and significantly enhancing their profitability. This strategic shift positions banks to streamline operations and remain competitive by allowing them to own a larger portion of the gateway and providing a seamless, direct experience to both merchants and consumers.

#1 Stablecoins and Money Movements

Stablecoins, which are cryptocurrencies pegged to stable assets like the US dollar, are emerging as a faster, cheaper, and more secure way to transfer funds globally. By leveraging blockchain technology, stablecoins can significantly reduce transaction costs, increase speed, and enhance the security of cross-border payments. This is particularly relevant in today's globalized society, where businesses and individuals require seamless and efficient ways to move money across borders.

The advantages are compelling: traditional cross-border payment methods often involve substantial fees and lengthy processing times versus stablecoins, dramatically reducing these transaction costs and enabling near-instantaneous settlements. Stablecoins' blockchain foundation provides enhanced security through improved transaction tracking and verification capabilities. Perhaps most significantly, stablecoins enable seamless cross-border operations, breaking down outdated geographic barriers in financial services and creating a more interconnected global banking system.

Traditional cross-border payments are expensive as they involve multiple intermediate banks corresponding with each other in distinct currencies that require conversion fees at each transaction step. Moreover, processing costs, SWIFT network fees, and compliance mandates add extra charges. Furthermore, digital wallets inherently promote financial inclusion by serving unbanked populations, of which an estimated 1.4B[9] adults worldwide today.

[8] Programmable Money, Fintech Futures, 2024: https://www.fintechfutures.com/2024

[9] Adoption of Digital Financial Services: https://www.worldbank.org

Traditional banking has high entry barriers, requiring trips to physical bank branches where complex paperwork involving government IDs and proof of address is required. Moreover, most banks exclude individuals from the financial system by mandating prohibitive minimum account balances.

On the other hand, digital wallets require only a mobile phone with an internet connection and fundamental KYC information to onboard. These digital wallets then enable users to purchase stablecoins with fiat, protecting them from local currency volatility and enabling seamless international payments, such as remittances. Stablecoins such as Tether's USDT and Circle's USDC have become critical for individuals seeking financial security in nations facing hyperinflation, such as Turkey, Argentina, Zimbabwe, Egypt, and Venezuela.

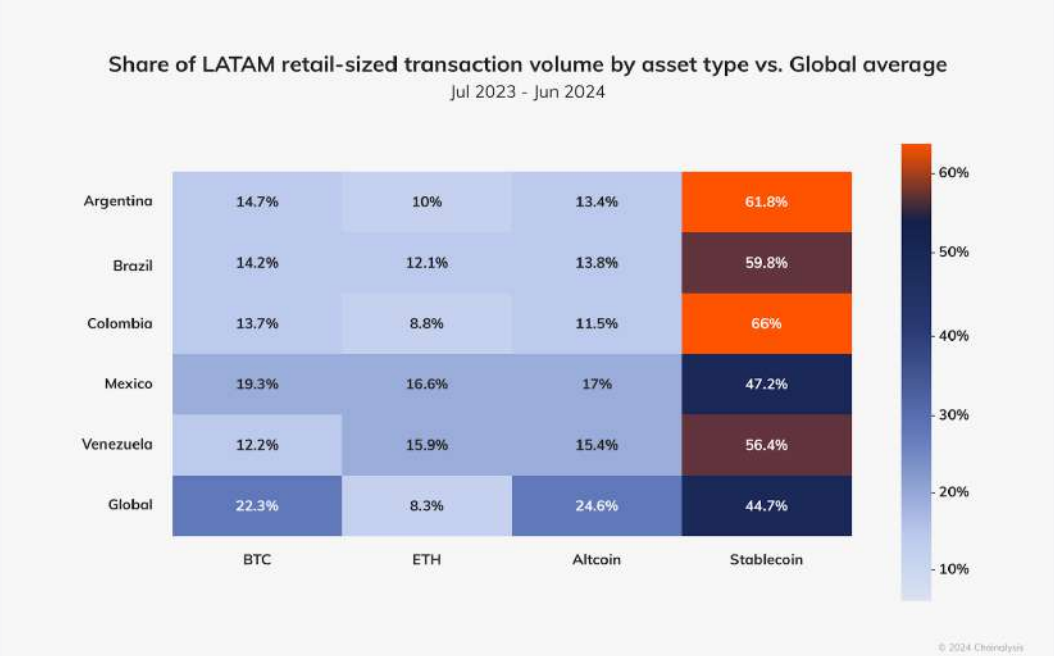
As shown below, these countries experienced inflation rates of over 25% for average consumer prices in 2024, as sourced from the IMF[10]:

