



THE GLOBAL PAYMENTS REPORT

For Financial Institutions and Merchants

Powering the next payments frontier

2022

CONTENTS

INTRODUCTION	3
GLOBAL PAYMENT TRENDS	5
KEY INSIGHTS	42
MARKET GUIDES	67
METHODOLOGY	150
PAYMENT TERMS	152

POWERING THE NEXT PAYMENTS FRONTIER

What's possible in payments continues to be redefined, revisited and reimaged. The traditional lines between banking, payments and commerce have all but dissolved. The rules that once limited who participates in money movement—and how that movement happens—have been rewritten. This connected world is creating new opportunities to shape the future of commerce and financial services.

Just as payments have changed, how we look at them in The Global Payments Report has, too.

In this enhanced seventh edition, you'll get an in-depth view of how consumers pay when shopping online and at the point of sale in more than 40 markets, along with real-time payments insight from FIS® Flavors of Fast research.

You'll also see what FIS experts think about the trends transforming the payments ecosystem, including:

- How **super apps** have transformed Asia and attracted tech giants who want to own a piece of the super-app pie
- What's in store for merchants and financial institutions as **crypto and central bank digital currencies** continue to shake up the global financial landscape
- How the **simplicity of embedded finance** is changing the way customers find and use tools to manage their financial, business and personal lives
- What the fast-moving **evolution of real-time payments** means for consumers, corporates, businesses and financial institutions
- How **financial technology is influencing financial inclusion** in unexpected ways to improve access and opportunity
- Key developments transforming **Europe's payments landscape**, and how it's shifting commerce

As technology gets more sophisticated, the rate of change gains more momentum. That's why we're providing the insights and tools you need to superpower your business while we power the next payments frontier.



GLOBAL PAYMENT TRENDS

Powering the next payments frontier

GLOBAL PAYMENT TRENDS

E-commerce

2021 witnessed strong global e-commerce growth of 14% YoY as the global economy – and the travel sector in particular – began to recover from early impacts of COVID-19, exceeding US\$5.3 trillion in transaction value. The share of mobile commerce exceeded that of desktop e-commerce in 2021, with transaction value from mobile devices reaching 52% of all e-com spend. Global e-com projects 12% CAGR through 2025 when it will surpass US\$8.3 trillion.



By 2025, e-com is expected to account for 12% of global consumer spend, with 59% of that e-com spend transacted via mobile devices. While e-com growth is expected to slow in APAC due to lingering COVID impact and market maturation, e-com will continue to grow dramatically in the LATAM (19% CAGR) and MEA regions (20% CAGR) through 2025.

E-commerce payment preferences continue to shift away from cash and credit cards towards digital wallets and buy now, pay later (BNPL). Contributing factors in credit cards' declining share include the rise of alternative payment methods, volume shifting to credit- and debit-linked digital wallets, consumers opting for interest-free credit in the form of BNPL and credit-centric verticals like travel still recovering from pandemic impacts. Accounting for 21% in 2021, credit's share of global e-com spend is projected to fall to 18.8% in 2025, though absolute value will rise to over US\$1.56 trillion. Debit is projected to fall less dramatically, from 13.2% of e-com transaction value in 2021 to 12.9% in 2025, with absolute value rising to over US\$1.07 trillion.

Digital wallets comprised 48.6% of e-commerce transaction value globally in 2021, or just over US\$2.6 trillion. Wallets are projected to rise to 52.5% of transaction value in 2025. Growth will be driven by digital wallets offering superior checkout solutions, flexibility in underlying payment methods, their anchor role in e-com marketplace ecosystems and local wallets consolidating into regional and global super apps. APAC continues to set the pace in digital wallet use driven by the overwhelming popularity of [Alipay](#) and [WeChat Pay](#); digital wallet's share of APAC e-com is projected to rise from 68.5% in 2021 to 72.4% (over US\$3.1 trillion) in 2025.

Bank transfers accounted for 7.4% of global e-com transaction value in 2021. Bank transfer global share projects to decline to 6.2% by 2025, while absolute growth will exceed US\$516 billion. Global consumers continue to turn to bank transfer due to the strength of open banking initiatives, the growth of bank transfer-backed real-time payment apps such as [Pix](#) in Brazil, and innovations like the multi-payment functionality of bank transfer-backed payments application such as [BLIK](#) in Poland.



The share of mobile commerce exceeded that of desktop e-commerce in 2021.

BNPL is proliferating globally, accounting for 2.9% of global e-com transaction value in 2021 and projecting to 5.3% share by 2025. BNPL is led globally by [Klarna](#), [Afterpay \(acquired by Square\)](#) and [PayPal](#), with challengers such as [Zip](#), [Sezzle](#) and dozens of smaller local competitors emerging to compete for this fast-growing payment segment.

