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Advanced Payments & Fintech Report 2025

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Tue To

Note from our Head of Fintech

Welcome to EDC's Advanced Payments & Fintech Report 2025. In this edition, we delve into 14 key topics that capture the latest trends shaping the payments and fintech landscape. Our aim is to provide valuable insights into the critical developments, challenges, and opportunities that will define the future of the industry.

2024 has been a pivotal year. The ongoing recovery from the COVID-19 pandemic has sparked new economic dynamics, paving the way for innovation across sectors. Simultaneously, geopolitical tensions and climate-related disruptions have added layers of complexity and uncertainty to global markets.

The payments sector is in the midst of a profound transformation. One of this year's key trends is the rise of generative AI, which is revolutionizing financial services. From enhancing customer interactions to driving operational efficiencies, AI is optimizing processes and enabling businesses to scale more effectively. Additionally, the emergence of Central Bank Digital Currencies (CBDCs) is reshaping global monetary systems, establishing new frameworks for digital payments and further driving change across financial networks.

As we move toward 2025, cutting-edge technologies are fundamentally changing how transactions are conducted. The seamless connectivity offered by IoT devices, the democratization of financial services through Open Banking and blockchain, and the rising popularity of mobile wallets all signal a shift toward more integrated, frictionless, and efficient systems.

Nevertheless, the road to widespread adoption—especially in emerging markets— remains challenging. Regulatory barriers, infrastructure gaps, and evolving consumer preferences continue to shape the pace of progress. Looking forward, the future of payments will depend on finding the right balance between innovation, inclusion, and regulation. As industry leaders capitalize on new opportunities, it will be crucial to ensure these advancements are secure, accessible, and designed to meet the diverse needs of consumers, all while fostering trust and ensuring long-term stability.

I would like to extend my gratitude to the EDC team for their contributions to this report. Our mission is to guide our clients and partners through these dynamic times, helping them leverage new opportunities while navigating the complexities of the evolving landscape.

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Introduction

In an era of rapid technological advancements and shifting consumer expectations, the payments industry is undergoing a profound transformation.

This report examines three critical areas driving the latest trends in payments and fintech, offering insights into emerging technologies and the evolving needs of businesses and consumers.

1. Emerging technologies
Artificial intelligence (AI), the Internet of Things (IoT), blockchain, and Central Bank Digital Currencies (CBDCs) are revolutionizing payment systems. The growing adoption of Alternative Payment Methods (APMs) is also reshaping how transactions are conducted.

2. Financial services inclusion and innovations Open banking, financial inclusion initiatives, digital banks, and B2B cross-border payments are driving innovation across the financial ecosystem. Peer-to-peer (P2P) remittances and insurtech are expanding access to financial services for underserved populations and emerging markets.

3. Consumer trends
Consumer preferences are shifting, with innovations in e-Commerce, in-store payments, and the gig economy prompting the industry to deliver more seamless and convenient solutions. Despite the decline in cash usage, it is unlikely to become obsolete anytime soon.

Looking ahead, the convergence of technological advancements, financial inclusion, and evolving consumer preferences will continue to reshape the payments and fintech landscape. This report explores 14 key topics within these critical areas, providing a comprehensive outlook on the trends set to define the industry's future.

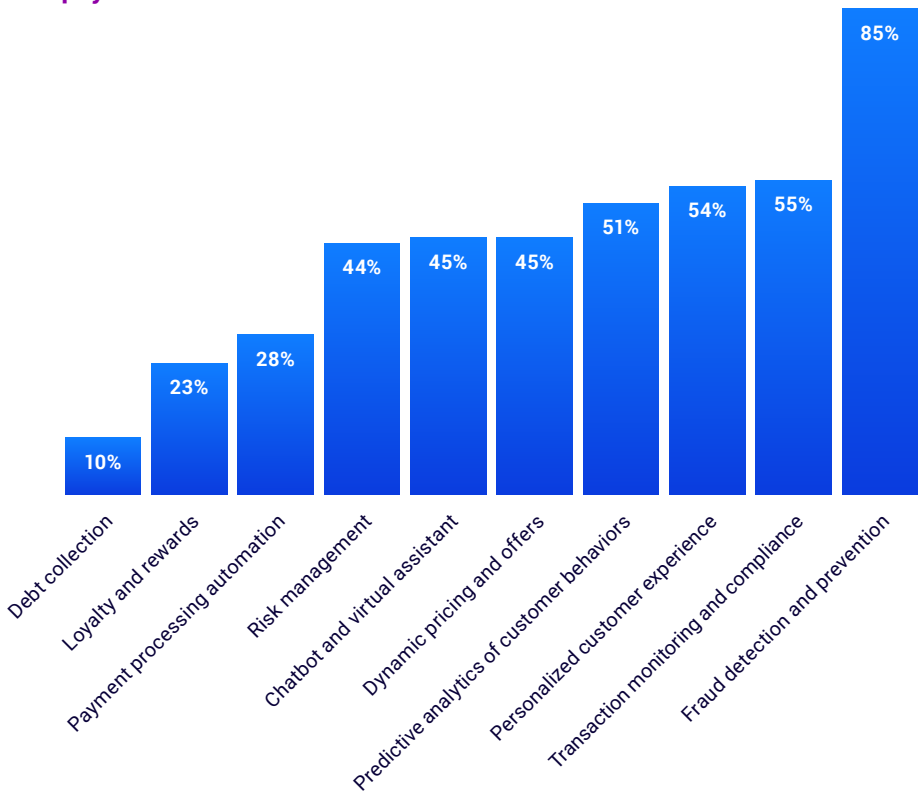
Advanced Payments Survey Results

Advanced Payments Survey Results

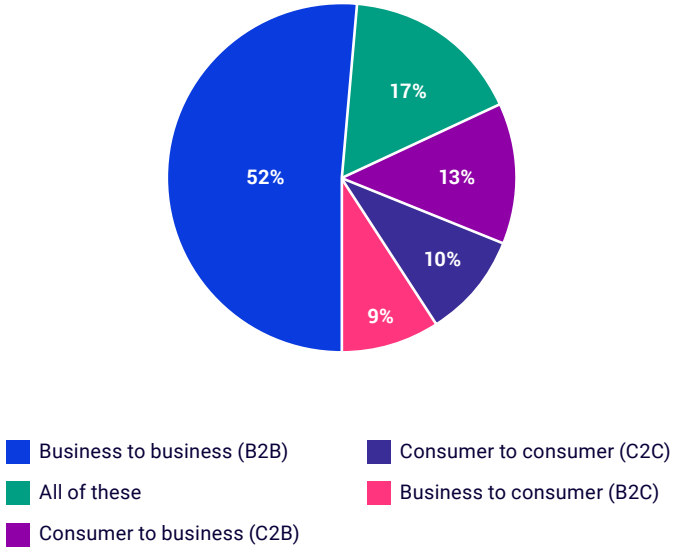
As with previous reports, we conducted an industry-wide survey between May and July 2024, gathering insights from 100 senior payments professionals across the globe.

The survey revealed the most pressing challenges and opportunities currently shaping the payments industry.

Q: What are the growing use cases of AI and machine learning in payments?



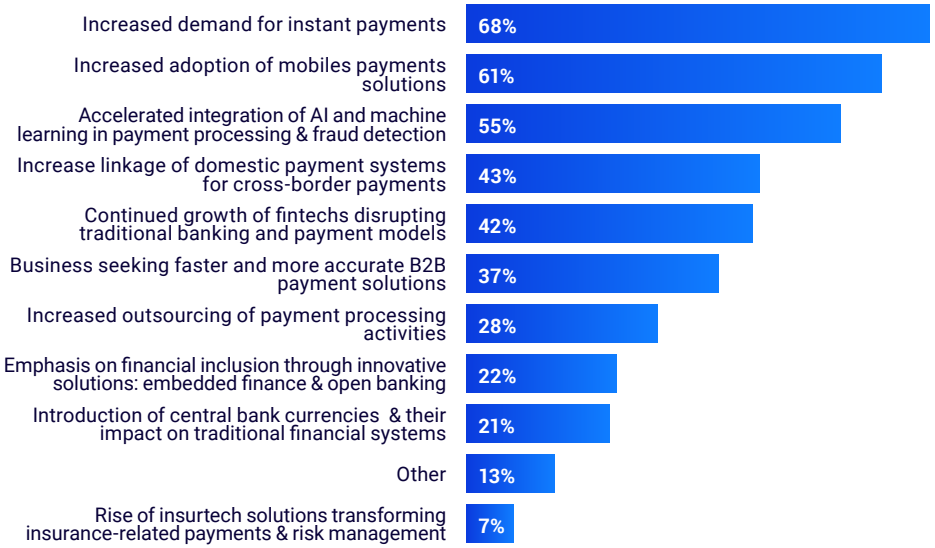
Q: Which segment of the cross-border payments market do you think has the greatest potential for innovation?



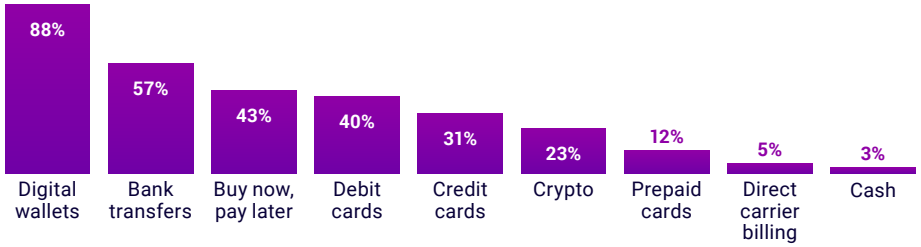
Demand for instant payments and mobile solutions

A notable 68% of respondents identified the rising demand for instant payments as a key trend, while 61% highlighted the growing adoption of mobile payment solutions. This aligns with the prediction that digital wallet usage will surge, with 88% of professionals expecting increased demand over the next 1 to 3 years.

Q: What are the most influential trends shaping the future of the payments industry?



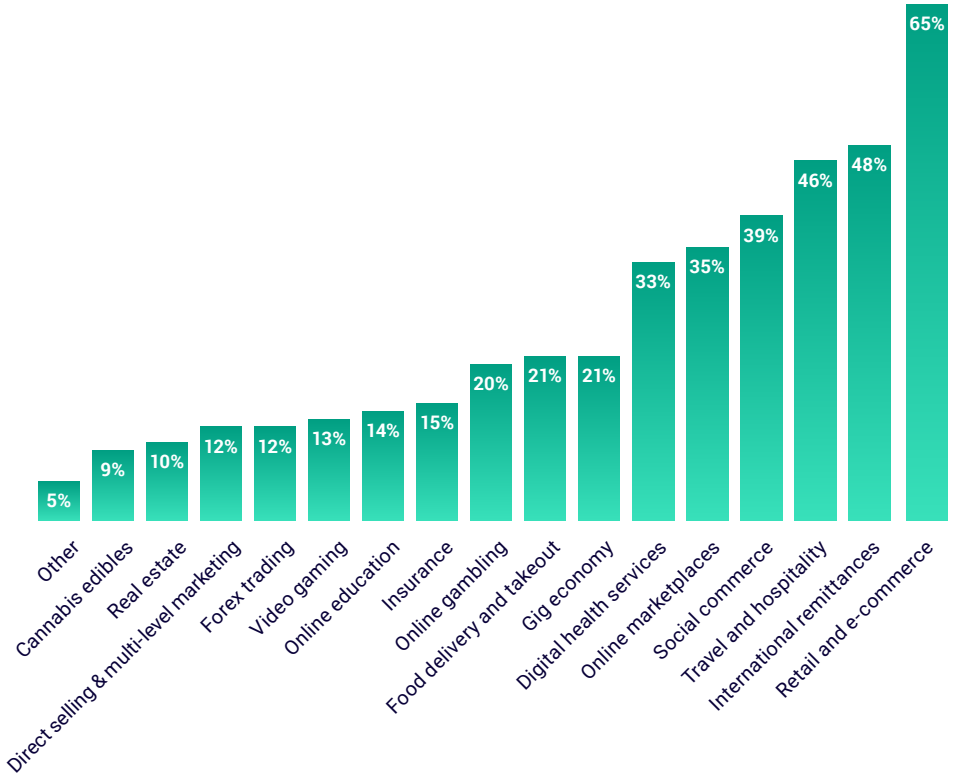
Q: Which payment methods do you expect increased demand over the next 1 to 3 years?



Growth verticals

Retail and e-Commerce are projected to experience the fastest growth in digital payments, with 65% of respondents designating these sectors as top priorities. International remittances (48%) and travel and hospitality (46%) are also expected to undergo substantial digital transformation.

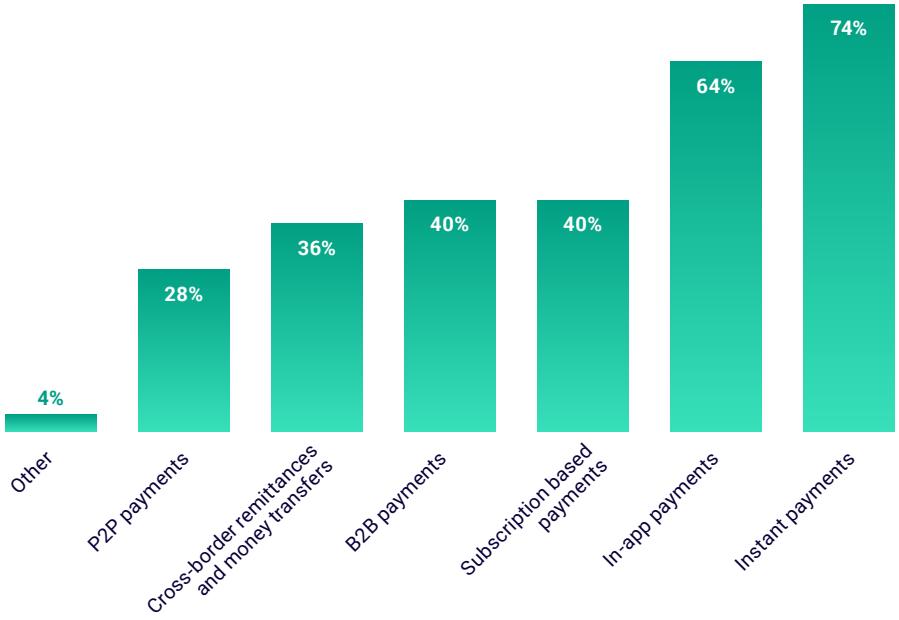
Q: Which industry verticals will likely see a steep digital payments growth over the next 5 years?



Emerging payment methods and technologies

Instant payments (74%) and in-app payments (64%) are forecasted to see the most significant growth in the next 1-3 years. Respondents emphasized the increasing importance of digital wallets and bank transfers, while Buy Now, Pay Later (BNPL) continues to gain traction. Technologies such as instant payments (75%), open banking APIs (68%), and tokenization (57%) were cited as essential in today's market.

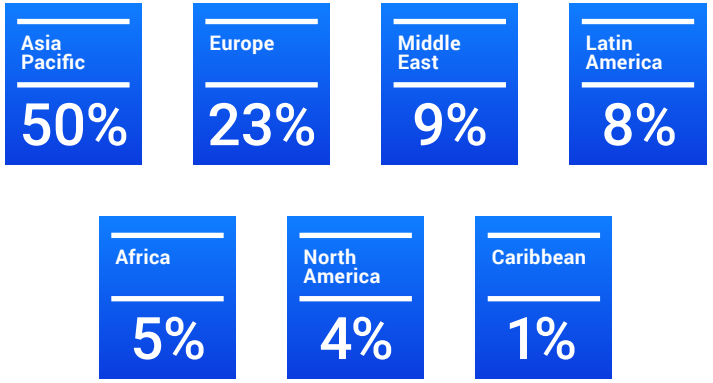
Q: Which areas of payments do you expect the greatest growth over the next 1 to 3 years?



Regional innovation hubs

The Asia-Pacific (APAC) region is expected to lead payment innovations over the next 3-5 years, with 50% of respondents identifying it as the top region, followed by Europe at 23%. APAC's dynamic growth is fueled by advancements in mobile and instant payment solutions.

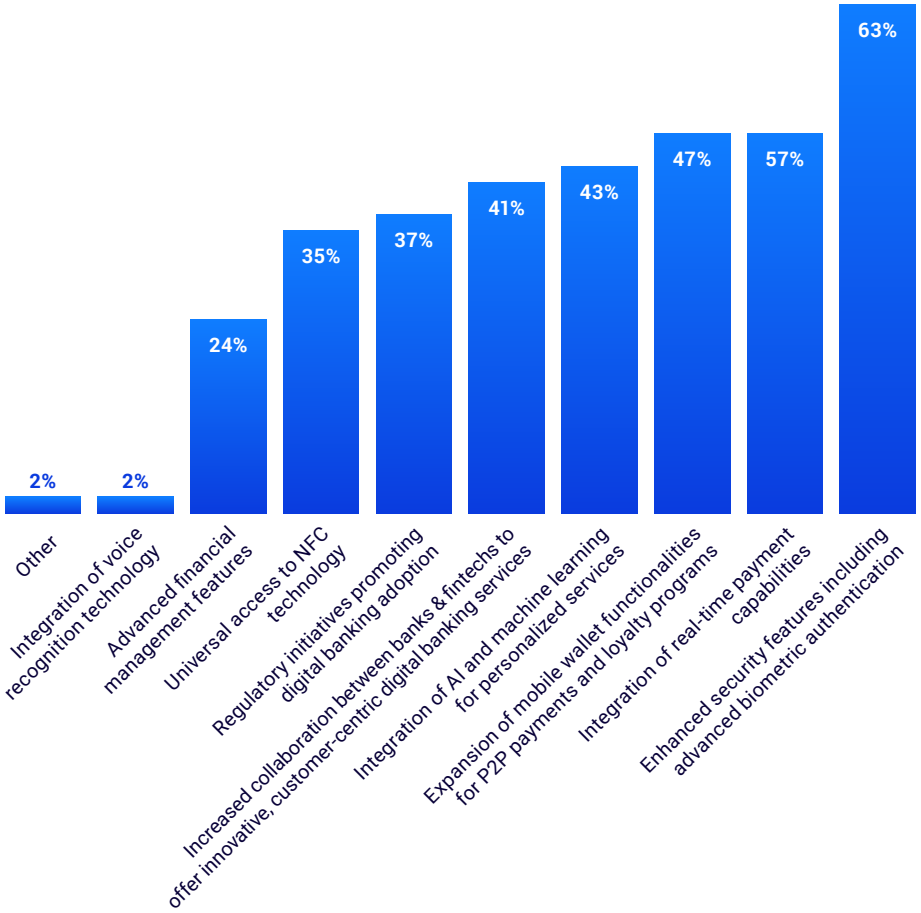
Q: Which region do you think will drive the most significant innovations in payments over the next 3 to 5 years?



Security and functionality in mobile banking apps

Enhanced security features, such as advanced biometric authentication (63%), and real-time payment capabilities (57%) are driving the growth of mobile banking apps. Expanding mobile wallet functionality to include P2P payments and loyalty programs (47%) is also seen as essential for increasing the appeal of digital banking.

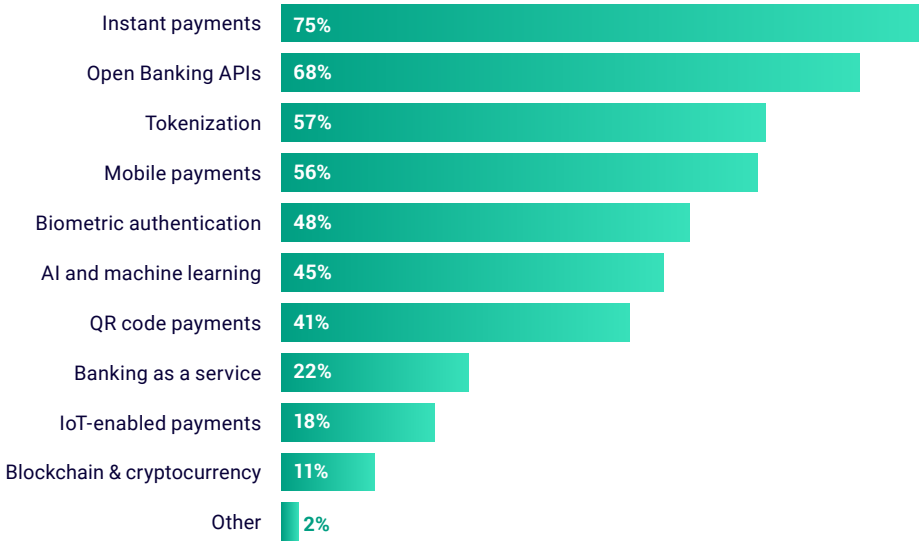
Q: What are the key technology-related drivers for the growth of mobile banking apps adoption?



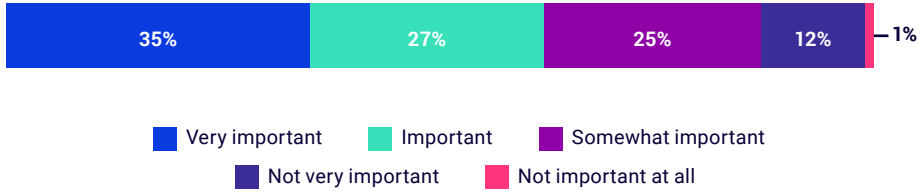
Growth trajectory

The industry's growth trajectory is closely tied to advancements in technology, consumer demand for convenience, and the development of secure, adaptable payment solutions. By focusing on innovation, digital integration, and regional expansion, stakeholders are well-positioned to capitalize on these trends and drive future growth.

Q: Which technologies are the essential winning payment solutions in today's market?



Q: How important is open banking in driving innovation, competition, and customer-centricity in the financial industry?



Emerging Technologies

01
AI’s Role in Revolutionizing Payments

AI has the potential to transform payments with efficiency and security

The application of AI can be viewed from two key perspectives

It requires addressing privacy, bias, transparency, and compliance

AI's Role in Revolutionizing Payments

Online marketplaces and gig economy platforms must adapt to the evolving needs of their users to remain competitive

AI has the potential to transform payments with efficiency and security

- As technology advances, AI, including generative models, is set to revolutionize the payments industry by significantly improving fraud detection, enhancing customer experiences, and optimizing operational efficiency. With sophisticated algorithms, AI can identify and prevent fraudulent transactions in real-time, thereby minimizing financial losses and bolstering security.
- Additionally, AI's capability to deliver personalized services and recommendations enhances customer satisfaction and loyalty, strengthening the relationship between businesses and their clients. By automating previously time-consuming tasks, AI streamlines operations, reduces costs, and markedly improves overall efficiency.