As citizens of these countries confront severe currency devaluation (due to domestic inflation), flights to safe-haven assets such as USD-pegged stablecoins have become increasingly popular. Notably, 61.8% of all crypto-asset transactions in Argentina are in stablecoins — a 17% above the global average rate. With a total market capitalization of ~$180B, stablecoins have found a clear PMF as an online payment method[11]. Globally, on average, stablecoins are used for almost half of all crypto asset transactions, with particular geographic regions such as LATAM experiencing exceptionally high adoption rates as people look to protect themselves from local economic crises.

[10] International Monetary Fund, 2024: https://www.imf.org

[11] Latin America Crypto Inflows: https://cointelegraph.com

The visual below shows the share of LATAM retail-sized transaction volume by asset type vs. the global average from July 2023 to June 2024:



The growth in stablecoin adoption and digital payments is not limited to less stable economies and is becoming a truly global phenomenon. In Europe, new regulations like MiCA shape the industry and create opportunities and challenges. These regulations ensure stability and consumer protection by banning algorithmic stablecoins and requiring strict reserve backing for fiat-backed stablecoins. This is leading to a convergence of traditional finance and stablecoins, as evidenced by the growth of the prepaid card market and initiatives like the European Payments Initiative.

Furthermore, Visa has been a pioneer in the blockchain space, providing extensive infrastructure to bridge the digital and traditional financial worlds. Visa currently enables over 65+ digital wallet partners, including market leaders Binance, Trust Wallet, MetaMask, Coinbase Wallet, Crypto.com, and Phantom Wallet, to issue Visa credentials, allowing stablecoin users to seamlessly spend their digital assets at more than 130M merchants globally. However, this is predicted to be only a beginning.

At the same time, the Middle East and Africa are experiencing a surge in digital payments, driven by a desire for greater financial inclusion and faster, cheaper cross-border transactions. The UAE is leading the way in this transformation, with significant growth in stablecoin adoption. Stablecoin transactions now account for over half of all crypto value in the UAE, exceeding the global average[12].

[12] UAE Stablecoin usage, 2024: https://www.zawya.com/

This growth is further fueled by regulatory clarity, such as the Central Bank of the UAE's recent approval of a stablecoin regulatory framework and Tether's launch of a Dirham-pegged stablecoin.

The increasing prominence of stablecoins in EMEA highlights their potential to address key regional challenges. Stablecoins offer faster, more affordable, and more accessible cross-border payment solutions, which can particularly benefit migrant workers sending remittances and businesses operating across borders. Furthermore, as discussed above, stablecoins can help drive financial inclusion by providing underserved populations with access to financial services. However, continued focus on security and education is crucial to build trust and encourage wider adoption. The future likely holds further integration of stablecoins with traditional finance, with CBDCs and interoperable payment systems playing a key role in shaping the evolving landscape.

However, it is crucial to address challenges such as adapting to an evolving regulatory environment to ensure the widespread adoption of stablecoins in banking. Different jurisdictions have implemented distinct stablecoin regulations. The EU's MiCA framework categorizes stablecoins as Electronic Money Tokens (EMTs) and Asset-Referenced Tokens (ARTs). The UK, meanwhile, classifies stablecoin payments as hybrid or pure. To date, the U.S. lacks federal stablecoin legislation, with regulations varying vastly from state to state. New York's BitLicense, introduced in 2015, provides a notable licensing model. Common regulatory principles include requiring stablecoin issuances for approval and ensuring 1:1 reserve backing.

Startup Highlight:

HIFI

HIFI provides a seamless solution for businesses, payment companies, and banks to integrate blockchain-based payment tools into their systems, enabling fast and efficient stablecoin transfers. With APIs for stablecoin orchestration, the company supports instant payouts to over 60 countries and multi-currency compatibility, among others.

pier

Pier Wallet is a Swiss-developed Wallet-as-a-Service (WaaS) platform that enables apps to integrate blockchain functionality through simple API/SDK implementation. The platform eliminates user gas fees through a paymaster system and includes features like transaction batching, multi-signature support, and MPC for biometric/social logins.

coinsub

Coinsub is pioneering a unified gateway for crypto commerce, addressing the accelerating trend toward fragmentation in digital finance. Coinsub resolves this by offering a platform that seamlessly integrates stablecoins, various token standards, blockchain ecosystems, and multiple CBDCs, enabling a unified, consumer-friendly experience.