Point of sale

POS acquiring rebounded strongly from COVID's recessionary impact in 2021, as 13% YoY market growth surpassed 2019's market size much sooner than expected. POS growth in 2021 was strongest in APAC at 15% and weakest in MEA at 6%. A sustained expansion of 6% CAGR is projected globally through 2025 with strongest growth in LATAM (8%) and APAC (7%); other global regions project to 5% CAGR. Global POS transaction values are projected to approach US\$58.9 trillion by 2025.





Credit card use dropped in 2021 and debit usage increased; however, card usage is increasingly shifting to pass-through mobile wallets.

Cash usage dropped sharply in 2020, driven by pandemic-induced business closures. While the trend continued in 2021, it was relatively minor. In markets such as Spain, Colombia and India, cash share even increased, though it remained well below pre-COVID levels. Cash continues to be a vital part of the POS mix, accounting for 17.9% of transaction value (over US\$8.3 trillion) in 2021. The continued rapid

digitalization of the global economy will see the use of physical cash fall to 9.8% share in 2025, lowest in North America (5.6%) and APAC (7.7%), and highest in MEA (31.3%) and LATAM (23.6%).

Credit card use dropped in 2021 and debit share increased; however, card usage is increasingly shifting to pass-through mobile wallets. Credit cards accounted for 23.9% of global POS transaction value in 2021 – over US\$11.1 trillion – led by a 40.2% share in North America. Credit's share is projected to decrease to 22.4% by 2025 when it will represent over US\$13.2 trillion. Debit cards increased spend share in 2021 to 22.7% globally, led by a 39.7% share in Europe. Debit cards are projecting to fall slightly to 22.3% in 2025.

Mobile wallet usage is increasing across markets, with further growth expected as contactless POS

terminal penetration increases. Mobile wallets' share of global POS transactions jumped over 21% YoY in 2021 rising to 28.6% of global POS transaction value, or over US\$13.3 trillion. APAC continues to lead the way in mobile wallet adoption with 44.1% of 2021 POS transaction value; mobile wallets are expected to outpace all other POS payment methods combined in APAC by 2023. Globally mobile wallets are expected to rise to 38.6% share (over US\$22.7 trillion) by 2025.

Local retailer and bank financing continues to be an important part of POS credit solutions, accounting for 3.9% of global POS transaction value in 2021, with slight declines to 3.4% share by 2025. While beginning to gain traction, BNPL solutions represented less than 1% of POS transaction value in 2021. Gains to 1.6% are projected for POS BNPL

globally through 2025. European consumers have gravitated to BNPL solutions at the POS most, where a 1.9% share projects to rise to 2.8% by 2025. Finally, the market for prepaid cards remains viable, accounting for 2.2% of global POS transaction value in 2021, with a slight decline projected to 1.9% in 2021, or over US\$1.12 trillion.

Real-time payments

Globally, real-time payments continue to grow with four more schemes – Russia, United Arab Emirates, Argentina and Colombia – joining the instant-payment club since 2020. Currently, 60 markets have a live, real-time payments infrastructure with Canada, Peru, New Zealand and Indonesia launching in 2022. This means that almost three-quarters of the world's population (around 72%) have, or will soon have, access to instant payments.

Many markets are also replacing or renovating their established real-time services, especially those that repurposed their corporate real-time gross settlement (RTGS) services to cater for instant payments, such as Brazil, United Kingdom, Japan, South Africa and Mexico. Similarly, India and the U.S. are introducing additional competing services that will sit alongside the established schemes.

The need to innovate is central to real-time payments; the speed of clearing and settlement is only the first step. Real-time payments enable frictionless commerce where the entire payment process occurs seamlessly and immediately. But a modern, open payments system also provides opportunities to develop creative overlay services on top of the faster payment rails, built along modern open banking standards through API-based services.