The application of AI can be viewed from two key perspectives

- From a process-oriented perspective, AI enhances internal operations by improving efficiency and accuracy in risk management (e.g., advanced fraud detection, streamlined KYC processes, and sophisticated predictive analytics) and payment optimization (e.g., intelligent transaction routing and automated reconciliation).
- On the client-oriented front, AI revolutionizes customer interactions by enabling organizations to gain deeper insights into customer behavior, efficiently resolve service issues, provide tailored guidance, and deliver highly personalized financial solutions. This includes the use of generative AI to enable more sophisticated personalization and create dynamic customer interactions.
- This dual approach allows financial institutions to simultaneously optimize their internal processes and enhance their customer-facing services, driving innovation and competitiveness in the industry.

It requires addressing privacy, bias, transparency, and compliance

- To effectively leverage AI in payments, businesses must tackle critical challenges such as enhancing data privacy protections to secure customer information and addressing algorithmic bias to ensure equitable treatment across diverse user groups.
- Furthermore, organizations need to navigate the complex regulatory landscape governing AI in finance, ensure seamless integration of AI solutions across various platforms, and prioritize ethical considerations to balance innovation with social responsibility in the payments ecosystem.

The application of AI can be viewed from two perspectives

Process-side applications

Fraud detection and prevention
AI algorithms, including generative models, analyze transaction patterns in real-time to identify and prevent fraudulent activities. By detecting unusual behavior and anomalies, AI alerts businesses and customers to potential fraud, reducing financial losses and enhancing security.

Trade-offs:
- Potential for false positives, which can inconvenience legitimate customers.
- High computational costs due to the need for real-time processing.

Payment optimization
AI algorithms use predictive analysis of transaction patterns, location, time, historical data, and payment method to dynamically route transactions to the most efficient networks, reducing processing times and costs while enhancing overall efficiency.

Trade-off:
- Potential to inadvertently incorporate biases present in historical data, resulting in unjust or inefficient payment routing.

Predictive analytics
AI provides comprehensive data analysis to anticipate trends and behaviors, enabling financial services to make informed, data-driven decisions on risk assessment and management.

Trade-offs:
- Accuracy depends on the quality and completeness of data.
- Potential biases in data can lead to unfair or inaccurate risk assessments.

Client-side applications

Personalized advice
AI-powered virtual assistants analyze individual spending patterns and financial goals to offer tailored budgeting tips, savings plans, and investment advice, helping customers manage their finances more effectively.

Trade-offs:
- Requires access to sensitive financial data, raising privacy concerns.
- Recommendations may not always align with user preferences or circumstances.

Enhanced customer support
Generative AI-driven chatbots provide instant, 24/7 support, handling queries about transactions, account balances, and payment issues by using natural language processing to understand and generate human-like responses, significantly improving service efficiency and customer satisfaction.

Trade-offs:
- Limited in handling complex or nuanced customer issues.
- May frustrate customers who prefer human interaction for certain queries.

Targeted promotion offers
AI enables the delivery of personalized promotional offers based on user data, helping businesses increase engagement and conversion rates.

Trade-offs:
- May intrude on user privacy and lead to data misuse.
- Offers may not always align with individual preferences or needs.

Examples of companies using AI to detect fraud, optimize operations, and enhance customer experiences

Amazon leverages AI extensively, particularly in logistics and supply chain management. AI optimizes warehouse operations, inventory management, and delivery routes, leading to significant cost savings and increased efficiency. Generative AI is also being integrated into various aspects of Amazon's operations, enhancing predictive capabilities and enabling more sophisticated decision-making processes.

Mastercard enhances cybersecurity with its "Scam Protect" suite, which combines AI, biometric, and open banking technologies to guard against various scam types. Mastercard's AI-driven Consumer Fraud Risk solution helps banks in the UK intervene in real-time to stop fraudulent payments, with account validation further strengthening security against sophisticated scams and identity theft.

Fiserv is leveraging AI to enhance customer service, fraud prevention, and operational efficiency. It uses AI-powered chatbots and a Virtual Banking Assistant for improved support across multiple channels and plans to offer AI-driven insights to merchants by fall 2024. AI is also being integrated into point-of-sale and real-time payment solutions, with ongoing tests through its Clover credit card processing service.

Google integrates AI across various products, including Google Search and Google Ads. AI algorithms enhance search results, enable targeted advertising, and optimize ad campaigns, directly contributing to revenue growth.

JP Morgan Chase uses AI for fraud detection and risk management in financial transactions. AI algorithms process vast amounts of data in real-time to identify and prevent fraud, reducing financial losses and enhancing security.

Tesla uses AI in its self-driving technology, which enhances vehicle safety and performance. This technology also opens new revenue streams through mobility services and subscription-based autonomous driving features.

Square integrates AI across its ecosystem to enhance business operations with advanced tools. AI features include personalized email generation, team announcements, and customer communication suggestions, improving efficiency and productivity. Additionally, AI assists with business setup through tools like the Menu Generator and Photo Environments, helping businesses streamline processes and boost their online presence.

Netflix employs AI to personalize content recommendations, boosting user engagement and retention. This tailored approach has been a crucial factor in Netflix's success.

PayPal uses AI to boost security, personalize user experiences, and streamline operations. AI systems detect fraud in real-time, offer tailored recommendations, and enhance customer support with chatbots. These AI-driven tools improve decision-making, risk management, and overall efficiency, reinforcing PayPal's competitive edge in digital payments.

Starbucks leverages AI in its mobile app to offer personalized recommendations and predictive ordering. This has increased app engagement, improved customer satisfaction, and driven higher revenue.

Visa leverages AI to enhance customer experiences by sharing shopping preferences with merchants for more personalized interactions. The company plans to use its proprietary token service to securely deliver AI-generated insights based on a consumer's transaction history, providing merchants with this data only with user consent.

FICO uses AI and machine learning for predictive analytics in credit scoring, risk management, and fraud detection. It emphasizes responsible AI, focusing on explainability and ethics. While AI is heavily utilized for fraud detection, it's applied carefully in credit scoring due to regulatory transparency requirements.

02
Blockchain’s Expanding Influence

Blockchain can enhance security, reduce costs, and expand financial inclusion

Banks and DeFi platforms are leveraging blockchain for efficiency

Regulations are evolving to address blockchain compliance and privacy issues

Blockchain's Expanding Influence

Blockchain is transforming the financial landscape by boosting security, efficiency, and inclusivity, while introducing new compliance and privacy challenges

Blockchain can enhance security, reduce costs, and expand financial inclusion

- Blockchain technology enhances fraud prevention and security through its decentralized, immutable ledger system. Ripple's XRP Ledger showcases this by enabling near-instant, transparent settlements, minimizing fraud risk.
- By removing intermediaries, blockchain streamlines financial processes, cutting costs and transaction times. Visa's B2B Connect utilizes this technology for direct, secure bank-to-bank transactions, reducing fees and speeding up cross-border payment.
- Blockchain also broadens financial inclusion in underserved areas. Stellar's partnership with IBM on World Wire illustrates how blockchain can transform cross-border transfers, offering faster, more affordable financial services to unbanked populations in developing regions.

Banks and DeFi platforms are leveraging blockchain for efficiency

- To stay competitive, banks are investing in blockchain to streamline payments, boost security, and enhance transparency. They are also exploring its use in trade finance, securities issuance, and settlements to reduce costs and improve efficiency. For example:
  - BNP Paribas is exploring blockchain applications for currency funds and order processing.
  - Bank of America holds more than 80 blockchain-related patents.
  - UBS has established a dedicated blockchain lab for exclusive research.
  - Citigroup has developed several blockchain projects, including its own cryptocurrency, CitiCoin.
- DeFi platforms like Uniswap and Aave are expanding, offering decentralized exchanges and lending services, improving access and rates by removing intermediaries.

Regulations are evolving to address blockchain compliance and privacy issues

- Governments and regulatory bodies, such as the European Union with its Markets in Crypto-Assets (MiCA) regulation, are creating comprehensive frameworks for blockchain-based payment systems, emphasizing transparency, investor protection, and financial stability.
- Blockchain companies face significant hurdles in meeting Anti-Money Laundering (AML) and Know Your Customer (KYC) requirements, as per guidelines from the Financial Action Task Force (FATF), which differ by jurisdiction.
- The General Data Protection Regulation (GDPR) in Europe also poses challenges for blockchain's immutability, especially concerning the "right to be forgotten," as regulatory efforts strive to balance transparency with privacy and data protection.

The evolution of blockchain has progressed from a niche technology to a potentially transformative force with the capacity to reshape multiple industries

2008 – 2013 Blockchain 1.0 P2P Digital currency

Origins of blockchain technology
Blockchain's foundational concepts originated in the early 1980s. It is a decentralized, secure database system characterized by auditable, immutable, and pseudonymous data storage.

Bitcoin as a use case
Introduced in 2008, Bitcoin was the first successful application of blockchain technology, showcasing its potential for a decentralized, peer-to-peer digital currency without central authorities.

2014 – 2017 Blockchain 2.0 Smart Contracts

Smart contracts
This is a self-executing agreement with terms encoded in immutable code and recorded on a blockchain, enabling automatic execution when predefined conditions are met, thus enhancing transparency and efficiency.

Programmable blockchains
The introduction of smart contracts has led to programmable blockchains like Ethereum, which allow developers to build decentralized applications (dApps) that leverage smart contracts for diverse functions across various industries.

2018 – 2020 Blockchain 3.0 Corporate Adoption

FIs embracing blockchain
Major institutions like JPMorgan Chase and Fidelity are adopting blockchain to enhance trading, payments, and asset management, with JPMorgan's Onyx leading in asset tokenization.

Emergence of blockchain-as-a-service (BaaS)
IBM and Microsoft offer BaaS platforms, simplifying blockchain adoption by providing necessary infrastructure and tools
Global Regulatory Developments: Governments are developing regulations for cryptocurrencies, ICOs, and blockchain to ensure protection, integrity, and innovation.

2021 – Present Blockchain 4.0 Advancements

Growth of DeFi
DeFi expands peer-to-peer financial services, offering automated lending and trading that reduce costs and enhance accessibility.

Combining blockchain with AI
This enhances investment strategies through better risk assessment, predictive analytics, and automated compliance, improving efficiency and personalization.

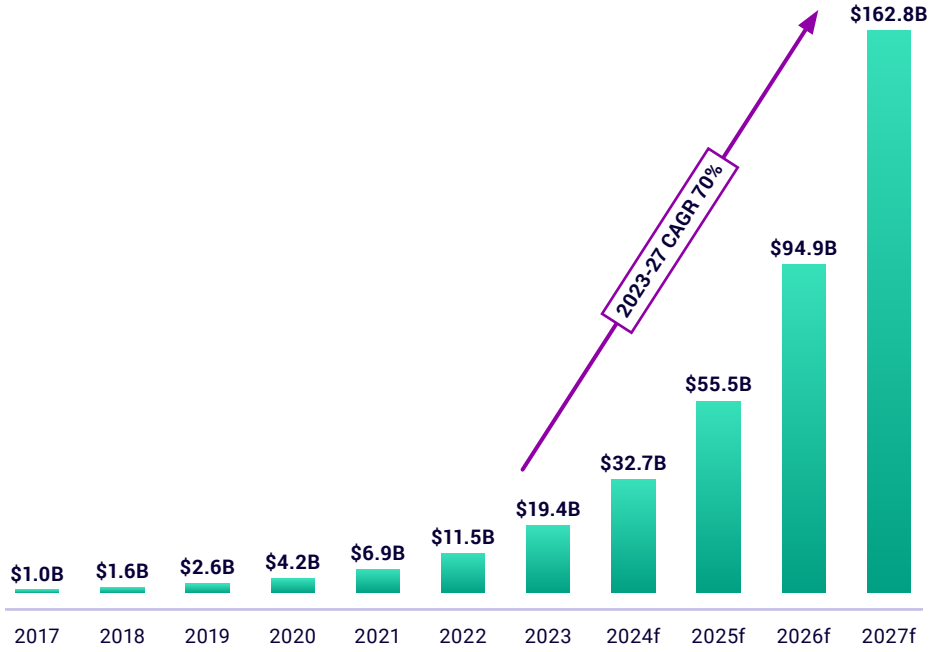
The creation of decentralized metaverse platforms
It enables user ownership and control of digital assets, enhancing security and transparency while fostering a vibrant digital economy through NFTs and blockchain-based assets.

Bitcoin ETF
The main catalyst behind BTC's adoption growth was the development of Bitcoin exchange-traded funds (ETFs) and the introduction of the Bitcoin Ordinals protocol, which enabled non-fungible tokens (NFTs) and fungible tokens to be minted on the Bitcoin network.

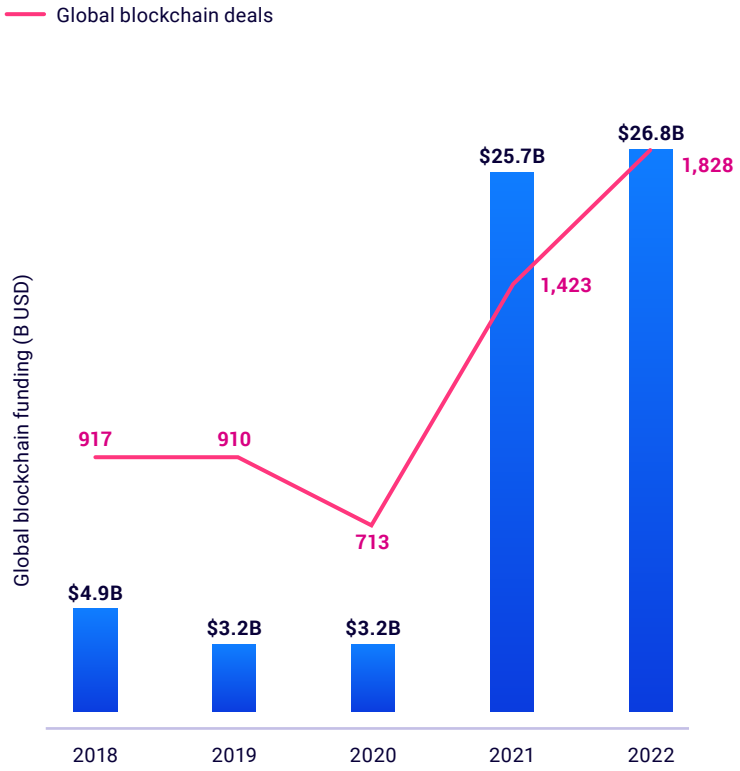
With around 300 million global users, the blockchain market has seen significant growth, drawing increased investor interest and substantial funding

Global blockchain technology market size

The market size is based on expected revenue generated by companies offering blockchain solutions. This includes software and platform sales, Blockchain-As-A-Service, Transaction Fees from blockchain networks.



Global blockchain funding and deals



Sources: Statista; CB insights; EDC Analysis

Blockchains provide cross-vertical solutions and offer several advantages over traditional payment systems

Use cases

Cross-border payments and remittances

RippleNet enables financial institutions to efficiently handle B2B cross-border payments at lower costs by using Ripple's XRP token for liquidity. Competitors in this space include Visa B2B Connect and IBM's Blockchain World Wire.

Platforms like BitPesa and Stellar offer low-cost cross-border remittances, benefiting migrant workers by leveraging blockchain technology to speed up transactions and reduce fees, making international payments more accessible and affordable.

Peer-to-peer payments

Apps like Circle and Cash App use blockchain to facilitate direct peer-to-peer payments, bypassing banks and payment processors.

Merchant payments

Companies like Overstock and Shopify, through integrations with BitPay, enable merchants to accept cryptocurrencies such as Bitcoin, reducing reliance on credit card networks and their associated fees.

Loyalty programs and rewards

Companies like American Express are exploring blockchain to develop more transparent and flexible loyalty programs, allowing for seamless transfer and exchange of rewards points.

Other verticals

Airline: Blockchain improves ticketing and passenger data tracking, minimizing errors and preventing overbooking while enhancing security and transparency (e.g., Blockskye).

Insurance: Blockchain automates and transparently processes claims via smart contracts, reducing fraud and accelerating settlements (e.g., Axa).

Digital identity: Blockchain offers a secure, decentralized approach to digital identity verification, giving individuals control over their data and reducing identity theft (e.g., Civic ID).

Comparison between traditional and blockchain payment systems

Aspect	Traditional Payment Systems	Blockchain Payment Systems
Transaction speed	Slower (days)	Faster (minutes / seconds)
Intermediaries involved	Multiple	None / minimal
Transaction costs	Higher	Lower
Transparency	Limited	High (Public Ledger)
Security	Vulnerable to fraud	Strong encryption, decentralized
Geographic barriers	Presence of challenges or limitations	Borderless / global

Key disadvantages of using blockchain technology in payments

Scalability: Blockchain networks can experience slower transaction processing times as the number of transactions increases.

Environmental impact: As financial institutions increasingly commit to net-zero emissions, their support for blockchain networks that consume large amounts of energy could be viewed as contradictory.

Potential illicit activities: The anonymity (or pseudonymity) offered by blockchain can be exploited by criminals. Regulatory frameworks like KYC and AML are being adapted to address these concerns.

03
Internet of Things (IoT) and Payments

IoT payments are expected to drive significant net new transaction volumes

IoT device adoption will soon reach 'critical mass'

IoT payments will create opportunities for the entire ecosystem

Internet of Things (IoT) and Payments

The Internet of Things is reaching widespread adoption and is poised to revolutionize the payments ecosystem

IoT payments are expected to drive significant net new transaction volumes

- Internet of Things (IoT), a term coined in 1999, refers to the growing network of physical devices embedded with sensors, software, and internet connectivity that allows them to collect and exchange data, enabling automated actions and optimizations.
- Today, IoT-connected devices are increasingly integrating payment capabilities, enabling machine-to-machine transactions and new IoT payments use cases where devices can directly initiate payments without human intervention.

IoT device adoption will soon reach 'critical mass'

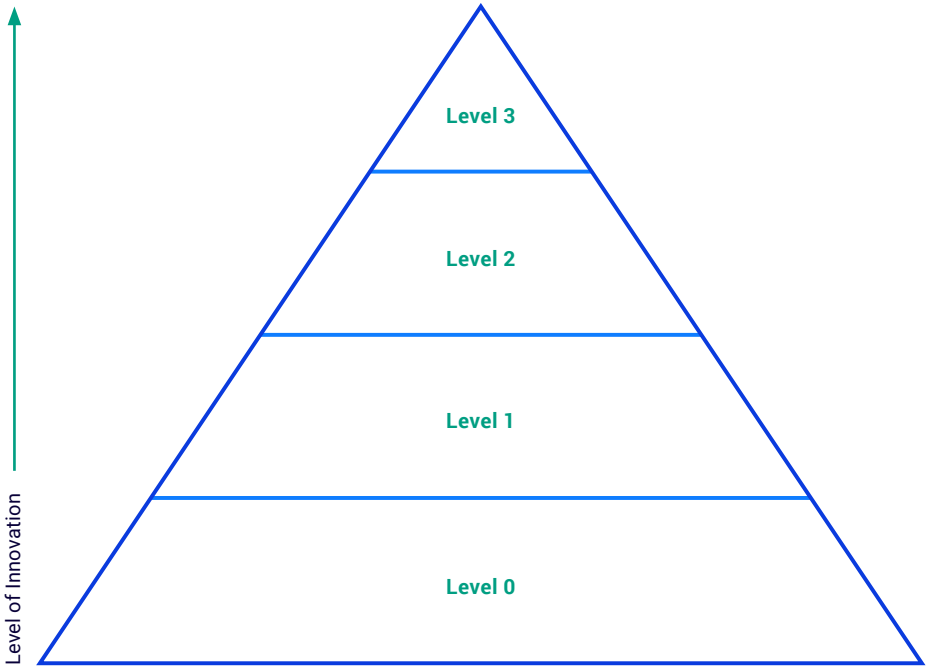
- IoT payments are reaching an inflection point, driven by technological advancements, consumer demand for seamless digital experiences, and an increasingly supportive regulatory landscape. These factors are collectively accelerating the rapid development and adoption of new IoT Payments use cases across various sectors.
- The IoT payments market is estimated to total $711 billion in 2024 and is forecast to sustain fast growth with large untapped potential to digitize and automate a significant volume of C2B and B2B transactions through IoT payment-enabled channels.

IoT payments will create opportunities for the entire ecosystem

- The rise of IoT payments is set to disrupt and redefine the traditional checkout experience by enabling seamless and invisible payments that are contextualized to the buyer's needs.
- Established industry players can maintain a competitive advantage by fostering a culture of continuous innovation, embracing strategic partnerships, and promoting an ecosystem of transparency.

The most transformative advantage of IoT Payments lies in its ability to empower IoT-enabled devices to autonomously initiate and dynamically contextualize transactions

Internet of Things payment pyramid



Level 0
Foundation | Access only
At the foundation level, devices can connect to and access the user's financial institutions (i.e. asking about bank account status, credit card balance, and latest transactions).

Level 1
IoT | Authentication
The IoT device requests explicit consent and authentication from the user to complete a transaction (e.g., email or mobile push notification). Examples include paying for fuel.

Level 2
IoT Payments | Conditional
The device is able to make payments automatically when certain conditions are met, as defined by the user. This is a seamless process that does not require human confirmation or authentication. Examples include a printer ordering ink when low, self-service store transactions, or toll payments.

Level 3
Smart IoT Payments | Automated IoT payments
IoT payments are when smart devices are able to initiate transactions without human involvement, taking into account user behavior, needs, special instructions (as in Level 2). Examples include retail stores automatically ordering inventory based on demand and supply, or a smart fridge ordering groceries.