#2 Yield-Bearing Assets and Tokenization

Blockchain technology also enables tokenizing assets, representing ownership of real-world assets like real estate or bonds on the blockchain. This process unlocks new opportunities for investors and financial institutions alike. Tokenization allows for fractional ownership, thereby increasing liquidity and accessibility to a wider range of investors. Benefits include enhanced liquidity, reduced transaction costs, and improved transparency due to the immutability of blockchain records.

Blockchain's encryption and distributed ledger capabilities also help minimize fraud, as every transaction is recorded and cannot be altered. Smart contracts allow for the automatic execution of agreements, reducing the need for intermediaries and enhancing efficiency.

For instance, tokenized real estate platforms allow individuals to purchase fractional property ownership, lowering the entry barriers in the real estate market. Other examples of tokenized assets in banking include corporate bonds, precious metals, and private equity. For instance, companies like Securitize and Tokeny provide infrastructure for issuing and trading tokenized bonds, giving investors fractional access to traditionally illiquid assets, such as private debt or small business equity.

This increased liquidity and accessibility can lead to more efficient capital markets and create new investment opportunities. The benefits of tokenization in banking include increased liquidity, faster settlement, and reduced costs due to blockchain efficiencies.

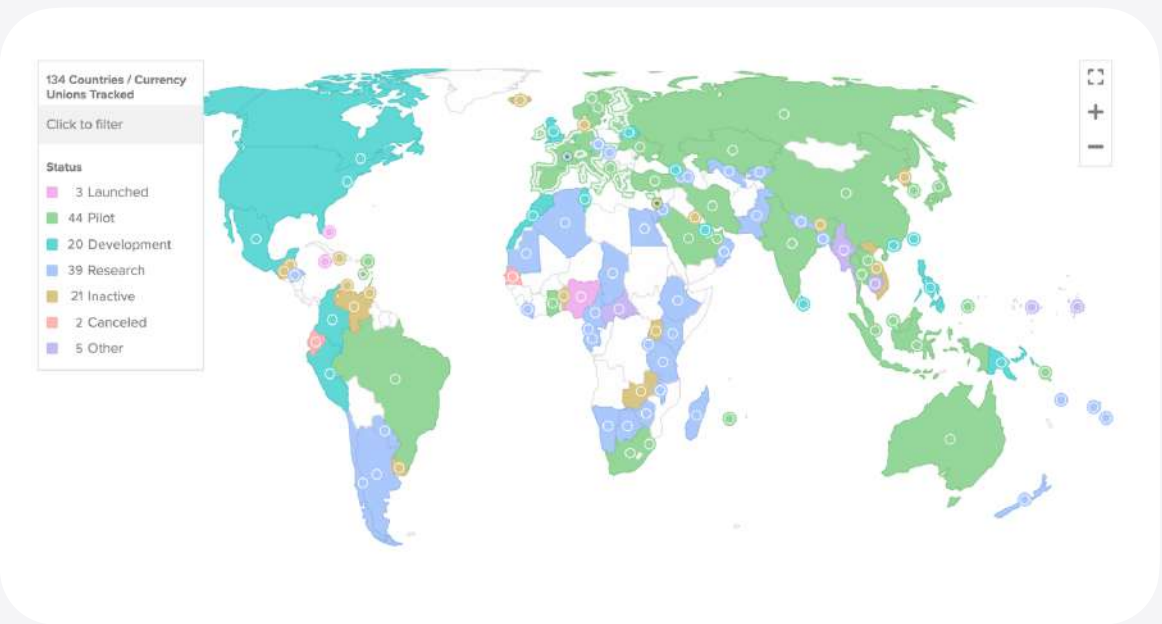
When banks consider tokenized assets on the blockchain, regulatory concerns include compliance with securities laws, KYC and AML requirements, asset segregation, transaction monitoring, and suspicious activity reporting. The asset's classification as either a security or utility token impacts its regulatory obligations.