Sources: Agilie; Worldline

Current State

- Today, any device that connects to the internet is considered an IoT, regardless of functionality and capability.
- Primary examples include voice-activated home assistants and smart home appliances that connect and operate via a mobile app.
- Use cases are emerging and evolving as enabling factors increase:
  - Availability of IoT devices (number and costs)
  - Internet broadband and 5G availability
  - Communication & Interoperability (i.e. RFID, NFC, tokenization)
  - Consumer habits (i.e. authentication)
  - Infrastructure to enable IoT (self-service stores, toll payments, smart fuel pumps)

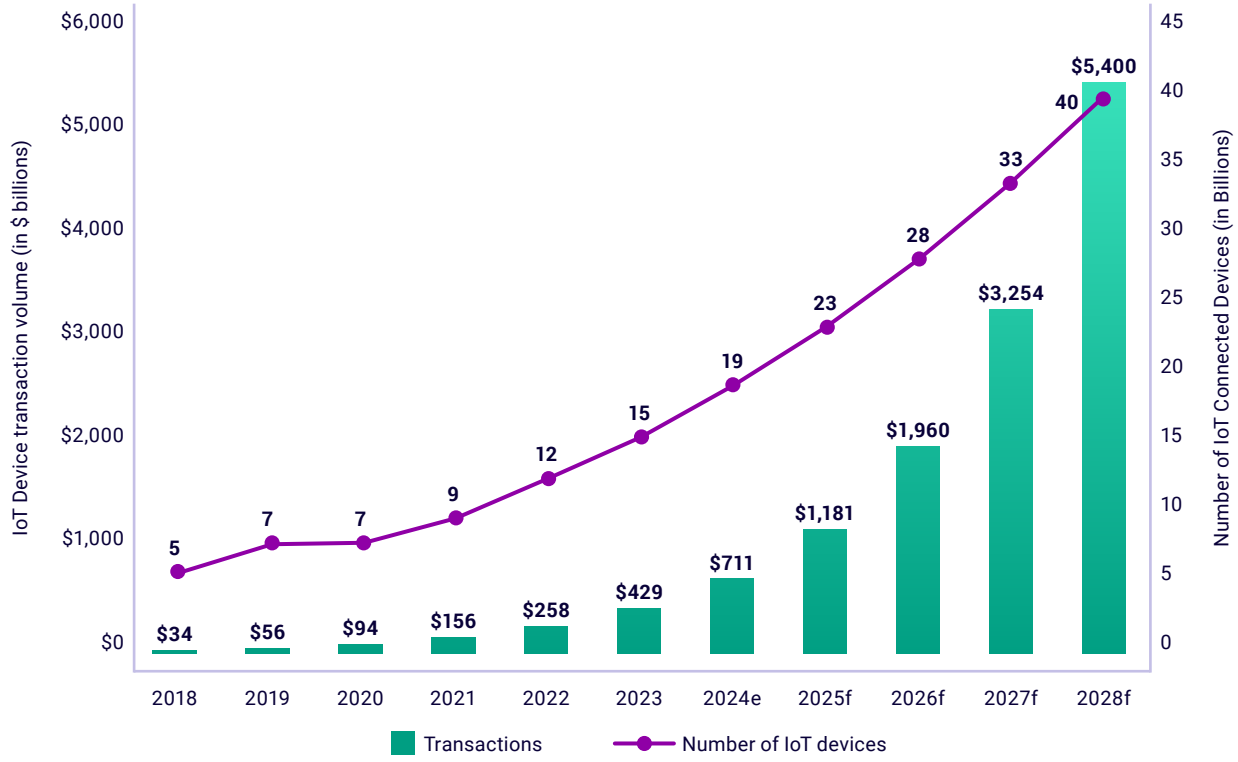
Future State

- The market is moving towards creating a network of connected devices that automate processes and take actions based on real-time data.
- The evolution is occurring across all industries, with some progressing faster than others:
  - Wearables (watches, rings, glasses)
  - Automotive (fuel, insurance, tolls)
  - Healthcare (billing data)
  - Retail (self-service stores / machines)
  - Industrial (inventory)
  - Smart cities (transit fare collection)
  - Smart Finance (personalization)

The IoT market is near an inflection point, with many connected smart devices reaching the market and supporting infrastructure to facilitate payments

The market for IoT devices and IoT Payments is set to experience fast growth in the coming years, once a critical mass of IoT devices is adopted by users

Global adoption of IoT for Payments, 2018 – 2028



Sources: Statista; Introspective Market Research; EDC Analysis

Number of connected devices

More and more devices are released with internet connectivity features.

These features initially appear in premium products but eventually become standard across all devices (with different products at varying stages of connectivity).

Emerging tools and technologies, such as machine learning / AI, 5G, and token-based card chips, are facilitating the embedding of IoT capabilities into devices and decreasing costs, making IoT more accessible.

Transactions through IoT devices

Once adoption and usage rise and demand for greater functionalities linked to payments emerges, we expect these IoT devices to climb the Pyramid to reach full IoT Payment capabilities.

IoT payments will experience rapid exponential growth as appropriate infrastructure, such as smart fuel pumps and EV chargers, is implemented.

IoT can create new opportunities for businesses, payment providers, and governments to leverage data to enhance the user / customer experience

Value chain component	Disruption caused by IoT on status quo
Consumer	Medium
Businesses / retailers	High
Payment providers	High
Governments	High

Businesses / retailers

IoT is not just a consumer-facing technology but will add huge value to business back-end processes and front-end customer sales.

Examples like the Nymi band, designed to authenticate employees, are just early examples of how IoT could help employees keep track of corporate expenses.

Inventory management is another area with clear benefits for IoT technology – inventory attached with RFID tags is scanned at different points in the supply-chain and allows for smart management and reordering based on sales data.

Sales is an obvious area where IoT can improve the customer experience, especially in retail stores (self-service stores, and online via IoT device orders).

Payment providers

There is potential for payment gateways to develop solutions for IoT-based technologies and payments, as developing new infrastructure is costly, and payment providers with a microservices cloud infrastructure are at an advantage.

These gateways integrate AI and machine learning to analyze, process, and present IoT transaction data to businesses through dashboards.

Authentication processes will change and require robust fraud prevention systems to handle transactions.

Gateways need to support different levels of authentication and processing models based on payment methods.

There is a significant upside in processing large volumes of transactions once IoT payments become commonplace.

Governments

Government agencies can leverage the IoT wave to promote cashless payments and foster economic growth.

IoT provides governments with tools to promote their agendas, such as:

- Improving public transportation and multimodal journey fare collection.
- Providing new payment options for government services and taxation.
- Implementing new strategies and pricing for parking, traffic management, and tolls.

Sources: Nymi; Intellias; Introspective Market Research; Bernard Marr & Co; Impact of Internet of Things (IoT) on Inventory Management: A literature Review (2022)

Key aspects in evaluating IoT implementation

User experience
IoT can be designed to provide enhanced and customized journeys tailored to the user / shopper.

Businesses / retailers can provide contextual promotions / offers to upsell or cross-sell.

A well-designed IoT shopper or user journey can build loyalty and encourage repeat sales.

Unattended stores / checkouts can provide better experiences to users.

Privacy and security
Regulations in Europe, such as PSD2 and similar laws, will enforce high-security standards, leading to secure data collection.

There are 3 key authentication protocols that can help IoT authentication: i) FIDO UAF; ii) EMVCo 3DS; iii) OpenID Connect.

For IoT to succeed, regulatory authorities must establish data privacy standards and key authentication protocols need to be adopted.

Costs
While costs can be high to implement industry-leading technologies, they are expected to decrease with increasing competition.

Developing interoperability standards (via APIs) will support this, allowing cheaper options in the market. This will be an area scrutinized by regulators, as seen in the payments and tech sectors.

Data
Data is central to the success of IoT.

Smart devices collect and access data, enabling detailed customer and user profiling.

90% of all user data was generated between 2021 and 2023, highlighting the critical challenge of data collection and storage for businesses involved in IoT, where vast volumes of data are continuously generated.

04
The Rise of Alternative Payment Methods (APMs)

Alternative Payment Methods are dominating the global e-commerce transactions

Alternative Payment Method usage trends vary significantly across markets

Alternative Payment Methods will not completely replace physical cards

The Rise of Alternative Payment Methods (APMs)

Alternative Payment Methods have been revolutionizing the way we pay

APMs are dominating the global e-commerce transactions

- APMs refer to any means of making a payment other than cash or credit / debit / prepaid cards from major card networks.
  - APMs include mobile wallets, Buy Now, Pay Later (BNPL), bank-to-bank transfers, cash-based payments (e.g., Boleto in Brazil), and cryptocurrencies.
  - The main benefits of APMs are convenience, higher conversion rates, speed of transactions and enhanced security.
- APMs have been gaining popularity worldwide and are expected to continue growing, reducing the share of payment cards in both transaction volumes and values. APMs hold a dominant position in the global e-commerce landscape and are expected to reach 77% of global transaction value by 2028.

APM usage trends vary significantly across markets

- APM adoption varies across different regions and countries.
  - Regions with advanced digital infrastructure, such as Asia-Pacific, North America and Europe, have already seen a significant shift towards digital payments. Asia-Pacific boasts the highest APM penetration, pushed by mobile wallets which accounted for 70% of the mobile wallet global transaction value in 2023.
  - In contrast, other countries may need more time to transition due to factors such as technological limitations or cultural preferences.

APMs will not completely replace physical cards

- APMs are not expected to completely replace physical cards or traditional payment methods.
- However, many consumers are increasingly choosing APMs, particularly digital wallets, as their preferred payment method, indicating a shift from card-centric payment models to digital solutions.
- The role of digital wallets is also expanding beyond payment-related services to include non-payment-related services such as loyalty programs, satisfaction surveys, and authentication.

2030

By 2030, the choice of digital wallets will continue to grow with increased consumer adoption. As the payment landscape continues to evolve, merchants and consumers will continue to demand innovative and convenient payment methods that meet their specific needs.

Sources: Payments Journal; WorldPay; Juniper Research; EDC Analysis

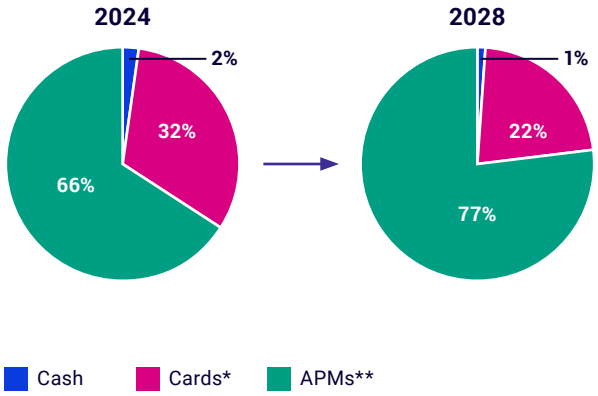
Despite some factors contributing to a slowdown in their growth rate, APMs are expected to become the leading payment method both online and in-store by 2028

Over the next four years, APMs will further solidify their dominance among e-commerce payment methods and become the leading payment method at in-store points of sale, representing 51% of global transaction values

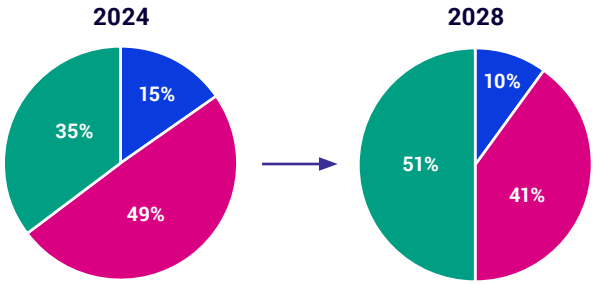
This growth is primarily driven by mobile wallets, which account for 53% of global e-commerce transaction value in 2024 and 34% of global in-store transaction value.

However, traditional payment methods will not disappear, particularly among certain demographics, such as the elderly, and in countries where digital infrastructure is less developed or cash remains prevalent.

e-Commerce global value of payments



In-store global value of payments



*Cards include credit, debit and prepaid cards

**APMs include mobile wallets, Account-to-Account (A2A), BNPL, others

Changing needs

This could lead to the development of new wallets with different features and capabilities – or the evolution of existing wallets to better meet the changing needs of the market. The payment function is only the tip of the iceberg for digital wallets.

Sources: WorldPay; EDC Analysis and Predictions

Factors contributing to a high growth rate of APMs

Benefits for consumers and businesses

- Secure transaction environment: APMs offer advanced security measures (e.g. biometric identification).
- Reduced online payment friction: APMs minimize the need to re-enter payment details for every purchase.
- Increased revenue due to a higher conversion rate.
- Improved cash flow: APMs facilitate faster and more efficient transactions.

Advancement in technology

Proliferation of smartphones and internet connectivity: consumers are increasingly embracing mobile technology and seeking streamlined payment experiences. As a result, APMs continue to evolve and gain prominence in the market.

Factors contributing to a slow-down in APM adoption

Cultural and demographic factors

Some cultures and demographics prefer traditional payment methods, such as cash and payment cards, due to a lack of trust in new payment methods or insufficient education about them.

Remaining technological barriers

Some regions still face limited access to smartphones and internet connectivity.

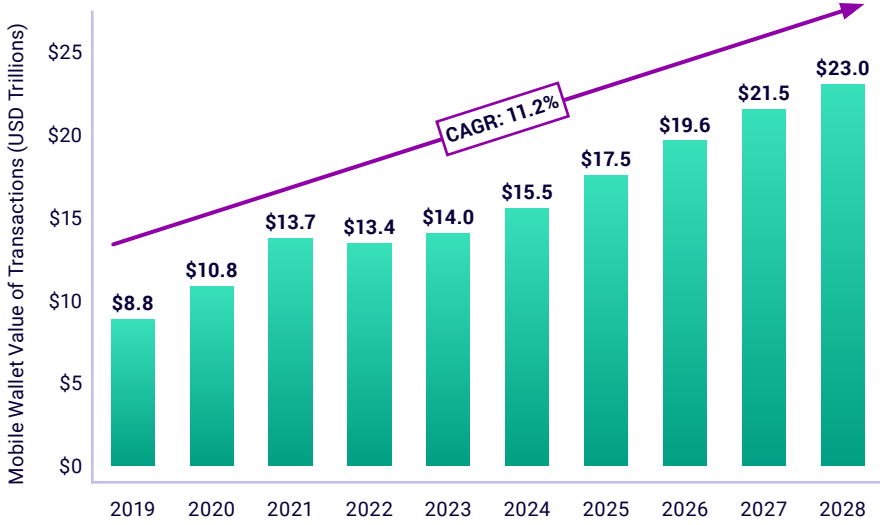
For some businesses, integrating multiple APMs can be both expensive and complex.

Among all APMs, mobile wallets are experiencing the most significant growth, with the Asia-Pacific region driving it

Transaction value through mobile wallets accounted for $15.5 trillion in 2024 and is expected to reach $23.0 trillion by 2028

Mobile wallets are primarily rolled out by financial institutions, mobile network operators, and third-party fintech companies, each with distinct strategic rationales.

Global mobile wallets evolution



Adoption of mobile wallets varies significantly across regions

The Asia-Pacific boasts the highest mobile wallet penetration, accounting for 70% of the mobile wallet global transaction value. This dominance is largely due to the region's advanced digital infrastructures and the extreme popularity of mobile wallets among consumers.

– The widespread adoption of mobile wallets in the region has been significantly driven by China, where platforms like AliPay and WeChat Pay account for more than 90% of digital payments.

Both in Europe and North America, mobile wallets are leading the e-commerce payment landscape. The long-standing reliance of these regions on card-based payments has made the shift slower at the POS.

In the Middle East and Africa region, mobile money stored value wallets like e& money, M-PESA, MTN MoMo, and Orange Money are increasingly gaining popularity.

In Latin America, credit cards continue to dominate the e-commerce payment landscape. The region also leads in A2A payments, driven by the success of solutions like Pix in Brazil. While cash remains the primary payment method at POS, mobile wallets are experiencing the fastest growth among payment options.

Sources: GlobalData; PYMNTS; WorldPay; EDC Analysis and Predictions

The mobile wallet competitive landscape is highly fragmented, with hundreds of solutions available at national or regional levels

This fragmentation leads to significant interoperability challenges, as mobile wallets cannot seamlessly communicate or transact with each other.

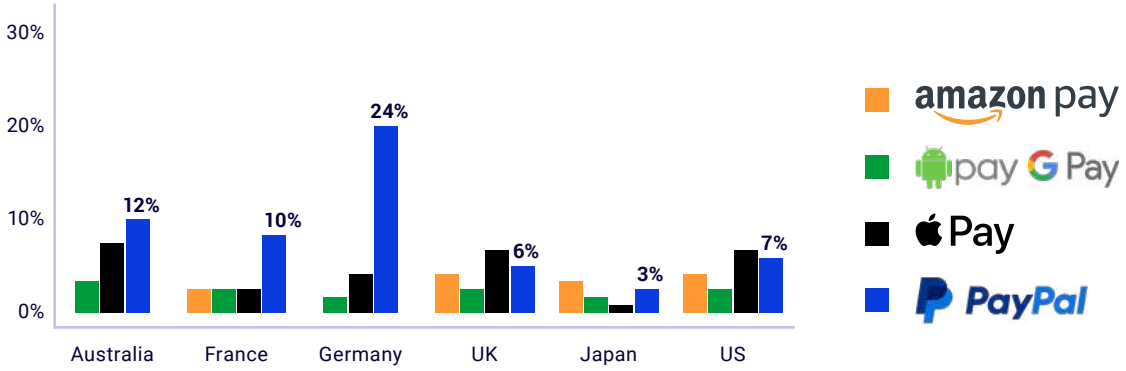
Among the numerous mobile wallets, a few have achieved near-global reach. These are Amazon Pay, PayPal, Apple Pay, Google Pay / Android Pay. These platforms are distinguished by their extensive user bases and ability to facilitate transactions, even across borders.

– PayPal stands out as a leading mobile wallet for e-commerce in several countries, such as Germany (where it will reach 24% of e-commerce transaction values in 2024).

The dominance of these global players highlights the potential for more standardized mobile wallet solutions.

As consumer demand for seamless and secure payment options grows, the industry may move toward greater collaboration and integration, reducing the current fragmentation and improving the overall user experience.

e-Commerce mobile wallet transaction values on total (2024)



05
Central Bank Digital Currencies (CBDCs)

CBDCs are being explored globally, offering diverse transaction capabilities

Current retail CBDC deployments are showing signs of low adoption

Wholesale CBDCs are shaping up to provide a stronger proposition

Central Bank Digital Currencies (CBDCs)

Central Bank Digital Currencies are being researched and piloted. The outcome has formed a divisive set of opinions

CBDCs are being explored globally, offering diverse transaction capabilities

- As of early 2024, 135 countries are actively exploring the use of Central Bank Digital Currencies (CBDCs).
- Unlike cryptocurrencies, CBDCs are centralized, created, and regulated by central banks. They differ significantly in terms of centralization, creation process, technology, supply control, privacy considerations, and regulatory frameworks.
- CBDCs are designed for a broad range of use cases, including P2P, B2C, and B2B transactions. In contrast, cryptocurrencies in practice are often being used to facilitate P2P transactions.

Current retail CBDC deployments are showing signs of low adoption

- Only 3 countries' CBDC programs are currently in a launched state: Bahamas (Sand Dollar), Nigeria (eNaira), and Jamaica (Jam-Dex).
- Current retail CBDC solutions are struggling with adoption, facing challenges like low public uptake, privacy concerns, and limited merchant acceptance. Each of these initiatives has failed to gain more than a 1% share of currency circulation since their inception.
- While CBDC research continues globally, some central banks are proceeding more cautiously with retail CBDC plans due to implementation difficulties, public skepticism, and debates around necessity and risks.

Wholesale CBDCs are shaping up to provide a stronger proposition

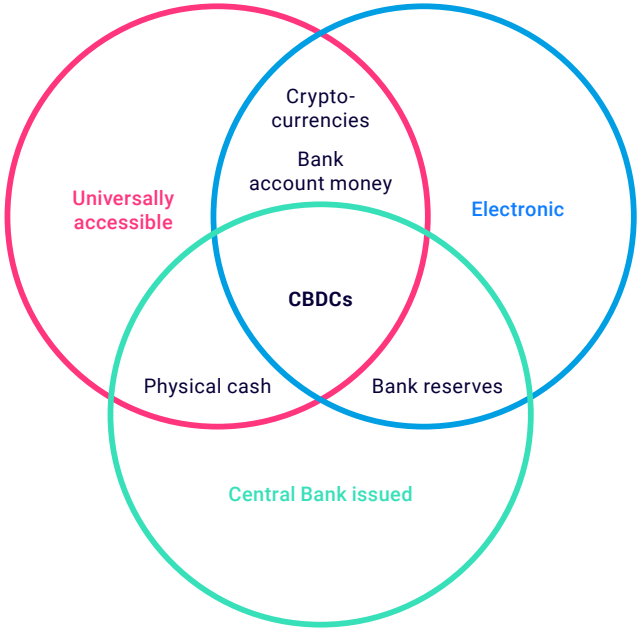
- Many central banks are now prioritizing the wholesale use of CBDCs, recognizing that retail applications may not be suitable for every market.
- Wholesale CBDCs could offer significant long-term benefits for numerous countries, including faster transaction settlement times and reduced costs for interbank and cross-border payments.

CBDCs are heavily researched, with few retail initiatives launched so far

CBDCs are a response to the rise of decentralized digital currencies like Bitcoin and Ethereum. They are still in the early stages, with extensive research being conducted by most international central banks.

CDBCs in relation to other forms of currency

CDBCs sit in the centre of three core currency concepts. They are universally accessible, electronic and issued centrally. This sets them apart from all other forms of currency.



Sources: Ole Bjerhg 'Designing New Money – The Trilemma of CBDC; Atlantic Council

CBDCs differ significantly from cryptocurrencies

	Cryptocurrencies	CBDCs
Location	Decentralized	Centralized
Creation	Mining or cryptographic rules	Issued and distributed by central bank
Underlying technology	Blockchain or distributed ledger	Centralized database
Supply	Limited	Central Bank controlled
Anonymity & privacy	Very private and anonymous	Central Bank can monitor transactions
Regulation	Operate outside traditional regulation	Subject to regulation and oversight
Use cases	Primarily used for investment, speculation, P2P transactions	Intended for domestic and cross-border P2P, B2C and B2B payments, financial inclusion

Current retail CBDC solutions face adoption challenges; wholesale CBDCs may offer greater long-term value

The global CBDC landscape

As of early 2024, 135 countries are exploring the use of CBDCs, representing 98% of the global GDP.