Custodial responsibilities require clear ownership records, while potential market manipulation risks and cross-border regulations demand vigilance from banks' risk management teams. Key aspects include jurisdictional differences, smart contract oversight, and investor protection. In sum, developing clear regulatory frameworks for tokenized assets and ensuring investor protection are crucial considerations for the successful implementation of this technology, and players in this emerging market must be vigilant of and adaptable to the ever-evolving landscape.

#3 Global CBDC Adoption: A Rapidly Expanding Landscape

As of September 2024, over 130 countries, representing 98% of global GDP, are exploring Central Bank Digital Currencies (CBDCs), with 66 nations in advanced stages of adoption, including pilots, development, and full-scale launches. This marks a sharp increase from 2021, when only 35 countries were considering CBDCs. For instance, China's digital yuan pilot has expanded to 17 provinces, processing over 7T yuan ($986B) in transactions by mid-2024, nearly quadrupling its 2023 volume.

Similarly, the European Central Bank has initiated a multi-year digital euro-pilot, with every G20 nation now exploring CBDCs to meet unique regional demands of governments worldwide, including all original BRICS member states. Motivations for exploring CBDCs include streamlining monetary policies and enabling more efficient payment systems through blockchain-enabled digital currencies issued by central banks. Below is a map of the current state of CBDCs internationally as of September 2024, tracked by The Atlantic Council:



Unlocking Financial Opportunities within Blockchain

Blockchain technology is reshaping banking by offering increased efficiency, transparency, and security. Stablecoins are revolutionizing cross-border payments, offering faster, cost-effective, and secure transactions compared to traditional banking methods. Asset tokenization creates new opportunities for investors, enhances liquidity, and allows fractional ownership in previously inaccessible markets. However, the successful integration of these innovations in banking depends on addressing regulatory challenges, ensuring investor protection, and establishing secure frameworks to adapt to this transformative shift in the financial industry.

"Blockchain is transforming banking with faster transactions, reduced settlement times, and greater availability. Stablecoins are reshaping global payments by offering fast, cost-effective alternatives to traditional systems. They remove barriers for entrepreneurs, enabling seamless transactions without gatekeepers or minimum balances. In cross-border payments, stablecoins replace costly correspondent banking with daily settlements, reducing delays and improving financial infrastructure.

Larger enterprises are also exploring stablecoins, drawn by their ability to bypass intermediaries and address issues like fraud prevention and identity verification. By 2025, stablecoins are expected to revolutionize payments, benefiting consumers, businesses, and institutions while accelerating the evolution of financial systems worldwide."
— Maximillian Jungreis, Head of Crypto & Digital Assets, Plug and Play

PSD3 & Beyond: Open Banking's New Era

Open banking is rapidly reshaping the financial landscape, and 2025 promises to be a pivotal year for its continued evolution. With the global market projected to reach $40.22 billion by 2029, banks have a crucial role to play in this transformation[12]. By capitalizing on Open Banking, financial institutions can enhance their offerings, improve efficiency, and thrive in this new era of finance. Interestingly, according to Capgemini Research Institute, banks need to embrace instant payments; however, 25% of banks can receive instant payments, and 53% can send and receive them[13].

The upcoming Payment Services Directive (PSD3) approved by the European Commission in June 2023 is set to revolutionize the Open Banking landscape further. Building upon the foundation laid by PSD2, PSD3 aims to enhance security, promote innovation, and foster greater competition within the European financial services market.

This new directive, expected to come into effect in mid to late 2025, will introduce stricter security measures, improve customer authentication processes, and further empower consumers to control their financial data. PSD3 will also likely expand the scope of open banking to include new types of financial data and services, creating even more opportunities for banks and fintechs to innovate and collaborate.

Banks have a crucial role to play in this evolving landscape. Read on to discover how financial institutions can leverage open banking to enhance their offerings, improve operational efficiency, and thrive in this new era of finance.

[12] Open Banking Mordor Intelligence, 2024: https://www.imf.org

[13] Future of Payments Capgemini 2025: https://www.capgemini.com/WPR_2025

#1 Embracing Account-to-Account (A2A) payments

One of the key ways banks can leverage Open Banking is by embracing Account-to-Account (A2A) payments. This technology allows for direct payments between accounts, bypassing costly intermediaries like card networks such as Visa and Mastercard. By offering A2A payments, banks can significantly reduce transaction fees and streamline the payment process, leading to faster processing times and reduced reconciliation efforts. This optimizes operational efficiency and enhances security by mitigating fraud risk. Ultimately, A2A payments provide a frictionless experience that surpasses traditional methods in speed, convenience, and cost-effectiveness, leading to increased customer satisfaction and loyalty.