Major economies are included in this ongoing research – with concepts such as:
- Digital € Euro
- Digital £ Pound
- Digital ¥ Yuan

At the moment, 3 countries' CBDC programs are in a launched state:
- Bahamas: Sand Dollar (launched 2020)
- Nigeria: eNaira (launched 2021)
- Jamaica: Jam-Dex (launched 2022)

An additional 36 nations are in a pilot phase.

The three live CBDC solutions

Bahamas: Sand Dollar

The Sand Dollar project was the first retail CBDC use case to go live in 2020.

Since its launch, $2.1 million USD worth of Sand Dollars have been distributed, which accounts for significantly less than 1% of the GDP.

The Sand Dollar project aims to increase financial inclusion nationwide, but this goal has yet to be achieved.

Nigeria: eNaira

The eNaira was launched in 2021 with the aim of aiding financial inclusion across Nigeria.

Despite alarming levels of cash shortages across Nigeria, public uptake of the digital currency has been very low.

This is attributed to a weak awareness campaign.

The pilot phase of eNaira for diaspora remittances is poised to expand the adoption of the digital currency and its associated wallet.

Jamaica: Jam-Dex

Launched in 2022 with the slogan 'No cash, no problem!'.

Around 8.3% of the population are users of the CBDC; however, Jam-Dex circulation stands at only about 0.1% of Jamaica's total currency circulation.

Jamaica plans to fund PoS terminal upgrades to increase Jam-Dex acceptance nationwide. Until this is complete, promotion efforts for the digital currency have been stalled.

Sources: Bank of Jamaica; Atlantic Council; Bahamas Central Bank

The future for CBDCs

Retail usage

The future of retail use for CBDCs remains uncertain, with growing concerns about privacy and spending control associated with these centralized digital currencies.

None of the three current live CBDC solutions have managed to achieve significant user uptake.

As other central banks and nations observe the progress of CBDC initiatives, it is becoming apparent that the value of CBDCs is not well appreciated by many individuals.

While time will tell, it seems unlikely that many additional nations will launch their CBDC initiatives in the near future.

Wholesale usage

CBDCs provide an opportunity to improve settlement times between wholesale entities and reduce operational costs for participants.

Wholesale participants are likely to have fewer privacy concerns about CBDCs compared to their retail counterparts, and the benefits of secure central bank networks will also appeal to them.

Securities settlement and cross-border FX payments present complex challenges for the CBDC community.

If development and innovation continue at the current pace, CBDCs could emerge as a compelling and competitive solution for interbank payments in the future.

Examples of cross-border wholesale CBDC projects

mBridge: Thailand, China, Hong Kong, UAE

Project Dunbar: Australia, Singapore, Malaysia, South Africa

Project Mariana: France, Switzerland, Singapore

Project Jasper: Canada, UK, Singapore

Project Aber: KSA, UAE

Sources: Bank of Jamaica; Atlantic Council; Bahamas Central Bank

Financial Services Inclusion and Innovations

06
Accelerating Growth of B2B Cross-Border Payments

B2B cross border payments will continue to grow

Businesses face recurring pain points when dealing with cross border payments

Fintech offer interesting value propositions to mitigate the pain points

Accelerating Growth of B2B Cross-Border Payments

B2B cross-border payments face delays, high costs, and FX issues with traditional methods, driving a shift to faster, cost-effective fintech solution

B2B cross border payments will continue to grow

- B2B cross-border payments are crucial for facilitating international trade and commerce.
- As globalization and international sourcing strategies continue to expand, the volume of B2B cross-border payments is expected to grow at a CAGR of 5.6% reaching $56 trillion by 2030.

Businesses face recurring pain points when dealing with cross border payments

- Businesses face several recurring pain points when sending and collecting cross border payments. These pain points can significantly impact operational efficiency and profitability. The primarily issues include.
- Delays in transaction processing due to complex international banking networks, time zone differences, and varying regulatory requirements.
- Cost of processing due to multiple intermediary banks, currency conversion fees, and compliance checks.
- Managing foreign exchange (FX) operations can be complex and challenging.

Fintech offer interesting value propositions to mitigate the pain points

- Traditional payment rails rely on a complex, multi-layered network where payment instructions pass through several intermediaries, processing data sequentially and in batches. This results in costly and time-consuming procedures.
- Fintechs offer a streamlined, cost-effective, and faster alternative to traditional SWIFT payments. By leveraging a global network of local currency accounts, providing virtual account capabilities, enabling instant currency conversions at competitive rates, and processing transfers through internal ledger balances, fintechs are revolutionizing the landscape of B2B cross-border payments.

Sources: FXC Intelligence; Worldbank; Our World in Data; AgileIntel Research; Digital Commerce 360; ECB, Mordor Intelligence

B2B cross-border payments are expected to grow at a CAGR of 5.7% to $56 trillion by 2030

Macroeconomic factors fuelling B2B cross border payment volumes

Global economic growth

The global economy has demonstrated remarkable resilience in the face of geopolitical tensions and is expected to surpass $100 trillion GDP in 2024. Powered by a compounded annual growth rate (CAGR) exceeding 2.9%, this growth continues to promote trade across global markets as well as economic activity worldwide.

Increased globalization of businesses

World merchandise trade volume is projected to grow 2.6% in 2024 and 3.3% in 2025, following a larger-than-expected decline of -1.2% in 2023.

Digital globalization

The rapid digitalization of business processes has enabled the growth of digital B2B marketplaces and e-commerce platforms, fostering global sourcing, optimized due diligence, and increased pricing competition.

Industry-level factors fuelling B2B cross border payment volumes

B2B e-commerce sales

AgileIntel Research estimates the B2B e-commerce Gross Merchandise Value to have reached $23 trillion (representing 60% of today's B2B cross border payment value) in 2023 and expects that value to exceed $33.7 trillion by 2026.

Growth of B2B marketplaces

Providing businesses with a wide array of international sourcing options, B2B marketplaces are the fastest-growing digital sales channel. Over 130% more B2B marketplaces were created between 2021 and 2023.

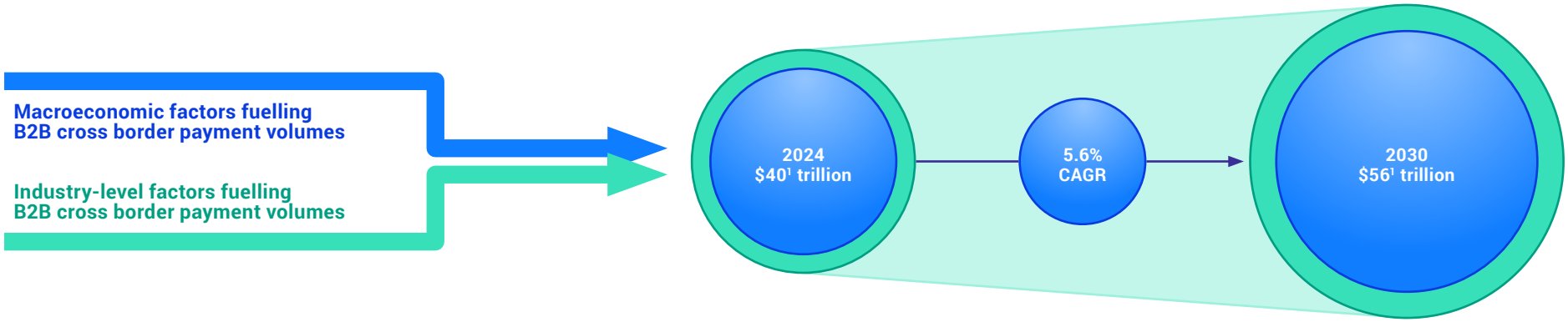
Rise of international sourcing strategies

The trend of outsourcing goods and services is expected to continue growing, with the IT segment leading the charge. Global IT outsourcing is projected to reach $617.7 billion in 2024 and $805.5 billion by 2029, representing a CAGR of 5.48% over the next 5 years. While goods outsourcing drove 20th-century globalization, service outsourcing will continue fueling globalization.

Assumption caveat

While the impact of macroeconomic and industry-level factors will most likely boost global trade, the introduction of reshoring policies (e.g. the US CHIPS and Science Act, China's dual circulation strategy and the US Inflation Reduction Act) as well as the potential fragmentation of trade along political lines—as evidenced by increasing trade barriers, corporate discussions, and the ECB's 2023 survey results published in Economic Bulletin, Issue 1 (2024) — may hamper part of the forecasted growth.

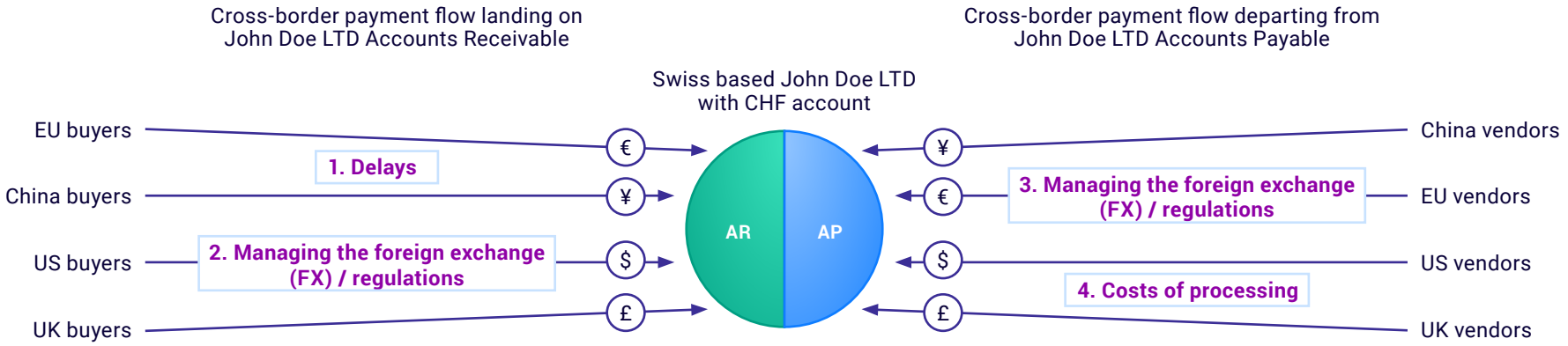
Expected growth of B2B cross border transactions



1. Excluding volumes from C2B and B2C fund transfers or any cross-border transactions originating from wholesale banking, institutional investors, hedge funds or proprietary investors.

Despite the growth, organizations face the same recurring pain points when leveraging traditional rails to operate / collect their cross-border payments

Illustrative example showcasing the 3 major pain points organizations face when operating / collecting cross-border payments through traditional banking system*



Notes

Names, currencies, and flows are fictional and are intended to showcase the existing cross-border payment pain points.

Traditional rails typically refer to wire transfers (SWIFT network) or correspondent banking network.

*In 2023, Rapyd surveyed 715 businesses based in Brazil, Canada, Germany, Mexico, Singapore, the UK and the US to understand the main hurdles when sending and receiving international payments through traditional banking rails.

Sources: Rapyd; Financial Action Task Force; Bank of England

1. Delays

Cross-border payments through traditional banks often involve multiple correspondent banks and intermediaries, leading to longer processing times, sometimes taking several days. Divergent Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) standards were identified as the two main challenges when processing cross-border payments in a survey among 173 industry players (banks, PSPs, electronic money issuers, etc.) conducted by the Financial Action Task Force (FATF). One question in the Rapyd survey demonstrates recurring delays organizations are facing when collecting / sending cross-border payments.

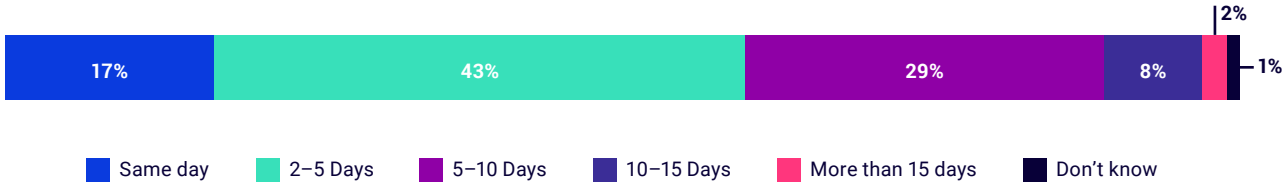
2 & 3. Managing the foreign exchange (FX) / regulations

Currency reconciliation processes, exchange rate transparency and cost, FX regulatory compliance, and accounting / tax implications are among the most cumbersome processes organizations face when dealing with cross-border payments. Currency fluctuation and market volatility were two of the top four concerns mentioned in the Rapyd survey when organizations are dealing with FX.

4. Costs of processing

By involving multiple intermediaries, traditional B2B cross-border payment operations often lead to increased transaction expenses (excluding FX management and fee costs). Correspondent banking fees, SWIFT fees, and high funding costs (banks must pre-fund accounts in various currencies or secure forex market access) are among the most prevalent operational expenses (opex) banks face when transferring a payment instruction on the SWIFT system.

Q: Typically, how much delay is involved in sending or receiving cross-border payments?[2]



2. Extracted from Rapyd research report "The state of B2B cross-border payments"

Fintechs are transforming the cross-border payment ecosystem by streamlining processes, eliminating intermediaries, and reducing FX costs

The traditional system value proposition is subpar compared to market needs and expectations

1. Delays
4. Costs of processing

1. Traditional banking systems heavily rely on SWIFT within a complex and multi-layered network where a payment instruction can transit through a chain of 3 to 5 correspondent banks and can be subject to fragmented and truncated data formats.

1. Every intermediary in the sequence processes payments sequentially and in batches, sending them only a few times daily. Time zones can also be an issue as banks operate on their local business days.

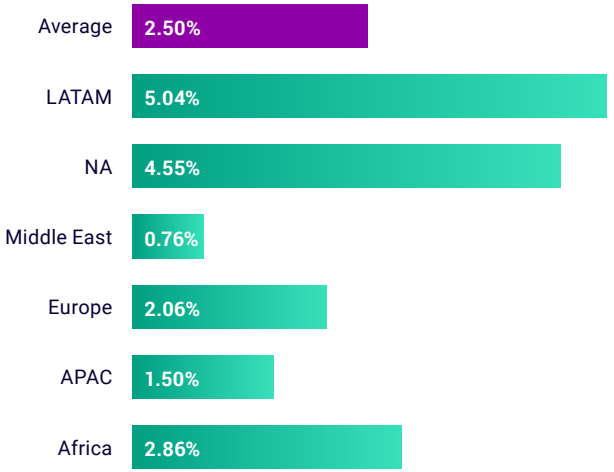
1. With 10% of payments still requiring manual review for errors and compliance issues, further delays are often added to the process.

4. While SWIFT charges messaging fees, it does not handle the FX.

4. Banks often negotiate FX rates for each transaction and view FX as a service and key profit generator. In the SWIFT network, a complex interchange process may be applied for certain currencies exacerbating the high FX fees (below is an example of average regional fees quantified by Corepay in 2021.

1&4. Each bank in the network performs its own verifications, compliance checks, and processing. Fees are charged for each of these services.

Average premium charged by region on currency conversion (USD to foreign)



Evolved timings

SWIFT GPI's (Global Payments Innovation) new 2-hour settlement time frame will improve the speed of traditional cross-border payments. Yet, this does not offer near-instantaneous transfer times, nor is this new feature live globally.

Sources: Rapyd survey; Capital Monitor; SWIFT; Corepay

The fintech value proposition is to enable cost-effective and fast payments

Fintechs hold accounts across the world, in multiple currencies. They maintain bank accounts in 50-100+ countries in local currencies.

They provide Virtual Account (VA) capabilities, enabling corporates to collect funds as if they were a local entity when operating abroad.

Leveraging multi-currency wallets and the VA (single account), fintechs offer instant conversions between currencies at very competitive rates.

Transfers are then processed through ledger balances, settling the various accounts according to the transactions registered during the defined timeframe in a single settlement. These transactions happen in a "closed loop" environment and are instantaneous.

How?
Fintechs can do so by matching offsetting currency needs (swap funds) within their network. They operate currency position netting to convert the unmatched amount, leveraging their institutional rates (access interbank rates), have no intermediary bank fees and no brick-and-mortar branches (reduced opex costs).

Fintechs can also wait for favourable rates to convert currencies held by clients.

Sources: Rapyd survey; Capital Monitor; SWIFT; Corepay

Caveat

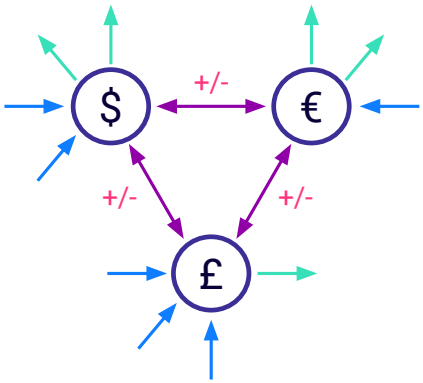
Traditional players have begun introducing bilateral agreements to settle FX transactions via blockchain based solutions. Wells Fargo and HSBC have partnered in 2021 to use a shared settlement ledger to process USD, CAD, EUR and GBP in real time. Such partnerships may be seen as a response from traditional players to match fintechs' value proposition.

Fintechs with cross border FX value propositions

NIUM, stripe, Rapyd, Payoneer, moneycorp, Thunes, Xpollens, kantox, Modulr, ALT21, Ebury, Airwallex, terrapay, wise, mDAQ, MONEX, MAMBU, Fyorin, Griffin

Not an exhaustive representation

Cross-border B2B payment flow: from pay-in to pay-out via Fintech FX JD[4] closed loop network



1. US buyer sends $50K to FX JD's USD account (pay-in)
2. $50K converted to €45K in EUR sub-account
3. €45K moved to German vendor's FX JD's EUR sub-account
4. €45K transferred from German vendor's FX JD's EUR sub-account to his treasury bank account in EUR (pay-out)

4. Not a real name, used for illustrative purposes.
The legend describes a typical cross border transaction flow between a US buyer and a German vendor. Fintech FX JD is a fintech with FX capabilities. The flow chart represents a wider network than the use case description in the legend.

07
Open Banking

Open Banking boosts innovation by granting access to financial data

Open Banking evolves globally, expanding scope and benefits across markets

Open Banking's progress has been hindered by insufficient adoption

Open Banking

Open Banking, developed to drive competition and innovation, is now evolving into broader Open Finance and Open Data initiatives

Open Banking boosts innovation by granting access to financial data

- Open Banking was developed with the objective of encouraging market competition, driving innovation, and increasing the availability of services within the financial ecosystem.
- To achieve these objectives, Open Banking initiatives led to the “opening up” of data owned by financial institutions. With users’ consent, this data can be accessed and leveraged by third party providers.

Open Banking evolves globally, expanding scope and benefits across markets

- However, the implementation and adoption of Open Banking have varied significantly across different markets worldwide.
- Some markets are extending their data-sharing efforts by introducing regulatory and technological frameworks for Open Finance and Open Data initiatives.
- These three data-sharing models - Open Banking, Open Finance, and Open Data - each have distinct scopes, leading to diverse use cases that benefit both consumers and businesses.

Open Banking’s progress has been hindered by insufficient adoption

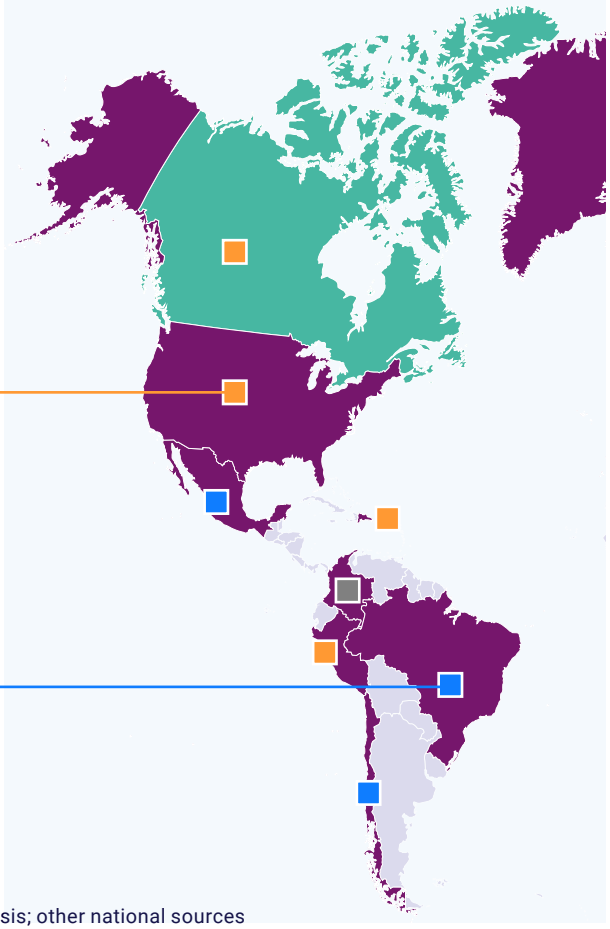
- Despite the advancements in Open Banking since its launch, the adoption of its intended use cases has not met initial expectations.
- Various factors, including technological limitations, consumer behavior, business strategies, and banking regulations need addressing to facilitate progress, adoption, and the potential evolution towards Open Finance and Open Data.

The global deployment and adoption levels of Open Banking, Finance, and Data initiatives vary significantly

Data-sharing and implementation model

USA (Open Banking – OB)
The CFPB released the OB regulation for public comment in October 2023.
Population (2023, Millions): 335m
No. of Participants / TPPs: Unknown due to the lack of centralised registry
Total A2A Payments (2023)[1]: $1,119 Tr

Brazil (Open Finance – OF)
OF regulatory framework implemented in 2021 (Phase 4)
Population (2023, Millions): 204m
No. of Participants / TPPs (Q1 2024): 195
Total A2A Payments (2023)[1]: $19 Tr



Legend definitions

Data-Sharing Model

Open Banking (OB)
Users consent to share their account data, held by their bank or FIs, with third-party providers (TPP).

Open Finance (OF)
Users consent to share their wider finance data, such as related to mortgages, savings, pensions, insurance or credit.

Open Data (OD)
Users link their account and finance data with data from other sectors such as utilities such as energy, telecom, health, government, etc.

Implementation Model

Regulatory-driven
Initiative introduced by regulatory entities.

Market-driven
Initiative introduced by stakeholders / players in the market.

Hybrid
Collaboration between regulators and market.

TPP = Third Party Provider
A2A = Account-to-Account
CFPB = Consumer Financial Protection Bureau
JROC = Joint Regulatory Oversight Committee

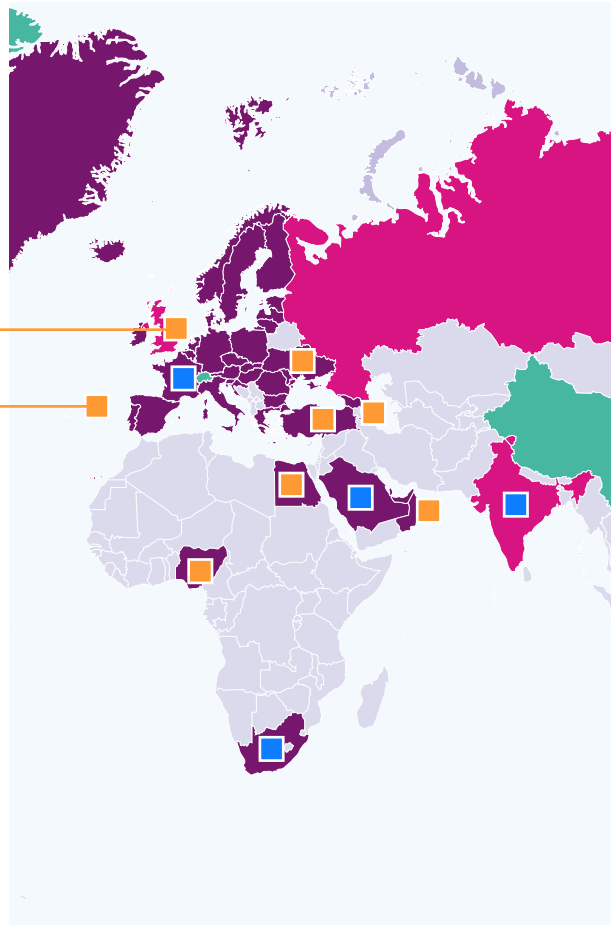
1. Total value of A2A consumer and commercial payments, including credit transfers, direct debit and instant payments. Potential total addressable market for OB payments.

Sources: Konsentus; Global Data; IMF; Frollo; EDC Research & Analysis; other national sources

Data-sharing and implementation model

UK (Open Banking – OB)
OB initiated in 2017. In 2024, JROC has published about the "Future Entity" that will oversee the standard-setting for OB & OF services.
Population (2023, Millions): 68m
No. of Participants / TPPs (Q1 2024): 206
Total A2A Payments (2023)[1]: $134 Tr

EEA (Open Banking – OB)
PSD2 was introduced in 2018. The proposal for OF regulation (PSD3) has been published in 2024.
Population (2023, Millions): 441m
No. of Participants/TPPs (Q1 2024): 367
Total A2A Payments (2023)[1]: $348 Tr



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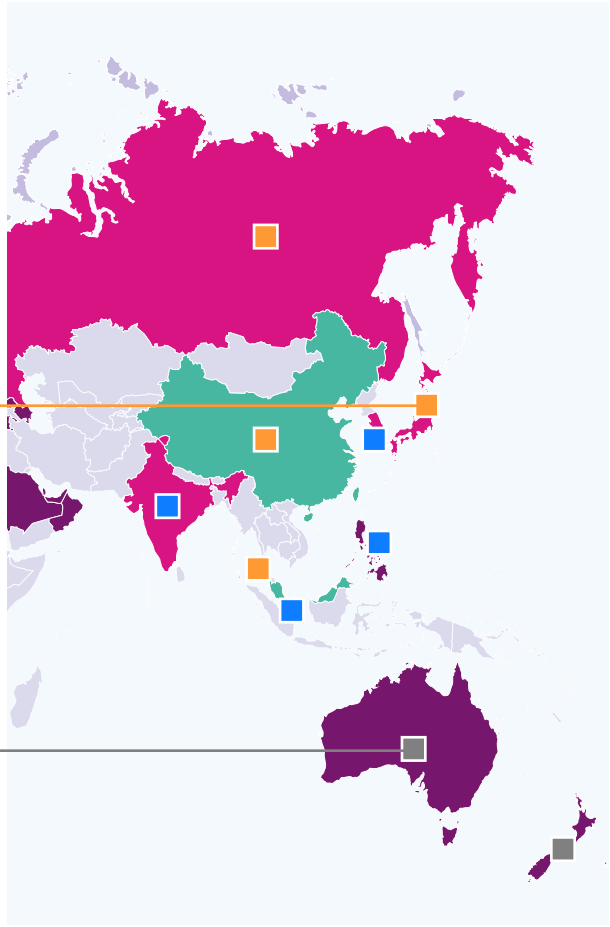
Data-sharing and implementation model

Japan (Open Banking – OB)
OB regulatory framework implemented in 2018.
Population (2023, Millions): 125m
No. of Participants / TPPs: Unknown
Total A2A Payments (2023)[1]: $25 Tr

Australia (Open Data – OD)
The Consumer Data Right was first published in 2019, then expanded from OB to Energy in '22 and plans to expand into OF in '24.
Population (2023, Millions): 27m
No. of Participants / TPPs (2023): 113
Total A2A Payments (2023)[1]: $12 Tr



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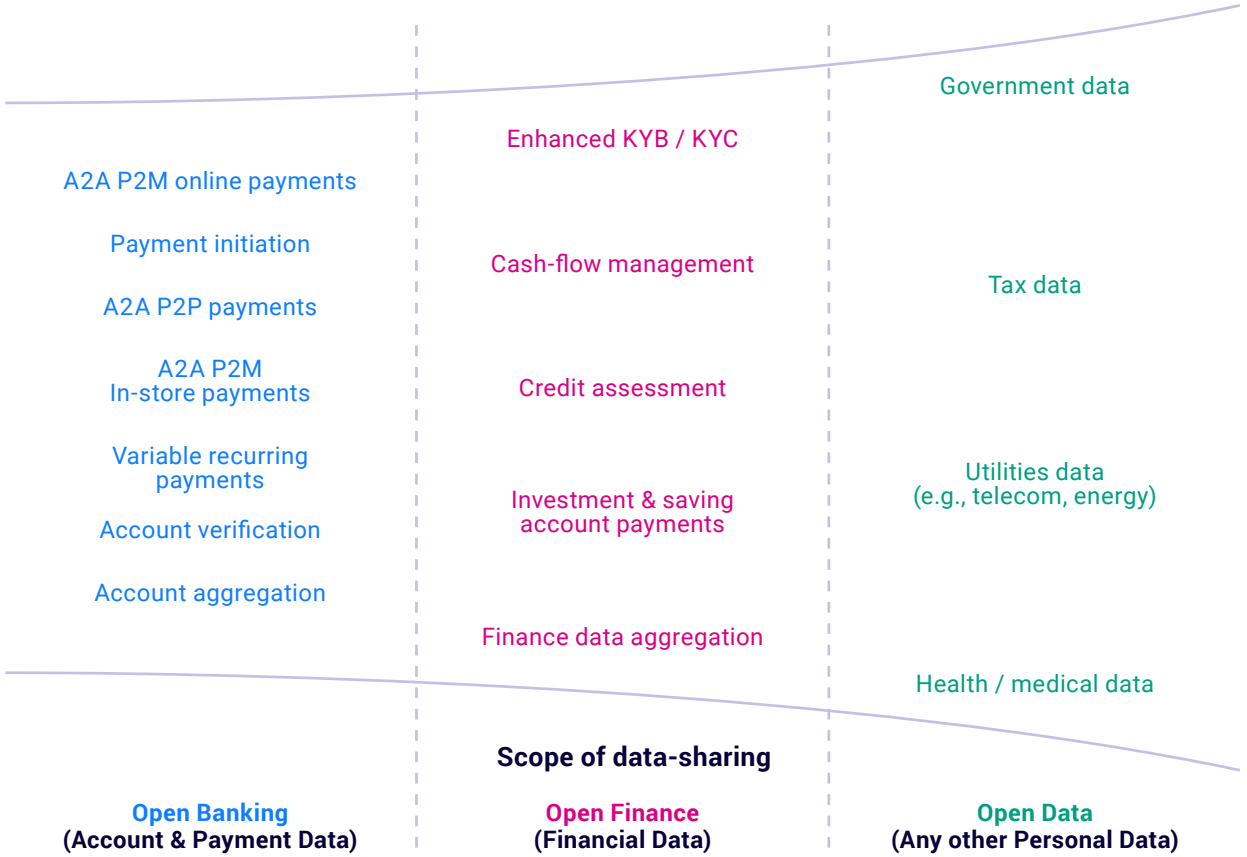
Open Banking use cases are well-advanced, whereas Open Finance and Open Data use cases are in early stages of development and adoption

Digitalized economy

Many governments worldwide aim to achieve a digitalized economy, emphasizing the crucial role of data accessibility and flow. This has led to the development of regulations opening access to consumers' and businesses' data while ensuring trust and security.

"Open banking exists within the context of the more recent Open Finance movement. And, both Open Banking and Open Finance sit within a broader landscape of Open Data." Payment NZ, 2023, "Looking Ahead – Open Banking in Aotearoa New Zealand"

Open Banking, Finance & Data key use cases



Source: EDC

Open Banking

- Open Banking Payments, also known as account-to-account (A2A) payments initiated by a TPP, have been pivotal in measuring Open Banking adoption across different markets. Primarily driven by P2P payments followed by online P2M transactions, the adoption of in-store P2M payments through point-of-sale terminals remains underdeveloped.
- Variable Recurring Payments (VRP) represent a recent innovative use case introduced in the UK. This feature enables customers to link authorized Payment Initiation Service Providers (PISPs) to their bank accounts, facilitating a series of payments, such as recurring transactions, within predefined parameters.

Open Finance

- The foundation of Open Banking, providing access to user account information, unlocks opportunities for a wider range of financial services. Open Finance aims to enhance this link and provide users with increased visibility for comparing financial products.
- Key use cases within Open Finance have the potential to enhance access to financial services for underserved low-income consumers and micro, small, and medium-sized enterprises (MSMEs), facilitating savings, investments, and access to lending products.

Open Data (OD)

- While data security and privacy regulations are well-established globally, their application may vary depending on market maturity.
- However, Open Data frameworks linked to Open Banking and Open Finance are still in early stages of development, with markets like Australia and New Zealand leading the way (though not yet fully implemented). Despite offering broad data scope, the adoption of Open Data infrastructure and use cases remains limited.

Sources: Open Banking Exchange; Payments NZ; EDC Research & Analysis

Overall, the adoption of Open Banking has fallen short of initial expectations. Several factors could enhance its progress in coming years

Technology perspective

Coordination

In many markets, Open Banking (OB) regulations mandate banks to provide standard APIs for third-party providers (TPPs) to access account data via bilateral integrations (e.g., UK, EU). As the number of TPPs and use cases grows, scalability and standardization issues may arise, especially with the potential development of non-mandated or premium APIs. New models are emerging to tackle these challenges; for example, the UAE has implemented an API Hub as part of its Open Finance Regulation.

Payment technology

The adoption of OB Payments for day-to-day in-store transactions heavily relies on the evolution of mobile payments and technologies such as tokenization, point-of-sale kernels, and mobile SDKs.

Consumer perspective

Consumer awareness & concerns

There remains a significant lack of consumer awareness about the benefits of sharing their data (account, financial, or other) and concerns persist regarding data security and protection. Governments, banks, and TPPs should take proactive steps to educate consumers.

Payment adoption

Despite overall growth in OB Payments, consumer adoption remains limited and primarily focused on specific transaction types (e.g., P2P transfers, funding accounts). To encourage broader use for day-to-day transactions and in-store P2M payments, a seamless user experience is essential. Additionally, incentives should be provided to encourage the transition from other payment methods like cards, such as matching existing benefits like loyalty programs or chargeback mechanisms (e.g., APP in the UK).

Business perspective

Business awareness

Similar to consumers, businesses must be made aware of the potential benefits of initiatives like Open Banking and Open Finance, such as reduced payment acceptance costs, improved cash flow, and greater access to financial services. These benefits are particularly crucial for micro, small, and medium-sized enterprises (MSMEs) that are currently underserved by traditional banks and financial institutions.

Payment acceptance

The adoption of OB Payments among businesses and merchants requires balanced growth from both the payer (consumer) and payee (business / merchant) sides. Businesses are unlikely to adopt new payment methods until there is significant demand from their customers.

Banks / FIs perspective

Incentives

Banks and Financial Institutions (ASPSPs) are mandated to provide their data via APIs to TPPs free of charge to promote new market entrants and foster competition. However, the lack of incentives for ASPSPs has hindered further innovation within Open Banking and Open Finance frameworks.

Payment acceptance

The adoption of OB Payments is heavily influenced by the availability of solutions from ASPSPs for consumers and businesses. The less favorable economics for ASPSPs regarding OB Payments compared to other methods, such as card payments, has slowed market adoption.

Despite the advancements in Open Banking since its launch, addressing several key factors is crucial to ensuring its continued progress and potential evolution towards Open Finance and Open Data.

Sources: Open Banking Exchange, The Banker, NatWest, Oxera, Raconteur, Arab Monetary Fund, EDC Research & Analysis

08
Consumer Digital Banks

Digital banks are disrupting traditional banking

Despite rapid customer acquisition, most digital banks remain unprofitable

Digital banks must convince consumers to switch their primary relationships to them

Consumer Digital Banks

Digital banks have gained market share by offering superior services, but now face the challenge of prioritizing profitability amid a tougher economic climate

Digital banks are disrupting traditional banking

- Digital banks, also known as neobanks or challenger banks, are online-only banks without any physical branches. Globally, they operate under different models depending on their product strategy as well as regional regulations; some have full banking licenses, while some work alongside their banking partners.
- Digital banks have disrupted the banking value chain, capturing market share from traditional banks at a rapid pace (in some countries more than others), targeting tech-savvy, unsatisfied or underbanked users.
- Digital banks are primarily accessed via mobile (growing smartphone usage contributed immensely to their popularity), though incumbents are now offering similar features. Consumers are choosing digital banks over their traditional counterparts because of better user experience, quicker onboarding, faster access to credit, multi-currency, personalization, or a lower fee structure.

Despite rapid customer acquisition, most digital banks remain unprofitable

- Digital banks have acquired customers at rates uncommon among traditional banks, but profitability has often been overlooked. As of H1 2023, nearly 95%[3] of all digital banks were not profitable.
- They attracted large customer bases by offering services at lower costs and relying on external capital, with plans to monetize at a later date. Abundant venture capital funding allowed them to prioritize geographic and product expansion over profitability. However, as funding becomes more expensive and scarce in the current economic climate, achieving profitability has become a key challenge.
- The few digital banks that have become profitable have done so through various methods tailored to their operating models, level of maturity, and the specific unmet needs of their target segments.

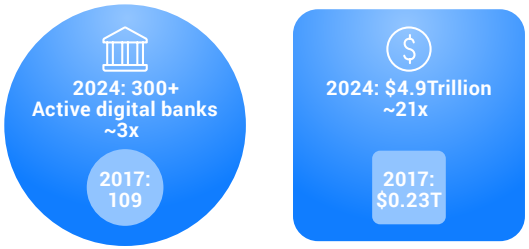
Digital banks must convince consumers to switch their primary relationships to them

- While most consumers currently use digital banks for secondary accounts, ensuring future success requires convincing them to switch to a primary account. This transition necessitates focusing on value proposition enhancement and customer engagement, ensuring platform stickiness and increased wallet share.
- Digital banks can achieve long-term growth and profitability by focusing on interest-bearing lending products, expanding into diverse financial services, innovating with personalized offerings, leveraging AI for operational efficiency, and prioritizing immersive customer experiences.

3. Simon-Kucher & Partners (Neobanking 2023 report)

Digital banks have been revolutionizing banking industry for some time, and their growth is poised to accelerate as consumer trust continues to increase

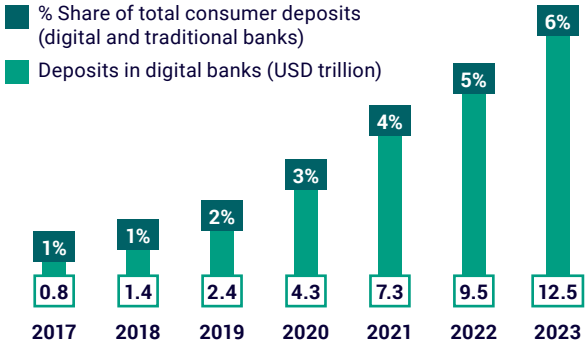
Number of digital banks and transaction values in the market are growing



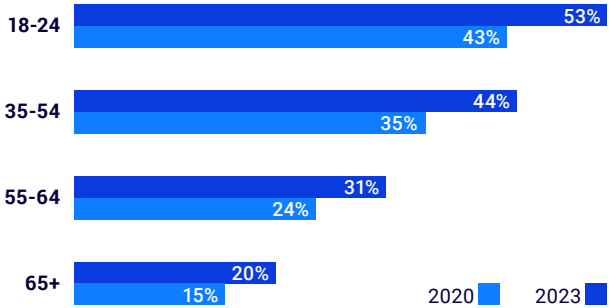
Number of digital banks
(Worldwide)

Transaction value in USD
(Estimated worldwide)

Value of customer deposits in digital banks are increasing



Consumer preference for digital banks when opening a new account 2023 vs 2020



The digital banks sector has seen significant growth in recent years, with more than 300 active banks in 2024. Around 90 new launches occurred in 2020, driven by the pandemic.

This growth was driven by consumer demand for a better banking experience and lower fees, coupled with increasing smartphone penetration, easier access to funding, and improved fintech infrastructure.

Transaction value in the digital bank market reached around 5 trillion USD in 2023 as per Statista insights and are projected to continue growing at 16% CAGR through 2028.

Digital banks experienced an increase in deposit values since 2017 holding between 7% to 13% of overall deposits as of 2023.

A larger deposit base provides a more stable funding source and can signal trust and satisfaction among customers, enhancing the bank's reputation and credibility in the market.

Digital banks have also typically found it easier to attract users. For instance, Webank (China) and Nubank (Brazil) have 360m and 100m users respectively as of 2024, adding users at acquisition rates that are rare among incumbents.

A 2023 survey by Global Data revealed that, digital banks have gained popularity across all age segments compared to 2020, with a stronger preference among younger users.

The increasing interest from older age groups is significant because they are wealthier, and more suited toward higher-value products such as credit and investments.

Consumers using digital banks in the US had a satisfaction rate of 79% compared to 66% for traditional bank users as per Galileo research. The majority (61%) indicated that they are somewhat or highly likely to switch to a digital-only bank in the future.

Sources: Statista (Accessed June 2024); Global data financial services survey 2023; Galileo; EDC Research & Analysis

Despite the global surge in popularity of digital banks, only a few have cracked the code to profitability, while many others continue their quest

North America

The North American market closely mirrors trends observed in the US. US digital banks, such as Chime, have attracted customers by offering no-fee accounts and high-yield savings, while also building trust through their affiliation with traditional banks (The Bancorp Bank and Stride Bank).

US banks such as Dave achieved their first quarterly profits in Q3 2023, and others are likely to follow.

European Union

Most European banks have struggled with profitability, relying solely on interchange fees and subscriptions to generate revenue. This model heavily depends on constant growth in the customer base.

A recent shift towards building stronger lending portfolios has yielded significant income for the likes of Bunq, Revolut, and Starling, which have focused on lending, especially mortgages.

ECB interest rate hikes over the past few years have also benefited EU digital banks. These have opened up more lending opportunities and reduced losses from holdings of reserves with the ECB.

Asia Pacific region

Asia has the most profitable banks, with China being a key contender. All five of China's initial digital banks, who obtained licenses in 2015, became profitable within five years of their launch. Unlike their Western counterparts, Asian digital banks such as WeBank (by Tencent) and MYBank (by Alibaba) operate on a consortium model.

Southeast Asia represents a significant growth market for digital banking, particularly in countries such as Thailand, India, and Vietnam, where large proportions of the population remain unbanked. Regional players are expected to continue gaining market share in these countries due to substantial hurdles for foreign players associated with cost and regulatory challenges.

Latin America and the Caribbean

In LATAM, Brazil stands out with the most extensive fintech ecosystem. Giants like Nubank, offering a range of services including credit cards, personal loans, and wealth management, are already profitable. Similarly, Brazil's Banco Inter has also achieved profitability in 2023, and both institutions are now expanding into other markets.