Bizum and Wero are prominent examples of successful A2A payment implementations in Europe. Bizum, a Spanish mobile payment platform supported by a consortium of 38 financial institutions, enables instant money transfers using mobile phone numbers. Its success can be attributed to its user-friendly interface, speed, and security features, highlighting the strong consumer demand for A2A payment solutions. Bizum has partnered with banks in Italy and Portugal to expand its solution, aiming to create a more interconnected European payment ecosystem. Wero, backed by the European Payments Initiative (EPI) and a consortium of 16 banks, represents the next stage in A2A payment evolution. Launching in Germany, Belgium, and France, Wero facilitates instant, cross-border transfers using phone numbers or QR codes.

Both Bizum and Wero are vying to expand their reach and become the dominant A2A payment solution across Europe, potentially leading to a unified system for instant payments.

Startup Highlight:

Token is an open banking infrastructure provider focused on enabling A2A payments. They offer a cloud-based platform that allows banks and merchants to connect to any bank account in Europe, facilitating instant and secure A2A payments. Token boasts high-performance connectivity and instant settlement, making it a key player in the A2A payment space.

Quidkey is a white-label A2A payment solution that allows businesses to integrate bank-branded payments directly into their checkout process. Partnering with banks provides a seamless and secure A2A payment experience that leverages customers' trust in their existing banking relationships.

#2 Tailored insights for financial management

Open banking revolutionizes financial institutions' ability to offer hyperpersonalized solutions. Banks can now deliver highly personalized services by leveraging secure access to comprehensive customer data through open banking APIs. This information allows them to develop sophisticated AI-driven tools that analyze transaction patterns, spending behaviors, and financial goals with unprecedented accuracy. Customers benefit from custom-built financial advice, proactive alerts, and product suggestions that align precisely with their unique financial situations.

For instance, users might receive real-time notifications about potential savings opportunities or investment recommendations based on their specific risk profile and financial objectives. This data-driven approach enables the creation of intuitive, personalized financial dashboards that provide customers with a holistic view of their finances, empowering them to make well-informed decisions and take control of their financial future.

Startup Highlight:

Personetics is an AI-powered platform that analyzes customer data to offer personalized financial guidance, such as automated savings suggestions, budgeting advice, and investment recommendations.

#3 Streamlining essential processes

Furthermore, open banking enables banks to streamline essential processes and bolster security measures. Banks can reduce manual effort, improve efficiency, and accelerate the onboarding process by automating customer onboarding and KYC checks through access to real-time transaction data. Leveraging open banking data can also expedite and enhance the accuracy of credit scoring decisions, leading to faster loan approvals and broader access to credit for customers.

To protect both the institution and its customers, banks should implement sophisticated fraud detection mechanisms that analyze real-time transaction data and identify suspicious patterns.

Startup Highlight:

Trulioo is a global identity verification platform that helps banks streamline KYC and AML compliance processes by automating identity verification and fraud prevention measures. The company can verify the identities of over 5 billion consumers across 195 countries, using more than 450 data sources.

#4 Open finance and data security

Banks embracing Open Finance can revolutionize their services by offering a centralized platform for comprehensive financial management. This would allow customers to seamlessly oversee their bank accounts, investments, pensions, and insurance policies in one place. This holistic approach significantly enhances convenience and customer satisfaction. To succeed in this new landscape, banks must prioritize data security and transparency to build and maintain customer trust while staying informed and compliant with evolving data privacy regulations to mitigate risks and uphold a strong reputation.

By leveraging Open Finance, banks can provide personalized financial advice based on comprehensive customer data and streamline operations through automated processes and API integrations. Ultimately, these innovations position banks as leaders in the financial services landscape, empowering customers with greater insights and control over their finances.

Startup Highlight:

Tink is an open banking platform that provides a comprehensive suite of APIs that enable banks and fintechs to access aggregated financial data, empowering customers to manage their entire financial lives in one place.

The Power of Open Data

The financial landscape is undergoing a rapid transformation fueled by Open Banking, and the arrival of PSD3 in 2025 will significantly accelerate this trend. Banks have a critical window of opportunity to embrace and leverage this evolution to their advantage. By capitalizing on Open Banking, financial institutions can enhance their offerings, streamline operations, and thrive in this new era of finance.