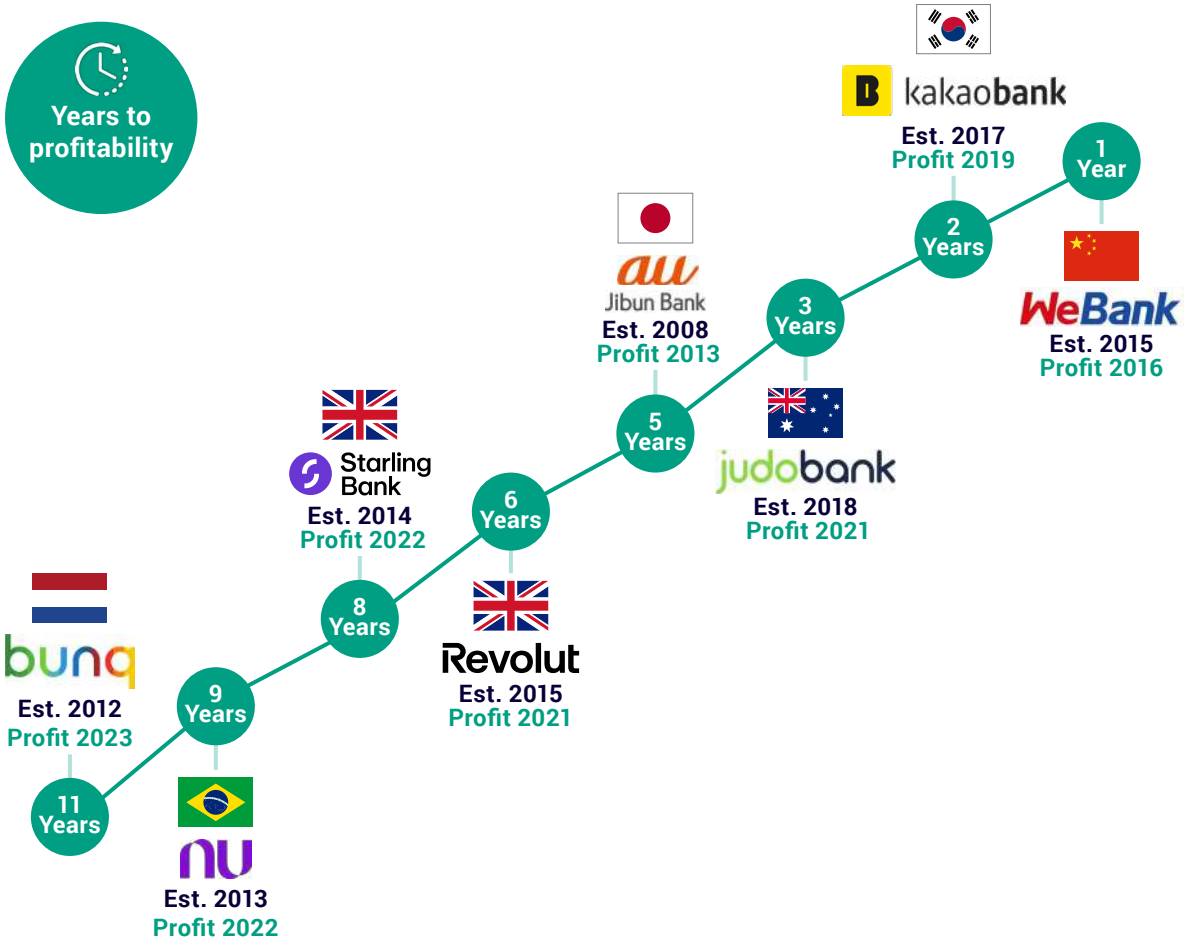
Middle East and Africa

In Africa, alongside the longstanding dominance of mobile money, digital banks are gaining traction as mobile penetration rises and more people seek credit. While banks like Fairmoney and TymeBank have recorded monthly profits, much of the ecosystem remains in the red.

Pure-play digital banking entered the Middle Eastern market a bit late, but the region is fostering a favorable regulatory environment by providing full banking licenses to UAE-based neobanks like Wio, which became profitable within a year of launch.

Sources: Bank annual reports; Global data (Digital challenger banks: the dawn of profitability report 2024); Various news articles; EDC Research & Analysis

Variation in profitability timeline for selected digital banks



Many digital banks have also ceased operations

Reasons: They offered too high-interest accounts, lacked product differentiation, crowded regional market and failed to raise funding.

Having relied heavily on external equity funding to amass their extensive customer base, digital banks face the challenge of retaining investor interest. They must demonstrate profitability or at least a viable path toward it, and have hence been forced to shut down.

Profitability concerns have caused more than 25 digital banks, including Orange, and Volt, to cease operations in the past 2 years.

XINJA

VOLT

Orange Bank

fidor BANK

Not an exhaustive representation

Digital banks can focus on implementing best practices to ensure a path towards profitability and sustain long-term growth, positioning themselves as leaders in the evolving financial sector

Emphasize on lending services and deposits

Banking is and will always be a balance-sheet-driven business. Most digital banks that have achieved profitability as of today have based their success on selling interest-bearing lending / credit products.

kakaobank

Kakao Bank was profitable within 2 years of launch due to its lending-focus from day one. In 2024, it recorded profits of $267m driven by expansion of loan refinancing services.

Starling Bank

UK-based Starling bank has shifted its focus towards lending products especially mortgages, which now constitute over 70% of its lending portfolio.

Extend a full-suite of financial products

Becoming a one-stop financial marketplace, offering diverse services like investment, insurance, trading, etc., will be pivotal for digital banks – to convince customers to switch from their traditional primary banking provider.

Revolut

Revolut launched trading in its platform since 2019 and as of 2024 even offers a Robo-Advisory service in the EEA region. Revolut also offers FX transfer, crypto, savings and cards.

N26

N26 added to their suite a travel insurance offering for its “metal” (premium) account holders and their traveling companions.

Constantly innovate product offerings

At the core of a digital bank’s attractiveness lies its capability to innovate and offer hyper-personalized products and value-added services. Maintaining a constant rate of innovation that aligns with consumer pain points is crucial to remain relevant.

NuBank has announced the launch of NuViagens, a portal for travel bookings (in partnership with hopper). They also ventured into offering eSim’s earlier this year for their premium customers.

chime

Chime’s offers MyPay, which lets consumers unlock some of their earned wages for free within one to two days of making a request.

Sources: Various news articles; Annual reports; EDC Research & Analysis

Harness the potential of AI

Leveraging AI allows digital banks to streamline operations and personalize services, ultimately improving customer experiences. The speed of AI adoption will set winners apart from both their digital-only peers as well as traditional banks.

US based Bank Dave uses AI-driven credit underwriting, reducing its 28-day delinquency rate from 2.60% to 1.83%.

Bunq launched a Gen AI tool called Finn on their app, which replaced generic search allowing consumers to plan their finances, budget, navigate the platform and find transactions.

Target niche segments

Niche targeting has been a persistent challenge for traditional banks. Successful digital players concentrate on creating offerings for their target segments, while also considering mass markets to ensure these offerings have the potential for broader appeal.

Monese specializes in serving thin-file customer bases, like students or migrants, providing them the ability to open an account in less than 2 mins.

Panacea Financial offers deeply integrated suite of financial products and services for doctors, their practices, and ultimately the broader healthcare industry.

Elevate the overall banking experience

In addition to commercial incentives, successful digital banks need to invest heavily in and prioritize immersive consumer experiences to cultivate loyalty and retention.

ZA Banks gamification strategy with 'Powerdraw' (Virtual slot machine) has increased its engagement among Hong Kong's youth.

Up Bank's Maybuy is a Save Now, Buy Later (SNBL) solution allowing customers to add products and start a savings schedule to purchase them.

Not an exhaustive representation

09
Digital Disruption in P2P Remittances

Global remittance flows are increasing at a slowing rate

The remittance space is highly lucrative but increasingly competitive

Digital technologies are reshaping remittance channels

Digital Disruption in P2P Remittances

The digital remittance revolution is disrupting costs and transfer methods

Global remittance flows are increasing at a slowing rate

- Remittance volumes have seen strong growth since 2000 growing at a CAGR of 8.6% (2000 – 2024). However, a number of factors are likely to cause this rate of increase to slow to a forecasted CAGR of 5.1% (2024 – 2028).
- The primary factors that are likely to lead to this slowdown are a reduction in global GDP growth, aging populations and changing local immigration laws.

The remittance space is highly lucrative but increasingly competitive

- Remittance volumes, while growing more gradually, remain significant.
- However, as more players have entered the market competition has grown. Digital remitters in particular have been able to reshape the competitive landscape in a short period of time, due to advanced technologies and processes and low dependency on physical locations.
- The growing competition has in turn caused noticeable and continuing reductions in remittance costs.
- These costs are expected to fall further, in line with the UN's goal to reduce the worldwide costs of remittances to 3% by 2030.

Digital technologies are reshaping remittance channels

- The growing prominence of international fintechs and their competitive business models, is causing more consumers to opt for these digital-only remitters. The number of consumers able to opt for these remitters is also increasing as unbanked populations fall.
- Furthermore, traditional money transfer operators (MTOs) are increasingly offering digital remittances. The comparative convenience of the online offering is causing many consumers to alter the way in which they remit money through these entities.
- Other macroeconomic factors such as the Covid-19 pandemic and rapid technological advancements have further accelerated the shift to digital remittances.

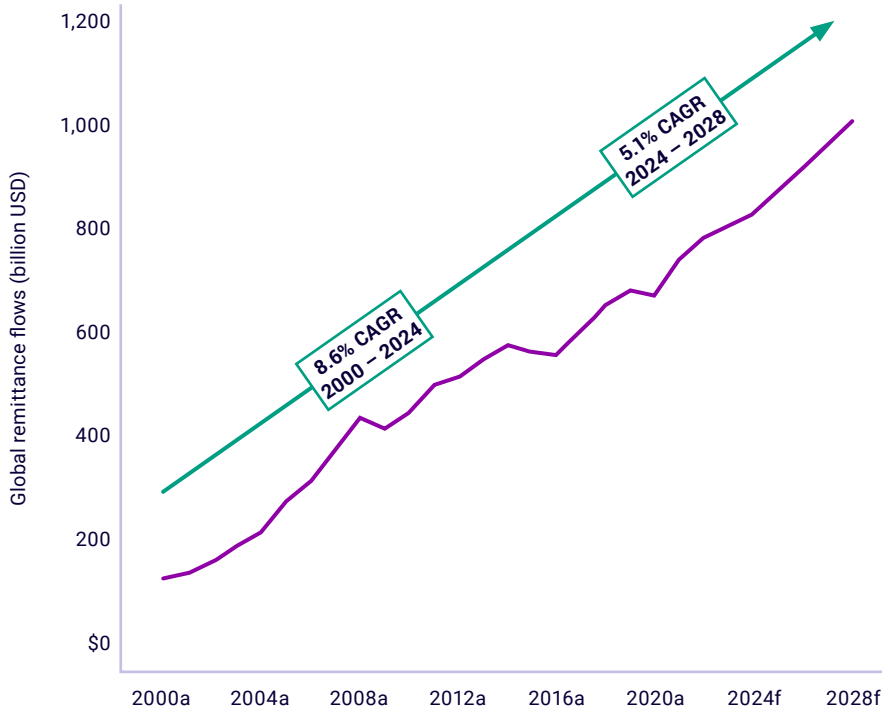
GDP growth rates

Remittances will continue to increase however at a slower rate.

Sources: International Monetary Fund; United Nations; KNOMAD / World Bank; EDC Analysis

Although historical global remittance flows have been consistently increasing over the past 2 decades, the rate of increase is likely to slow in the coming years

Past & Forecast
Historical and forecasted global remittance flows



Sources: International Monetary Fund; United Nations; KNOMAD / World Bank; EDC Analysis

Future
Factors contributing to a slowing remittance flow growth rate

Slowing GDP growth rates
Globally high inflation rates caused by a number of macroeconomic factors including war and trade disruption, have caused economic and GDP growth rates to slow in some markets. Reduced GDP growth rates typically equate to less spending power in the population. Subsequently, workers around the world are likely to have less disposable income to send back to their families abroad.

Aging populations
Broadly speaking, the global population in richer markets from where remittances originate is aging meaning there are fewer people of working age. This translates to a smaller pool of people in employment overseas, sending money to their families back home.

Aging populations are also positively correlated with a country's prosperity. Greater domestic prosperity likely means there is a reduced need to venture overseas in search of higher paying work.

Changing local laws
Immigration laws vary significantly by country however recent changes in some markets may cause remittance volumes to increase at a slower rate. In the UK for example, it has become harder to obtain a visa thanks to minimum income requirements, thus reducing the growth in migrant numbers and the need for remittances. In Saudi Arabia, overseas workers are allowed to bring families with them, which is likely to reduce the growth in remittance volumes.

The remittance landscape is undergoing transformation with increasing digitalization, declining remittance costs and the rising influence of fintech disruptors

Remittances are becoming increasingly digitalized

- There is a gradual shift from cash-based to digital C2C international transfers, a trend accelerated by the COVID-19 pandemic. While some corridors are expected to remain cash-based, technological advancements, like mobile money and wallets are increasingly enabling the unbanked population to access digital international money transfers.
- Money Transfer Operators are also shifting towards digital channels. Although cash-based transfers still dominate for players such as Western Union, MoneyGram and Ria, the volume of transactions via digital channels increases every year due to their efforts to introduce digital solutions (e.g., mobile apps).
- In many advanced markets, fintech disruptors are progressively capturing market share from Money Transfer Operators and banks. Consumers are increasingly opting to use new, accessible, digital-only fintech players to remit money, further driving the digitalization of the remittance market.

The number of disruptors in the remittance industry is growing

- International fintechs are increasingly able to compete with traditional banks and exchange houses due to several key characteristics:
  - **State-of-the-art digital apps:** These apps are highly convenient and user-friendly, allowing customers to be onboarded quickly through advanced know-your-customer verification processes.
  - **Rapid transfers:** One of the key advantages of using fintech solutions for international remittance is speed. Where a bank can take up to a few days to transfer money, fintech applications can take just hours.
  - **Competitive and transparent fees:** Many remittance fintech companies offer free processing for selected regions and avoid extra charges such as amendment fees. When fees are applied, they tend to be more transparent compared to traditional banks.
  - **Multicurrency accounts:** Fintech companies provide multicurrency accounts that offer users account details from various countries, enabling them to receive payments in matching currencies and avoid exchange rate concerns.

Example disruptors

Remitly · WorldRemit · Wise

Not an exhaustive list

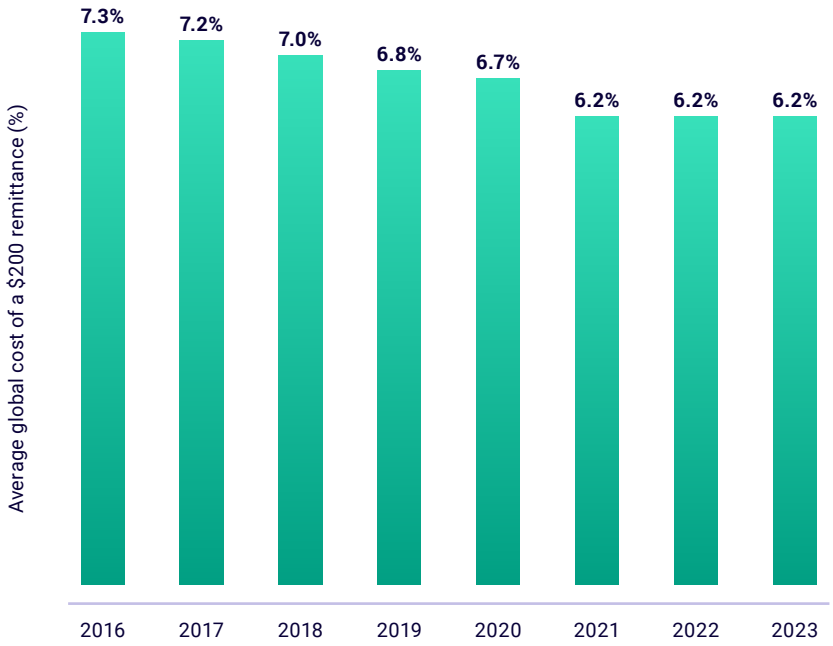
Remittance prices

Remittance prices include both cash and digital remittance prices. Fluctuations between corridors could be due to differing weighting between cash and digital remittances.

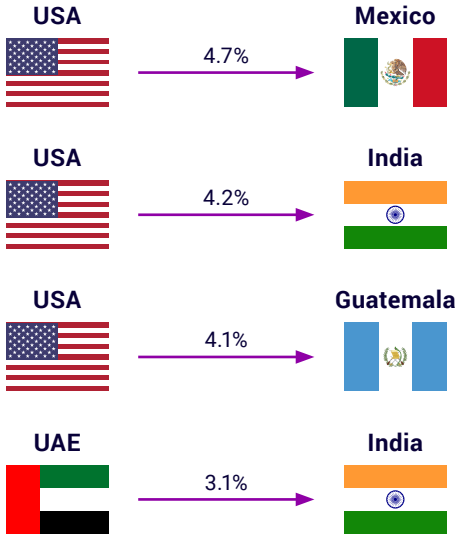
Sources: World Bank; EDC Research & Analysis

Decreasing remittance prices worldwide

Average global cost of a $200 remittance



Average remittance corridor prices – examples ($200)



Digital only fintechs

Customers increasingly choosing digital only fintechs over banks and money transfer operators to remit money, particularly in developed markets, means that the remittance market as a whole is becoming increasingly digitalised.

10
Expanding Financial Inclusion through Payment Solutions

Financial inclusion is expanding globally, albeit at varying rates across different regions

The number of payment solutions for the financially excluded is steadily increasing

Financial inclusion solutions play a crucial role in the digitalization of the payment ecosystem

Expanding Financial Inclusion through Payment Solutions

Financial inclusion has surged due to the growing availability of innovative payment solutions that offer viable alternatives to traditional banking

Financial inclusion is expanding globally, albeit at varying rates across different regions

- The percentage of individuals with accounts at financial institutions or mobile money service providers rose from 51% in 2011 to 85% in 2024. However, regions such as Latin America and the Caribbean (LAC), South Asia, the Middle East and North Africa (MENA), and Sub-Saharan Africa continue to lag behind the global average.
- The primary reasons consumers do not have accounts, regardless of the region, include insufficient funds and the high costs associated with financial services.

The number of payment solutions for the financially excluded is steadily increasing

- To cater to this segment, various payment options have emerged over time, including mobile money, agent networks, stored-value wallets, prepaid cards, and digital banks.
- These solutions have different starting points (e.g., parent company, technology), success factors, and characteristics, such as their acceptance network.

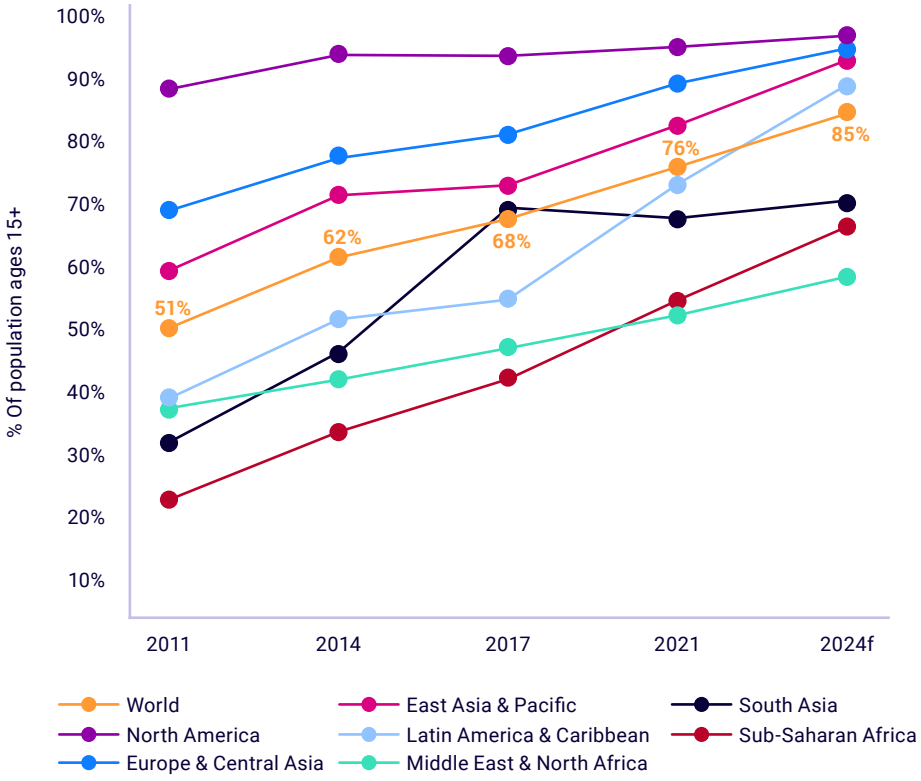
Financial inclusion solutions play a crucial role in the digitalization of the payment ecosystem

- In emerging markets, the shift towards a digital payment ecosystem depends on several factors, including the adoption of digital payment methods by financially excluded consumers.
- Other key factors include merchant acceptance, technology availability, the maturity of payment infrastructure, and the regulatory landscape.

Financial inclusion is increasing over time; however, 24% of the global population remains financially excluded, largely due to insufficient funds

Evolution of account ownership

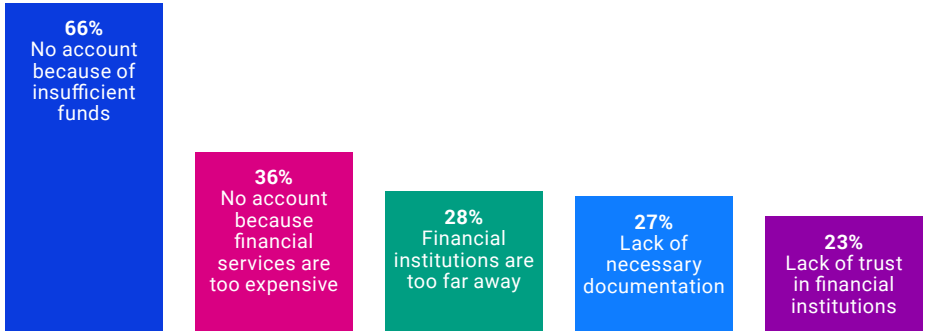
This metric shows the proportion of the population over 15 years of age that owns an account at a financial institution or a mobile-money-service provider.



Sources: World Bank: Global Findex Database; EDC Analysis

Reasons why consumers do not own an account

The data below only includes responses from proportion of the population that do not own an account and excludes high-income markets.



Financial inclusion is on an upward trend; however, in 2024, 15% of the world's population remains financially excluded, with South Asia, the Middle East and North Africa, and Sub-Saharan Africa having rates that exceed the global average.

There are various reasons why consumers do not have an account, but the primary reason across all regions is a lack of sufficient funds. Consequently, there is a clear correlation between financial inclusion and macroeconomic factors such as market economic stability, personal consumption levels, education, access to technology, and the prevalence of the informal economy.

Furthermore, financial inclusion is linked to cash usage – higher financial inclusion leads to greater consumer access to digital forms of payment, thereby reducing the reliance on cash.

Sources: World Bank: Global Findex Database 2021; EDC Analysis

To address the needs of financially excluded consumers, several payment solutions have emerged over time, each with different starting points and acceptance networks

Key payment solutions for financially excluded consumers by acceptance network

Closed oop → Restricted Loop

Mobile money

- Mobile money enables users to store, send, receive, and manage money through their mobile phone network, typically provided by Mobile Network Operators (MNOs).
- Its success lies in its accessibility for low-income consumers and the extensive reach of independent locations.
- However, it primarily supports payments within the mobile phone network, such as Cash-In / Cash-Out (CICO) and peer-to-peer (P2P) transactions.
- Mobile money is particularly widespread among consumers in the Africa, especially in markets like Kenya, the home market of leading provider M-Pesa, and Tanzania.

Agent networks

- Agent networks consist of a distributed group of individuals or businesses that operate on behalf of FIs or MNOs to offer financial services to consumers.
- Consumers primarily use these agents for CICO, P2P, and bill payments, which are typically closed-loop transactions.
- However, as the ecosystem and consumer demand evolve, agent networks like Fawry in Egypt and Moniepoint in Nigeria are increasingly expanding their services to include open-loop retail payments by leveraging traditional payment rails such as cards and bank transfers.

Stored-value wallets

- Stored-value digital wallets allow users to store funds and make payments or withdraw cash via a smartphone app.
- These wallets originate from a variety of sectors, including telecommunications, fintech, delivery and ride-hailing services, and social media companies.
- In emerging markets, the evolution of these wallets typically begins with closed-loop functionalities, such as CICO, P2P transfers, and bill payments. Over time, they may expand to include restricted-loop payment acceptance, such as QR codes, and in some cases, evolve into open-loop systems that support payments via cards or instant payment rail.

Examples

Sources: CGAP; World Bank; Investopedia; Tmob; BusinessFinancing.co.uk; EDC Research and Analysis

Prepaid cards

- Prepaid cards are payment cards that must be preloaded with funds before they can be used, as they are not linked to a bank account or credit line.
- Their acceptance depends on the card network they operate on. International networks like Visa and Mastercard, as well as domestic networks such as Meeza in Egypt and Verve in Nigeria, enable open-loop transactions. However, prepaid cards can also be issued for restricted and closed-loop payments, such as gift cards.
- The growth in prepaid card usage is largely driven by wallets and digital banks that offer them to facilitate open-loop payments for users.

Digital banks

- Digital banks are online-only institutions with no physical branches. They either hold full banking licenses or operate in partnership with traditional banks, such as through subsidiary arrangements.
- Their presence has grown in emerging markets in tandem with rising internet and smartphone penetration.
- Key factors contributing to their success include more accessible eligibility criteria, streamlined documentation requirements, lower fees, and a simplified user experience.

Financial inclusion solutions can advance the digitalization of payments in emerging markets, particularly when supported by favorable ecosystem conditions

Historical background

- Emerging markets in regions like LAC, MENA and Sub-Saharan Africa, have historically faced low levels of consumer financial inclusion. Traditional banks often avoided serving low-income consumers, focusing instead on the smaller segment with higher incomes.
- To address the needs of the financially excluded, mobile network operators and non-bank entities developed mobile money and agent banking networks. These systems allow consumers to deposit cash, make payments, and withdraw money via mobile phones through a network of agents.
- With technological advancements, including increased internet access and the proliferation of smartphones, companies from diverse sectors—such as fintech, delivery and ride-hailing services, social media platforms, and even some traditional banks—have introduced additional digital solutions. These include stored-value wallets, digital banks, and prepaid cards, all of which have furthered financial inclusion and broadened access to financial services.

Consumers demand change

- The proportion of financially excluded consumers is decreasing, driven by the growing variety of alternatives to traditional banking.
- As consumers become more interconnected and engage in more online transactions, there is an increasing demand for digital payment solutions that are interoperable both domestically and internationally. This shift is moving from closed-loop systems to open-loop solutions that utilize traditional payment rails, such as cards.
- In less developed markets, however, many consumers still use digital payment solutions primarily for accessing cash (CICO and P2P transfers). To encourage a transition towards everyday digital payments, it is essential to identify use cases that address existing needs or pain points and offer incentives to promote adoption. Effective strategies might include nation-wide applications such as mass transit or government payments, which can drive broader awareness and usage.

Payment ecosystem conditions

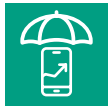
- The digitalization of a payment ecosystem requires a dual approach, addressing both consumer needs (payment issuance) and merchant demand (payment acceptance). The proliferation of affordable and accessible POS terminals, such as mPOS and softPOS, is essential for increasing digital payment acceptance among merchants, particularly in emerging markets where most businesses are micro and small enterprises.
- The presence of advanced payment infrastructure—such as real-time gross settlement (RTGS) systems, national payment switches, instant payment networks, domestic card schemes, and digital ID systems—along with payment technologies like QR codes, NFC, and tokenization, can significantly accelerate the evolution of the payment ecosystem.
- Additionally, the regulatory landscape plays a critical role in driving or hindering payment digitalization. Central banks or national payment companies typically control this aspect, setting legislation and spearheading initiatives to enhance the payment infrastructure and technology available in the market.

Source: EDC Research & Analysis

11
Insurtech

The insurance industry is ripe for disruption and innovation

Insurtech leverages new data streams to price premiums more accurately



The Insurtech industry is experiencing significant growth

Insurtech

Insurtech companies are poised to disrupt the traditional insurance industry by leveraging advanced technologies and enhanced data analytics to optimize existing processes

The insurance industry is ripe for disruption and innovation

- Insurtech refers to the use of new technologies to transform the current insurance landscape, delivering cost savings and efficiencies.
- Historically, the insurance sector has been slow to innovate and relatively untouched by the sweeping changes fintech has brought to other industries.
- Insurtech companies are emerging, delivering enhanced customer experiences, process efficiencies, personalization, flexibility, lower costs, and improved security. These businesses are set to disrupt the existing insurance business model.

Insurtech leverages new data streams to price premiums more accurately

- The insurance industry has relied on basic or limited data, leading to end users paying significantly more than necessary and minimal differentiation between insurers.
- Insurtech companies leverage data from internet-enabled devices, such as cars, geolocation services, and activity trackers, among other sources, to offer customized and competitively priced insurance products.
- This results in lower prices for customers who are willing to share data about their behavior to receive better rates.

The Insurtech industry is experiencing significant growth

- In 2022, the global consumer Insurtech market was valued at $5.4 billion and is expected to reach $152 billion by 2030.
  - Leading examples of high-growth Insurtech businesses include Lemonade in the US and ZhongAn in China.
- These companies, along with others in specialized insurance verticals, also employ robotic process automation (RPA), machine learning (ML), and artificial intelligence (AI) to analyze alternative data streams, and enhance internal tasks such as sales and claims processing. This technological integration leads to more competitive prices for customers.

Sources: Grand View Research; EDC Analysis

Trends in the payments industry, including embedded finance and open banking, are significantly impacting the success of Insurtech companies

There are 4 key payment trends in the Insurtech industry

1. Embedded Finance
Insurtech solutions are integrating into the checkout process through seamless, real-time transactions. For example, travel insurance can be embedded within the booking flow for airlines, hotels, or car rentals, and product protection insurance can be incorporated into e-commerce checkouts.

Payment service providers (PSPs) benefit from partnering with insurance providers to enable a smooth, one-click insurance purchase at checkout.

2. Usage-Based Insurance (UBI)
UBI is gaining popularity by analyzing new data streams for insurance calculations, such as pay-per-mile auto insurance or dynamic health insurance based on fitness data. Implementing UBI requires dynamic, real-time payment processing systems capable of handling microtransactions based on customer behavior or events.

Payment processors must support flexible, usage-based billing cycles to accommodate UBI.

3. Open Banking
Insurance companies are utilizing open banking to collect payments directly from bank accounts, bypassing card networks and reducing transaction fees.

4. Claims Payouts
Policyholders increasingly expect instant claim payouts similar to e-commerce refunds, necessitating instant payout methods via digital wallets.

This is a pain point for many traditional insurance companies, which do not have instant payout capabilities to different payment methods.

Examples of Insurtech companies

Insurtech	Focus	Geography
Lemonade	Renters; Homeowners; Car; Pet; Life	United States
Bdeo	Motor home	Spain
Ethersic	Insurance infrastructure on blockchain	Germany
Route	E-Commerce / Shipping	United States
Dacadoo	Health	Switzerland
Spot	Injury & Travel	United States
Vouch	General Liability	United States
High Definition Vehicle Insurance	Fleet Insurance	United States
Pumpkin	Pet insurance	United States
ZhongAn	Health; Accident; Car	China
Oscar	Health	United States

Insurtech companies
The US is the largest insurance market globally, and is thus home to the most successful Insurtech companies.

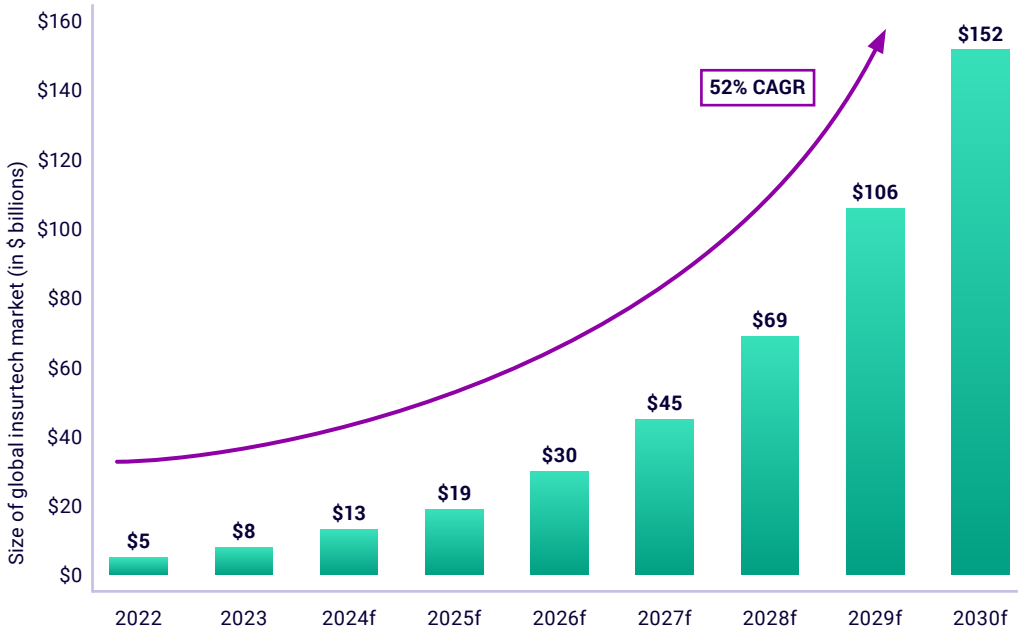
Some of the Insurtech listed above work to embed themselves into larger insurance companies and organizations.

Sources: The Ascent; Built In; Company websites

The global consumer Insurtech market, valued at approximately $5 billion in 2022, is projected to grow significantly, reaching an estimated $152 billion by 2030

Global consumer Insurtech market size, in $ Billions, 2022 – 2030

The number of insurance claims worldwide is one of the largest factors contributing to market growth. Among these, auto, life, and home are the most common insurance claims.



Sources: Grand View Research; Investopedia; EDC Analysis

Challenges addressed by Insurtech

Insurtech companies have successfully tackled several key challenges in the insurance industry:

Claims management: Leveraging advanced technologies to automate processes, detect fraud, and expedite claim reviews, processing, and payouts (through instant payout processing).

Underwriting: Utilizing data sharing, including through Open Banking, to automatically collect and analyze data for accurate risk assessments.

Contract execution: Implementing smart contracts and other automation processes to enforce policies and handle payout claims efficiently.

Risk mitigation: Accessing extensive data, including historical and near-real-time data, to make better risk decisions, monitor risks, detect fraud, and reduce exposure.

Challenges faced by Insurtech

Insurtech companies face several significant challenges:

Regulation: The insurance industry is highly regulated, slowing innovation and increasing the burden for new entrants to compete with established insurers.

Dependence on traditional insurers: Due to regulatory and operational complexities, Insurtech companies often partner with traditional insurers for underwriting and risk management, leading to potential over-reliance.

Data privacy concerns: The value proposition of Insurtech depends on consumers sharing non-traditional data. However, privacy concerns may deter some consumers, limiting the total addressable market for Insurtech companies.

Consumer Trends

12
Innovations in e-Commerce and In-Store Payments

Social Commerce serves as a powerful growth lever for retail businesses

Customers seek highly personalized experiences, sometimes outpacing retailer innovations

Unified commerce elevate retail experience

Innovations in e-Commerce and In-Store Payments

As shopping and payment experiences rapidly evolve, retail businesses face the critical challenge of striking an optimal balance between continuously enhancing customer experience and maintaining operational efficiency

Social Commerce serves as a powerful growth lever for retail businesses

- Social Commerce seamlessly integrates the shopping experience within social media platforms, allowing customers to discover, explore, and purchase products without leaving their favorite social apps.
- By leveraging social data and user behaviors, businesses can deliver highly personalized product recommendations and marketing messages to their target audience.
- While Social Commerce has already demonstrated high conversion rates and significant adoption in regions like Asia, it has primarily served as a traffic driver in the Western markets.
- However, the launch of TikTok Shop in late 2023 has the potential to disrupt the Social Commerce landscape globally with its massive user base and innovative features.

Customers seek highly personalized experiences, sometimes outpacing retailer innovations

- Driven by technological advancements and innovative strategies, personalization has emerged as a critical differentiator, transcending the boundaries of luxury retail and permeating every aspect of the customer journey, both online and in-store:
  - Customers seek personalized interactions with retailers across various touchpoints.
  - Large retailers are investing heavily in customer data tools and data collection strategies, both online and in-store to deliver highly personalized offerings, recommendations, and experiences.
  - Retailers are using data, technology, and customer insights to create effective loyalty programs, enhancing customer engagement and fostering emotional loyalty.
  - These loyalty programs are evolving to reward actions beyond just purchases, contributing to long-term revenue growth.
- However, many retailers are still lagging in their ability to deliver effective personalization at scale due to data management challenges, organizational silos, lack of analytical capabilities, and inadequate technology enablement.

Unified commerce elevate retail experience

- While both Unified Commerce and omnichannel strategies aim to provide a consistent experience across multiple channels and reduce the complexity of multichannel and multiregional operations, Unified Commerce takes it a step further by integrating all channels into a single platform, providing better efficiency and smoother experiences for both customers and retailers.
- This integration enables seamless transitions for customers between channels and streamlines retailers' operations, expediting various tasks such as bank reconciliation through centralized payment data in a unified back-office.
- According to the 2024 Adyen "Retail Report: Unified Commerce Study," which surveyed 13,177 businesses across over 26 countries, businesses that implemented Unified Commerce last year saw an additional 8% revenue growth in 2023. Additionally, 36% of these businesses reported an improved understanding of customer behavior, enhancing their targeting and marketing efforts.

Example of Social Commerce

TikTok Shop

Launched in 2023, TikTok Shop is a comprehensive e-commerce solution that enhances sales and brand growth on TikTok. It enables sellers to market and sell products directly through in-feed videos, live streams, and the Showcase tab. It supports seamless product discovery, detailed information, checkout, and post-payment activities, all within the TikTok app.

By embracing omnichannel personalization and harnessing the power of social commerce, businesses can create more engaging customer experiences

- Companies are leveraging sophisticated algorithms and data analytics to offer tailored interactions. For instance, Amazon recommends products based on browsing and purchase history, while Sephora sends personalized product recommendations and offers through email and mobile apps, considering customer preferences and beauty routines.
- Ensuring a consistent and unified shopping experience across digital and physical channels is a priority. For example, Starbucks' mobile app allows customers to customize and reorder drinks, making the transition between online and in-store experiences seamless and cohesive.
- Real-time customer support and dynamic loyalty programs are crucial for building strong relationships and increasing retention. Starbucks sends tailored offers and reward updates based on purchase history, encouraging repeat visits and deeper engagement.
- Embedding direct purchasing options within social media posts and videos simplifies the path from discovery to purchase. Brands are also partnering with influencers and content creators to boost credibility and reach new audiences authentically. This strategy is particularly effective in industries where visual appeal and social proof are key, such as fashion and beauty.

Examples of highly personalized experiences

amazon

Amazon uses advanced algorithms to recommend products based on a customer's browsing history, purchase history, and items in their cart.
The homepage and emails are dynamically tailored with product recommendations, special deals, and advertisements based on individual user data.

SEPHORA

Sephora collects data on customer preferences, skin type, and beauty routines to send highly personalized product recommendations and offers through email and mobile apps.
Sephora's Virtual Artist feature allows customers to virtually try on makeup products.

STITCH FIX

Stitch Fix uses detailed customer profiles and style quizzes to curate and send personalized clothing and accessory recommendations through their subscription service. Each box is tailored to the customer's unique style, size, and budget preferences.
Customers can provide feedback on the items they receive, which helps refine future recommendations and ensures a better fit with each delivery.

STARBUCKS

The Starbucks mobile app allows customers to fully customize their drink orders, save their favorite configurations, and reorder them with ease.
Based on purchase history and preferences, Starbucks sends tailored offers, discounts, and reward updates to customers through the app.
This encourages repeat visits and enhances customer loyalty and helps customers earn rewards as well.
The app tracks user behavior to suggest new products and seasonal offerings that align with individual tastes and habits, making the experience more engaging and relevant.

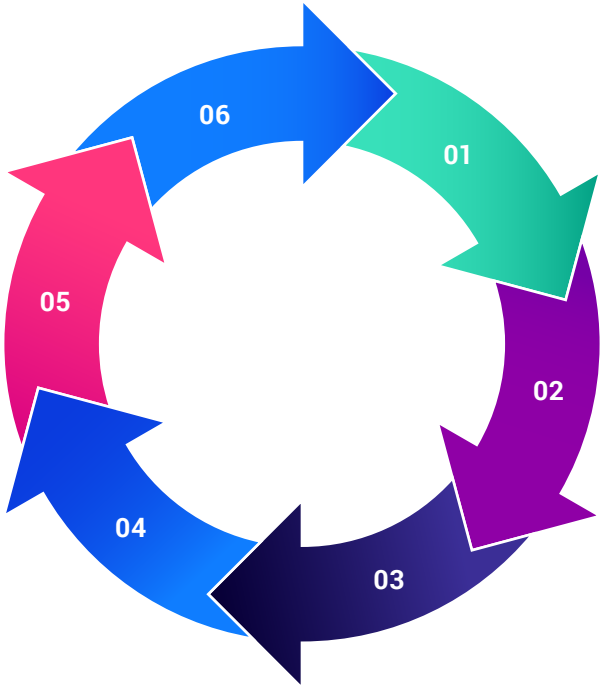
Merchants are leveraging innovative technologies to improve customer satisfaction and streamline operations both in-store and online

6 Key aspects within the innovation cycle transforming the retail industry today

1. In-store experience enhancement
- Interactive kiosks
- Smart shelves providing real-time inventory tracking, continuously monitoring stock levels
- Facial recognition systems
- Augmented & Virtual Reality (AR/VR)

2. Omnichannel integration
- Mobile apps
- Buy Online, Pick Up In-Store (BOPIS) and Curbside Pickup
- Endless aisle
- Consistent cross-channel promotions
- Virtual try-on and augmented reality
- Personalized marketing across channels

3. Data Analytics and personalization
- AI for customer behavior
- Customer service through chatbots and virtual assistants
- Analyzes shopping patterns to predict behaviors
- Helps tailor product offerings and marketing strategies



4. Back-end operations
- Inventory management including:
- Optimizes stock levels and reduces wastage
- Ensures the right products are available at the right time
- Streamlining of the order processing workflow

5. Innovative payment solutions
- Mobile wallets and contactless payments
- Buy Now, Pay Later (BNPL)
- Biometric payments
- Voice-Activated payments
- Integrated payment systems combining various payment methods into a single system that supports in-store, online, and mobile transactions, providing a seamless checkout experience (e.g., Square, Stripe)
- Payment orchestration

6. Sustainability and eco-friendly practices
- Implementation of eco-friendly packaging and products
- Promotion of recycling and circular economy initiatives
- Reduction of their carbon footprint

Artificial Intelligence is the breakthrough technology that holds the promise to truly transforming retail payments

AI is revolutionizing the retail payments industry by addressing key issues around speed, security, and user experience

PayPal mastercard

AI analyzes transaction patterns in real time to detect and prevent fraud, ensuring secure transactions for both merchants and payment providers (e.g., PayPal and Mastercard).

amazon Walmart

AI generates real-time insights from massive transaction data, helping merchants identify new revenue opportunities, demand trends, spending patterns, and areas needing improvement (e.g., Amazon and Walmart).

STARBUCKS Alibaba

AI predicts customer behavior and preferences in terms of payment, enabling retailers to tailor product offerings, recommendations, and loyalty programs (e.g., Starbucks and Alibaba).

13
Adapting to the Marketplace and Gig Economy

A robust and flexible payments infrastructure is essential

Instant Payments are becoming increasingly important

Embedded Finance drives growth and value for platforms

Adapting to the Marketplace and Gig Economy

Online marketplaces and gig economy platforms must adapt to the evolving needs of their users to remain competitive

A robust and flexible payments infrastructure is essential

- Online marketplaces and gig economy platforms must have robust, flexible payment infrastructures that accommodate various payment models. These models should include diverse payment options, efficient cross-border payment solutions, split payments, escrow services, and payment orchestration to meet the dynamic needs of sellers, buyers and workers.
- Compliance with regulatory standards, such as Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations is paramount to ensuring trust and security within these ecosystems.
- Transparency about payment methods, fees, FX rates and security measures fosters trust among the players within the ecosystem.

Instant Payments are becoming increasingly important

- Gig workers and SMEs increasingly demand faster access to their earnings, driving a shift towards real-time payments. This demand is fueled by the need for improved cash flow and financial flexibility.
  - Gig workers are willing to pay a fee for instant access to their earnings.
  - SMEs rely on fast and efficient fund settlement for their day-to-day operations.
- The fragmented global landscape, with varying real-time payment (RTP) infrastructures and regulations, poses integration and operational hurdles for platforms operating across multiple countries.

Embedded Finance drives growth and value for platforms

- Embedded finance can unlock significant growth and provide a competitive edge for platforms.
- Platforms like Shopify and Grab are extending beyond their initial offerings to include embedded financial services such as lending, insurance, and savings products.
- This integration allows gig workers and SMEs to access a broader range of financial tools within a single platform, enhancing their overall experience and providing them with the necessary resources to thrive.

Marketplace vs gig platform

The key difference between a marketplace and a gig platform lies in what they offer: marketplaces facilitate the buying and selling of products, while gig platforms connect individuals and businesses to exchange services.