Collaborating with open banking fintechs offers a significant opportunity for banks to enhance operational efficiency, access valuable customer data, and foster innovation. These partnerships enable banks to leverage advanced technologies and analytics, allowing for more personalized services and streamlined processes. Additionally, collaboration helps banks navigate regulatory challenges while fostering a more integrated financial ecosystem that benefits both institutions and customers.

The Future of Banking is Sustainable

The banking sector is experiencing a profound transformation driven by the urgent need to address climate change and promote sustainable practices. Banks are stepping up to empower both consumers and businesses in the transition to a greener future, evolving beyond their traditional role as financial service providers to become key drivers in the decarbonization of economies by directing capital flows toward sustainable models.

This evolution is not merely a matter of compliance; it represents a fundamental shift in the banking industry's purpose and strategy. This commitment is being materialized with the launch of ambitious initiatives such as the Net Zero Banking Alliance, where over 140 global leading banks from over 44 countries have pledged to achieve net-zero emissions by 2050 [14].

This shift is driving a wave of innovation across the sector, where technology plays a crucial role. By leveraging advancements in AI, data analytics, and digital platforms, banks can integrate tools to effectively integrate sustainability into every facet of their operations, from managing climate-related risks within their portfolio to driving customer engagement with gamification and personalized insights and analyzing data of their corporate clients to assess their ESG performance and regulatory compliance.

"Innovation and sustainability are two sides of the same coin, and Caixabank has a key role to play as a vehicle for the investment required for the transition. With the new Sustainability Plan, we will mobilize 100 billion euros between 2025 and 2027 to build a greener economy and support the economic and social development of all businesses and people. We will do so by financing renewable energy projects, clean mobility, and efficient buildings, facilitating solutions that accelerate the decarbonization of companies and families, promoting financial inclusion, favoring training and employment, and responding to the solutions posed by increasing longevity. Innovation is key to achieving our goals."
— Álvaro Colino, Director of Sustainable Business Products at CaixaBank

[14] Net Zero Banking Alliance: https://www.unepfi.org/net-zero-banking/

#1 The Customer Experience of Sustainable Banking

In response to the growing consumer awareness about environmental impact, banks are taking an active role in empowering customers on their journey towards sustainability. To facilitate this, a key approach has been the integration of impact tracking and gamification tools within banking apps, providing customers with detailed insights into their consumption patterns and their environmental effects.

It is becoming increasingly common for banks to offer carbon footprint analysis based on customers' purchases. Specialized startups provide the technology to measure environmental impact through transactional data, enabling customers to understand their spending habits and identify areas where they can make the most significant positive impact. A notable example is the collaboration between KBC Bank Bulgaria and Connect Earth. By adopting Connect Earth's API technology, KBC users in Bulgaria have gained awareness of their carbon footprints and have actively reduced them. Over 600 million transactions have been enriched with CO2e estimates, reducing 3 million kg of CO2e emissions (a 6.8% decrease) due to changes in purchasing behavior.

While purchase analysis is a valuable tool, banks can unlock further potential in driving sustainability by helping customers minimize their environmental footprint across other aspects of their lives, such as home energy use and mobility.

The housing sector provides a compelling illustration of this opportunity. The increasing necessity to adapt homes to energy efficiency standards is set to drive demand for renovations and the purchase of energy-efficient products. This presents an opportunity for banks to utilize innovative solutions that assess the energy performance of their client's homes and pinpoint areas for improvement. Banks can then use this information to offer personalized financial products, like loans for green home upgrades.

This customer-centric approach promotes environmental awareness, strengthens customer relationships, fuels engagement, and positions banks as leaders in the transition to a more sustainable economy.

Startup Highlight:

Connect.Earth supports financial institutions in offering their retail and business customers carbon emission measurement solutions. Its APIs convert financial transaction ledgers into standardized carbon footprint calculations. This is achieved using a unique carbon intelligence infrastructure, progressive data models, and AI.

Clevergy empowers companies to champion energy efficiency and sustainability. They provide a cutting-edge energy transition tool that helps banks optimize their energy offerings while empowering customers to save energy and reduce their carbon footprint.

#2 Guiding Businesses Towards Sustainability

In response to the growing consumer awareness about environmental impact, banks This customer-centric approach promotes environmental awareness, strengthens customer relationships, fuels engagement, and positions banks as leaders in transitioning to a more sustainable economy.

Although individual consumer engagement is essential, businesses are key to driving significant environmental change. Banks, as trusted advisors, must proactively guide their corporate clients in developing robust transition plans and bridge the gap between sustainability aspirations and their current levels of practice.

Banks can leverage technological solutions to assess and monitor their clients' ESG performance to achieve this. New fintech solutions can streamline a company's collection, organization, and analysis of ESG data to efficiently evaluate their progress and help them define a transition roadmap, adapting to different industries and maturity levels. This analysis can also help assess a company's regulatory compliance and ultimately facilitate access to sustainable financing.

Integrating these digital solutions can be particularly beneficial for SMEs, who often face challenges in meeting increasing data demands and reporting requirements. An OECD survey highlighted this challenge, with most financial institutions reporting that access to data on SME clients' sustainability performance is a significant obstacle [15].

With a collaborative approach and the right technological partner, financial institutions can actively engage with corporate clients, provide valuable and personalized advice, and give them financial solutions to support each stage of their sustainability journey.

[15] OECD Survey, 2023: https://www.oecd.org/oecd/financing-smes

#3 Managing Climate Risk in Banking Portfolios

Another central challenge banks face is appropriately managing and integrating climate-related risks within their loan portfolios. Current risk models fail to adequately incorporate the environmental impact many of their corporate clients face, leading to underestimating their actual risk exposure.

Financial regulators and supervisors are also increasing pressure on institutions to manage these risks adequately. A study by the European Central Bank estimated that financial institutions could face losses of up to 70 billion euros in a climate crisis if they do not adequately measure the climate impact on their borrowers [14].

In this context, comprehensive climate risk management becomes crucial for financial institutions to anticipate and proactively manage their portfolios' exposure. This management requires a thorough analysis, including both physical risks, such as damage to infrastructure due to extreme weather events, and transition risks, which include the adaptability of companies reliant on fossil fuels to a decarbonized economy.

This challenge has led to significant traction for climate risk solutions, with fintech tools having a transformative impact on enabling institutions to assess and mitigate climate risks within their portfolios.

Thanks to integrating AI, predictive analytics, and machine learning, risk models and climate risk assessment tools are becoming increasingly robust and precise. These technologies, typically as software, facilitate collecting and analyzing large volumes of data, creating models to predict future climate scenarios, and, ultimately, quantifying the climate impact on identified businesses.

As institutions begin to assess the long-term sustainability of their borrowers, new startups and solutions will facilitate the integration of transition risk intelligence into credit risk models, giving it the same weight as traditional credit scoring metrics.

Startup Highlight:

CLIMATE X

Climate X is a leading climate risk intelligence company that helps financial institutions assess and manage the impact of climate change on their assets. Using a unique combination of a Digital Twin of the Earth, physics-based modeling, and AI, Climate X provides detailed risk assessments for various climate hazards across different warming scenarios.

[14] Climate risk, European Central Bank, 2022: https://www.expansion.com/empresas/banca

A Sustainable Future for Finance

The financial sector stands at a pivotal moment regarding ESG. Driven by growing demand from all stakeholders (customers, investors, and regulators), sustainable banking in Europe has rapidly attained a central position, establishing itself as a fundamental pillar of the sector.

This transformation will require banks to develop new internal capacities, adopt innovative solutions, and embrace the potential of Climate Fintech to navigate this fast-paced landscape. Larger institutions are already taking the lead, establishing strategic partnerships and investing in cutting-edge technologies to ensure compliance and unlock competitive advantages in a rapidly changing market.

Banks embracing this transformation will be better positioned to navigate future regulatory challenges, enhance their client relationships, and drive long-term value creation.

Key Investment Trends Shaping Financial Institutions

As the financial services industry undergoes rapid transformation driven by technological advancements, banks increasingly recognize the need to invest in innovative solutions that enhance their operational capabilities and customer experiences. In 2024, banks focused on external investments in technology companies and startups that can provide them with a competitive edge in areas such as artificial intelligence, digital customer engagement, data analytics, blockchain, and process automation.

Despite a general slowdown in venture capital activity, strategic investments in Artificial Intelligence, mainly by European banks, are steadily increasing. According to the Evident AI Index, while overall technology investment experienced a 28% decline, AI remains a primary focus for the industry. European banks are leading this trend, accounting for 45% of global AI dealflow [15]. Notably, 66% of their funding is directed toward European AI startups.