Gig Economy workers and SMEs are increasingly demanding instant access to their funds, however the fragmented RTP landscape poses operational challenges for marketplaces and gig economy platforms

Gig workers

Currently, the payment structure for gig workers varies significantly by platform and country.

- Gig platforms like Uber and Deliveroo offer Instant Pay options, while other platforms operate on a weekly or bi-weekly payout schedule.

According to PYMNTS, nearly 40% of gig economy transactions are now instant, driven by demand for faster access to earnings.

- According to a Mastercard survey, 64% of gig workers prefer to be paid instantly or within a few hours of completing a job.
- About 85% of gig workers indicated they would pay a fee (around $1 - $2 per transaction) for instant access to their earnings.

SMEs / vendors

Many SMEs experience long settlement times, which impact their cash flow and ability to manage expenses.

- According to Millbrook Business Finance, 48% of SMEs report that cash flow is the biggest challenge they currently face. This is exacerbated by issues with late payments.

The adoption of instant settlement for SMEs is still in its early stages, however the trend is clearly moving towards faster access to funds.

- According to a PYMNTS survey, approximately 70% of SMEs would prefer instant settlements to improve cash flow and financial management. The demand is particularly high among SMEs that rely on daily income to manage operations and payroll.
- 57% of SME surveyed said they are willing to pay a fixed fee for instant payment.

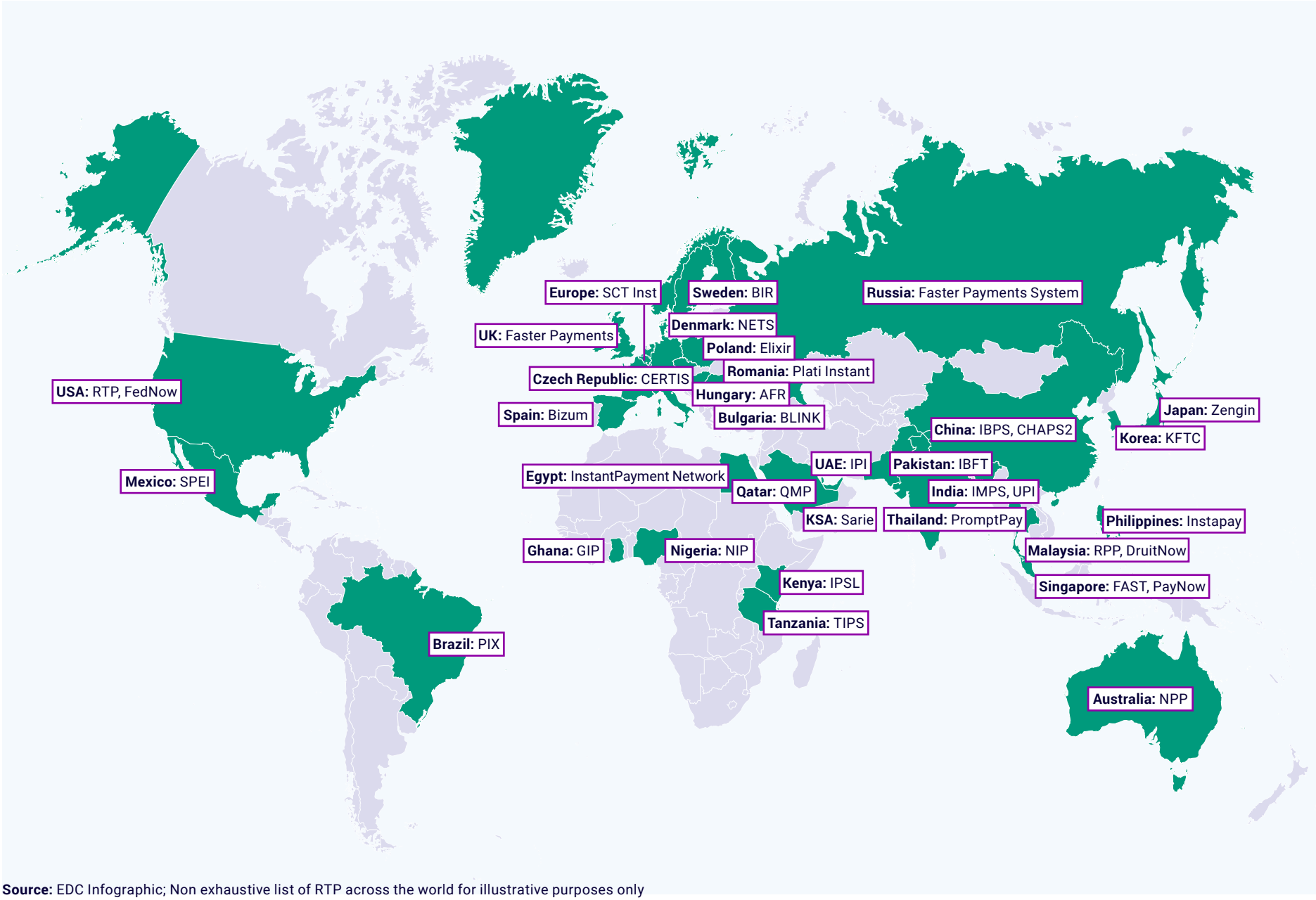
RTP landscape

The global RTP landscape remains fragmented, leading to operational and integration challenges for marketplaces operating across multiple countries. These countries need to navigate different systems and standards.

The appetite and adoption for instant payments vary significantly by country. While some countries have developed their own domestic RTP systems (e.g., Faster Payments in the UK, Bizum in Spain, PIX in Brazil, UPI in India), others rely on regional solutions (e.g. the pan-European SCT Inst scheme).

There are ongoing efforts by governments to promote instant payments (e.g. the European commission has mandated adoption and price equalisation of SCT Inst, the FSB has put forward a roadmap to enhance cross border payments by 2027, EPI has introduced the Wero wallet in 2024).

Sources: GQ Research; PYMNTS; Fintech Futures Fintech Nexus; Millbrook Business Finance



Source: EDC Infographic; Non exhaustive list of RTP across the world for illustrative purposes only

Embedded finance holds extensive potential to enhance the overall user experience, foster trust and loyalty, and drive growth for all stakeholder

Financial services that can be integrated into online marketplaces and gig economy platforms

1. Financial management & growth

Cash flow and budget management tools
Track income and expenses, predict seasonality, and make informed financial decisions.

Financing and loan options
Providing gig workers and SMEs with access to capital.

Investment and savings tools
Empowering vendors or gig workers to save for retirement, taxes, or other financial goals. Allowing gig workers to invest small amounts of money into diversified portfolios.

Profit margin management
Offering insights and recommendations to help vendors optimise their pricing and profitability.

2. Payments and transactions

Digital wallets
Enabling seamless and secure transactions within the marketplace.

Card issuance
Issuing vendors / gig workers with physical or virtual payment cards for seamless transactions and expense management.

Foreign exchange and hedging
Mitigating currency risk for vendors who operate in multiple countries.

3. Risk management & compliance

Insurance products
Protecting vendors from income loss, equipment damage, and other risks.

Onboarding and KYC / AML compliance
Streamlining the onboarding process for vendors / workers and ensuring regulatory compliance.

VAT, tax, and accounting services
Simplifying tax compliance and financial reporting.

4. Additional services

Payment orchestration
Integrating multiple PSPs to offer a wider range of payment options, optimise processing and reduce cost.

Early payments / earned wage access
Allowing vendors to access earnings or allowing gig workers to access earnings before the standard payment cycle.

Income smoothing tools
Providing options for gig workers to average out income over time, helping them manage fluctuations in earnings.

Credit building services
Offering tools and services to help vendors / gig workers build and improve their credit scores.

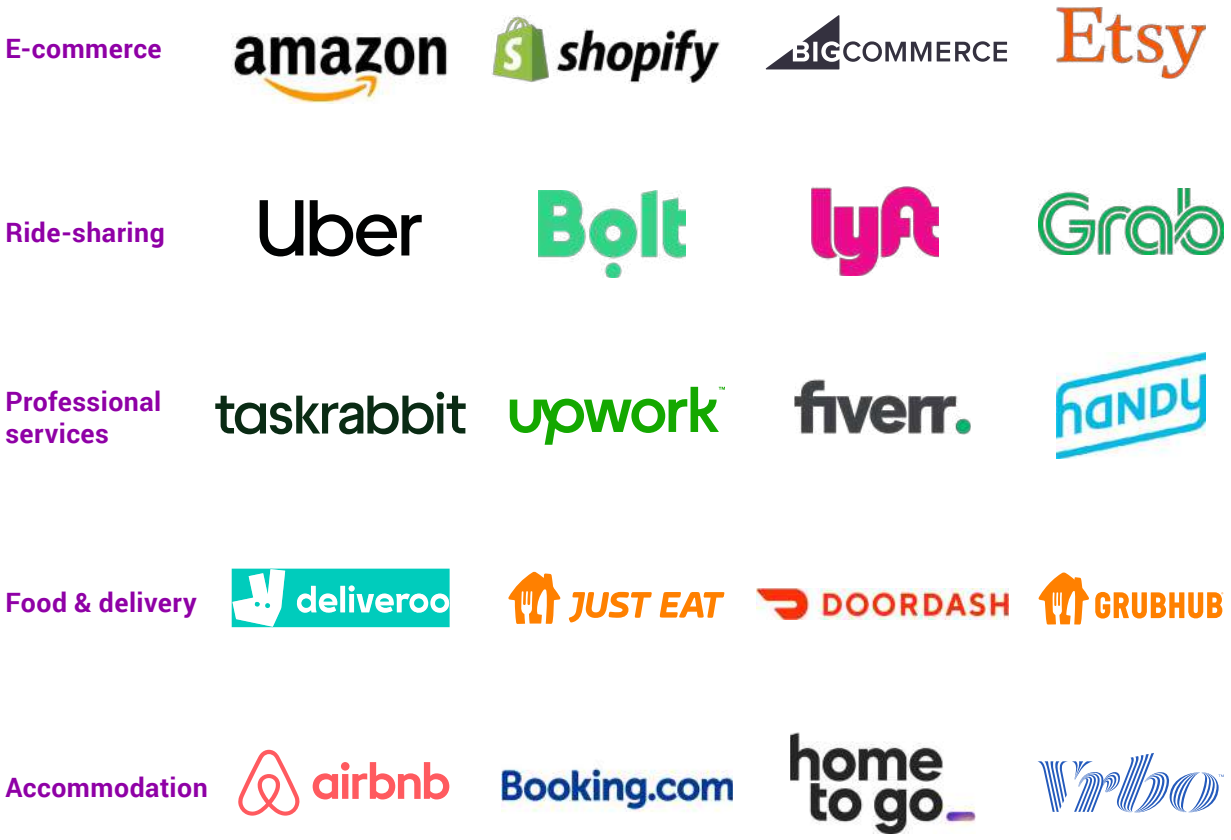
Source: EDC Infographic

Embedded Finance allows marketplaces and gig economy platforms to seamlessly integrate financial services into their offerings, creating new revenue streams, enhancing customer experiences and increasing loyalty and retention.

According to Research and Markets, in 2024, the embedded finance market is estimated at approximately $112.6 billion. By 2029, the embedded finance market is projected a double and reach a market value of $237.4 billion.

According to The Paypers, Embedded finance can enable companies to increase their revenue potential by 2-5 times.

Online marketplaces and gig economy platforms that currently embed finance into their offering



Sources: Research and Markets; The Paypers; Dealroom.com

Non exhaustive list for illustrative purposes only

14
Future of Cash

Cash usage is declining as digital payment methods continue to grow

Cash usage trends vary significantly across markets

Cash will not disappear in our lifetimes

Future of Cash

Despite the decline in cash usage, various factors will likely prevent cash from becoming obsolete

Cash usage is declining as digital payment methods continue to grow

- Cash usage in both retail transactions and peer-to-peer (P2P) money transfers is declining, and this downward trend is expected to continue in the near future. Specifically, over the next four years, the cash proportion of total transaction volume is expected to decrease from 14.5% to 10.1% globally.
- The core reason behind the migration towards electronic payment methods is advancements in payment technologies. These advancements include the growth of alternative payment methods, the increasing popularity of contactless payments and the birth of central bank digital currencies.

Cash usage trends vary significantly across markets

- Cash usage varies significantly market by market due to contrasting macroeconomic factors, government initiatives and adoption of payment technologies:
  - Real-time payment networks and the rapid rise of successful fintechs & neobanks and the services they offer (e.g. BNPL services, real-time payments, cross-border money transfer services) are propelling mature markets towards digital payments and away from cash.
  - However, in developing countries cash remains relatively resilient due to factors that include perceived corruption, large unbanked populations, and significant informal economies.
  - Italy and Japan are also witnessing the resilience of cash, driven by habitual customer behavior and, in Italy's case, low trust and confidence in financial institutions.

Cash will not disappear in our lifetimes

- Cash is likely to remain relevant in all markets for the foreseeable future. Its intrinsic characteristics, such as anonymity, privacy, and convenience for low-value, day-to-day transactions, make it virtually impossible to replace entirely in the near future for most markets.
- Cash holds particular value for certain segments of the population, including the elderly, the unbanked, those residing in rural areas, and those engaged in the informal economy.
- Moreover, governments worldwide have demonstrated a commitment to preserving the use of cash if its usage declines significantly, recognizing its importance as a public good and a contingency measure.

Sources: Global Data; EDC Analysis

Cash usage varies around the world due to a differing macroeconomic trends, government initiatives and varying levels of payment technology

Examples of countries with high cash usage

Mexico

The resilience of cash in Mexico is driven by several factors: a high unbanked population (53%), a significant informal economy (23% of GDP), a notable perception of corruption (ranked 56th most corrupt) and the large number of SMEs (99% of all Mexican businesses).

However, government initiatives promoting an interbank electronic payment system (SPEI) and a digital payments app (CoDi) are expected to reduce cash usage.

Italy

Cash remains resilient primarily due to the privacy it offers and a distrust in banks, with 41% of Italians believing their primary bank does not understand their needs or operate transparently.

Additionally, low levels of computer literacy relative to the rest of Europe further contribute to the continued prevalence of cash.

Japan

Cash has long been popular due to concern over personal information leakage and misuse. Its reliability during power outages in natural disasters and the extensive ATM network (950 per million inhabitants) make it a convenient option.

However, the rise of cashless payment technology (e.g. QR codes), banking fees on cash deposits, rising interest rates and the government's 'Cashless Vision', including digital salary payments, are likely to diminish cash usage.

Cash is king

Italy and Japan selected to highlight the fact that cash usage can still be high in developed markets where unbanked populations are low.

Sources: Global Data; CPI; EDC Research

Examples of countries with low cash usage

Sweden

Initiatives such as the Swish payments system are contributing to significant decline in cash usage. Sweden's tech-savvy population, the success of fintechs (e.g. Klarna), and merchants' freedom to refuse cash payments further accelerate this trend.

More broadly, as in many other developed countries, the rise of contactless payments via physical payment cards and mobile wallets has also contributed to the decline in cash usage.

USA

The rise of neobanks such as Chime and Money Lion offering features such as payday advances and no credit checks has decreased the unbanked population.

Coupled with the growing popularity of money transfer apps, this has contributed to a decline in cash usage.

However, high card transaction fees and local government initiatives ensure physical currency persists to some extent.

Argentina

Argentina's instant direct debit system (DEBIN) which supports P2P, C2B and B2B transactions, along with the real-time payment service (Transfarencias) have accelerated the decline in cash usage.

Workers increasingly being paid in cryptocurrencies (250% increase from 2022 to 2023) to avoid the volatile Argentinian Peso has further amplified this trend.

Government initiatives such as raising the minimum card-spend amount and expanding ATM infrastructure will likely prevent cash from becoming obsolete.

Market usage

Anecdotal examples to illustrate how cash usage varies by market.
Source: Global Data; CPI; EDC Research

In the near future, the factors driving the decline in cash usage are likely to outweigh those supporting its resilience

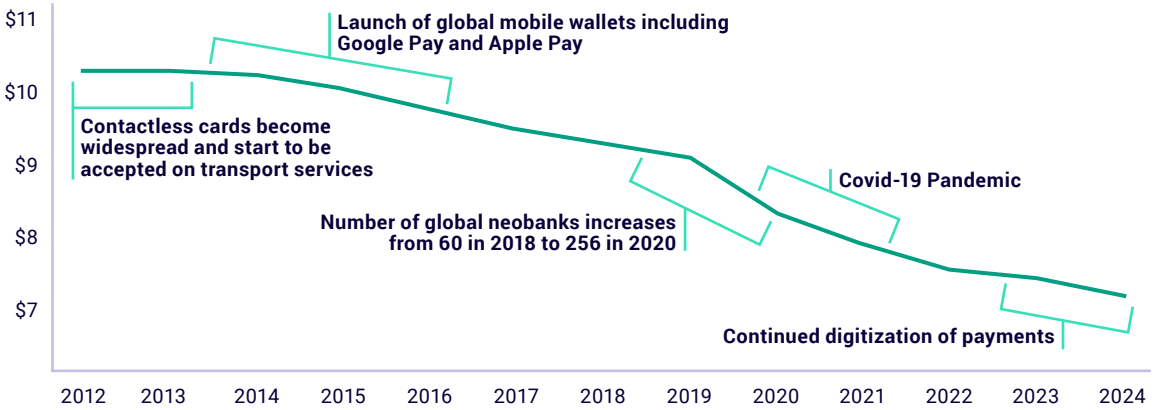
Factors contributing to cash resilience

- Low value day-to-day transactions
- Informal economy
- Unbanked populations
- Elderly populations
- Rural populations
- Government intervention

Factors contributing to cash decline

- Improvement in payment infrastructure
- Adoption of contactless
- Central bank digital currencies
- Advance in local / alternative payment methods

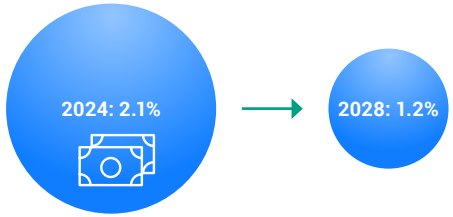
Global cash transaction value (Trillion USD)



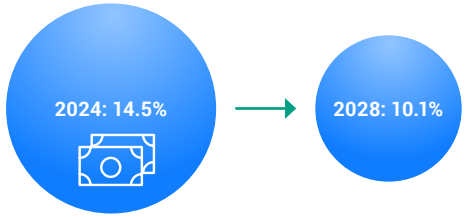
Sources: Global Data; EDC Analysis

The future of cash

Cash proportion of global transaction value



Cash proportion of global transaction volume



4 years

Over the next 4 years there is expected to be a fall in the cash proportion of both total transaction volume and value.

Forward View

The payments and fintech landscape will continue to evolve. Emerging technologies like the Internet of Things (IoT) are enabling seamless, automated transactions that have the potential to transform both consumer and business payment experiences.

Developments in blockchain and CBDC have the potential to enhance cross-border payments and accelerate the digitalization of financial ecosystems. As artificial intelligence and machine learning further improve fraud detection and personalization, companies that effectively harness these technologies will gain a distinct competitive edge.

As open banking expands into Open Finance, it presents new opportunities for innovation and financial inclusion. Digital banks, alternative payment methods, and digital remittances are reshaping the market by offering more flexible, secure, and efficient solutions tailored to diverse consumer needs. However, the pace of adoption will hinge on overcoming regulatory hurdles and building consumer trust. In underserved regions, digital solutions are gaining traction, though the balance between cash and digital payments will differ across markets, highlighting the need for adaptable strategies.

Looking ahead, traditional financial models will face increasing disruption, prompting greater collaboration between established institutions and fintech startups. Success in this dynamic landscape will depend on a focus on consumer-centric innovation, fostering strategic partnerships, and navigating complex global challenges. As the lines between traditional finance and technology continue to blur, we can expect more integrated, efficient, and accessible financial ecosystems that meet the diverse needs of individuals and businesses in an increasingly digital world.

Glossary and notes

A2A
Account-to-Account

A2A payments
Total value of A2A consumer and commercial payments, including credit transfers, direct debit and instant payments. Potential total addressable market for OB payments.

ASPSPs
Account Servicing Payment Service Provider

CFPB
Consumer Financial Protection Bureau

CICO
Cash-in / Cash-out

Closed Loop
Network / system that only enables payments between payment methods and parties that belong to the same entity or financial institution.

Consortium model
A model where multiple stakeholders, such as banks, technology companies, and other financial institutions, collaborate to launch and operate a digital bank.

Digital banks
Digital banks, also known as neobanks or challenger banks, are online-only banks without any physical branches that offer their services completely via mobile apps.

Fis / FIs
Financial Institutions

GPI
Global Payments Innovation

Internet of Things (IoT) device
Different sources have slightly different definitions of what constitutes an IoT device, meaning that figures might differ slightly based on what is included as an IoT device. All these sources forecast a fast growth of IoT devices in the next few years.

JROC
Joint Regulatory Oversight Committee

MNOs
Mobile Network Operators

Mobile wallets
Include pass-through wallets that facilitate card transactions, stored value wallets, mobile money wallets and global brands such as Alipay, Apple Pay, Google Pay, M-Pesa and PayPal as well as local and regional wallets.

Open Loop
Network / system that enables payments between different payment methods and parties that do not belong to the same entity or financial institution.

P2M
Peer-to-Merchant

P2P
Peer-to-Peer

Profitability
Profitability in the context of this report refers to annual or financial year profitability, not shorter periods such as monthly or quarterly.

Remittance prices
Includes both cash and digital remittance prices. Fluctuations between corridors could be due to differing weighting between cash and digital remittances.

Restricted Loop
Network / system that enables payments between a limited group of payment methods and parties.

TPP
Third Party Provider

About Edgar, Dunn& Company

We are a global consultancy specializing in payments and financial services. Since 1978, we have partnered with clients across the globe and developed an unrivalled depth in specialist expertise.

We help organizations navigate the complex payments and fintech ecosystem, identify opportunities to accelerate profitable revenue growth, and drive their competitive advantage.

Offering a truly independent perspective, our vision is to be the most trusted global payments consultancy. Today, we serve clients in over 45 countries through our global office network in North America, Europe, Middle East and Australia.

Our Mergers & Acquisitions Advisory

We provide comprehensive support for merger and acquisition deals in the payments and digital financial services space including:

- Buy-side support (target selection, bid strategy)
- Sell-side support
- Due diligence
- Valuation
- Information memorandums

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