Goldman Sachs has historically led in AI investment within the Evident AI Index landscape, but Citigroup currently dominates recent activity. BNP Paribas demonstrates aggressive growth in this area, rising to third place in overall AI dealflow. ING, the only European bank in the top 10, concentrates on early-stage investments (seed rounds) in AI solutions specifically designed for financial services.

Deep Dive in the Emerging Investment Trends in Banking

This year, significant transactions have highlighted the changing investment dynamics of banks within technology startups. The banking sector continues demonstrating a strong commitment to artificial intelligence, as evidenced by BNP Paribas' investment in Mistral AI's $415 million Series A funding round and Deutsche Bank's strategic investment in Aleph Alpha, a leading German AI company.

This strategic move underscores their dedication to embracing innovative technologies and reflects a broader trend within the industry toward aggressive investment in AI capabilities. Banks like BNP Paribas and Deutsche Bank aim to gain a competitive edge in an increasingly digital landscape by supporting companies at the forefront of AI development.

[15] Evident AI Index, 2024: https://evidentinsights.com/ai-index/

Blockchain technology is also gaining traction, with startups offering blockchain-based solutions for retail banking. Stripe's recent $1.1B acquisition of Bridge, a leading stablecoin infrastructure provider, highlights the growing importance of this technology for facilitating frictionless international payments. Bridge has grown rapidly since its 2022 founding and has provided cross-border payment and government aid solutions, attracting high-profile clients such as SpaceX and Fintech companies globally. Stripe joins the likes of PayPal, which launched its PYUSD stablecoin last year, and Robinhood, which acquired Bitstamp earlier this summer in June, further highlighting fintech's shift towards crypto-based financial solutions.

Alongside AI and blockchain, Climate Fintech continues to attract significant investment, although the sector has experienced a readjustment after a period of explosive growth. However, funding in this area remains higher than pre-pandemic levels, demonstrating its continued importance in the broader sustainability transition. In 2024, UBS Next, the venture arm of UBS, and CommerzVentures invested €34 million in the Swedish fintech startup Doconomy. The startup works with more than 100 financial institutions around the world to help their clients measure the CO2 footprint of their transactions. This investment reflects a growing recognition among financial institutions of their role in promoting sustainability and addressing climate change.

Plug and Play Insight:

The primary focus of technology investments in banking centers around enhancing efficiency, improving customer experiences, and staying competitive in a tech-driven market. Banks and corporate venture capital (CVC) arms are investing in startups to adapt to industry shifts, with a significant focus on AI, mobile-first banking, personalization, open banking, and blockchain.

As banks continue to navigate the innovation landscape, we can expect to see further innovations and strategic investments, aiming to unlock new growth and better meet the changing needs of their customers by maintaining a strategic advantage in an increasingly tech-driven financial ecosystem.

Conclusion: The Tech-Driven Transformation of Banking

The banking sector is undergoing unprecedented transformation, with exciting new opportunities, daunting challenges, and complicated regulations. Technological advancements, evolving customer expectations, and the urgent need for sustainable practices are reshaping the financial landscape. To thrive in this environment, banks need to be more than just financial institutions; they need to become savvy companies that put the customer at the center of everything they do.

This report has explored the key trends shaping the future of banking, from the rise of digital-first banking to the integration of AI and blockchain. We've demonstrated how banks are using innovation to personalize the customer experience, streamline operations, and create new products and services.

We've also highlighted the importance of sustainability in the future of banking. Consumers and investors alike are demanding that banks take a more active role in addressing climate change and promoting social responsibility. In the coming years, we expect to see even more innovation in the banking industry. AI will become even more sophisticated, blockchain will become more widely adopted, and Open Banking will create new opportunities for collaboration and growth.

Banks that proactively embrace these trends and invest in innovation will be well-positioned for growth and success. By harnessing the power of technology, prioritizing customer-centricity, and integrating sustainability into their core strategies, financial institutions can shape a future where banking is more efficient, inclusive, and responsive to the needs of society and the planet.

The key takeaway from this report is clear: In today's highly competitive financial environment, leading banks must consistently prioritize innovation and rapidly adopt emerging technologies. This dedication to staying ahead is essential for preserving their competitive advantage and succeeding in the face of continuous disruption.

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