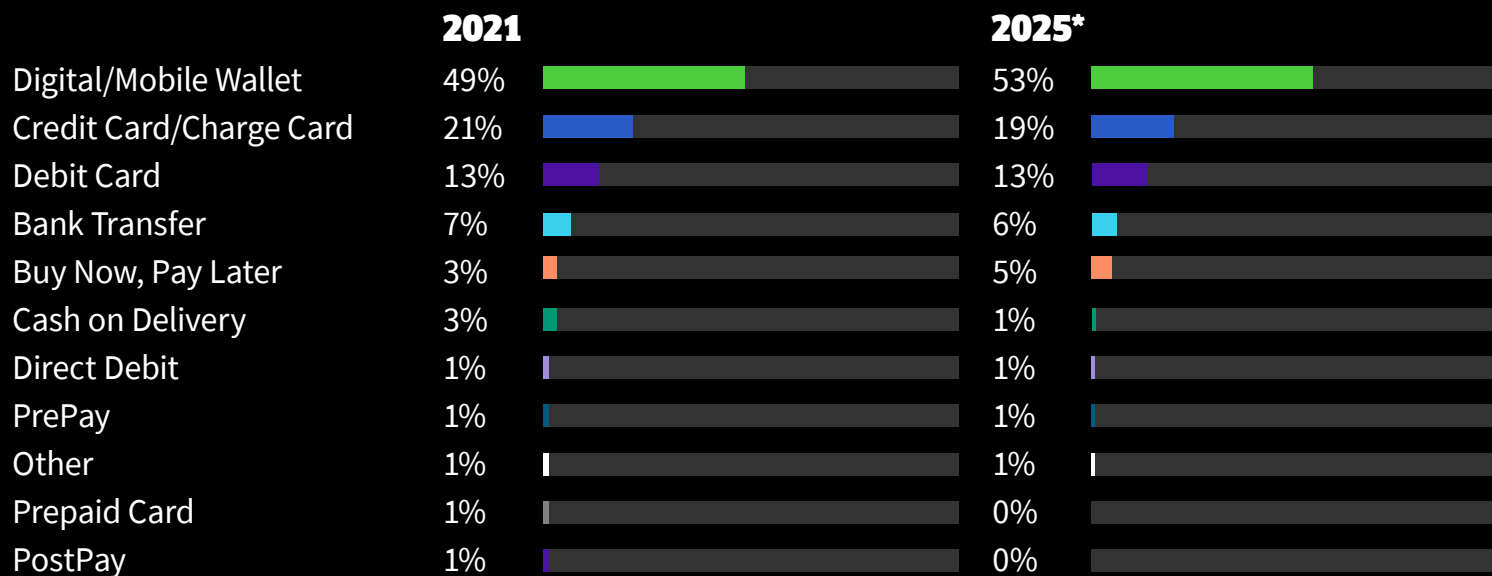


Once touted as primarily focused on consumer and retail use cases, real-time payments are increasingly targeting business and corporate applications. Private firms have been quick to see how instant settlement changes their business models for salary payment, accounts payable, mandates for direct debits and bulk payments, especially in APAC and Europe. The public sector in many markets is also seizing the opportunity, with many government departments already utilizing real-time payments for fee and tax collection, and benefit and pension payout.

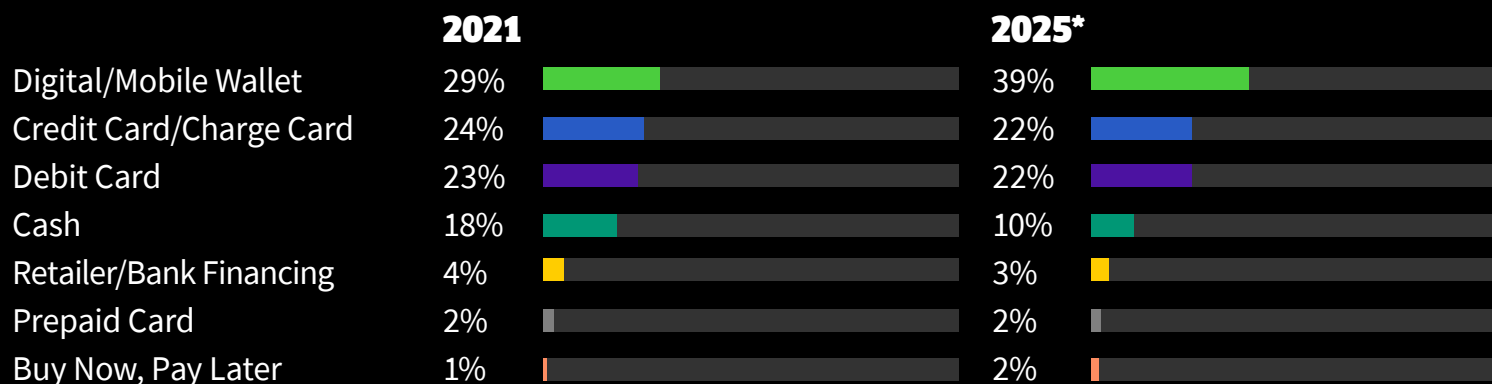
Once differentiating services such as request to pay, account aliases, e-invoicing, P2P, payee confirmation and payments at POS have now become commoditized and are available in most schemes. However, these root services are driving consumer, merchant and corporate adoption globally; real-time payments are cheaper, faster, more efficient and potentially lower risk means of moving money compared to traditional methods.

Some domestic schemes are also collaborating to enable cross-border, real-time international transactions and remittance payments. Southeast Asia has seen Thailand, Singapore and Malaysia piloting cross-border initiatives, along with Taiwan, India, Australia and Hong Kong. As schemes around the world move closer to standardization and interoperability to promote commerce, cross-border real-time payments could become as routine as domestic payments.

Global e-com payment methods



Global POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted



EUROPE PAYMENT TRENDS

E-commerce

Europe's e-com market posted 11% YoY growth in 2021 and is expected to extend 11% CAGR through 2025. The biggest expansions into 2025 are projected to take place in Turkey (25% CAGR) and Russia (20%), but robust growth is also forecast through 2025 in Italy (16%), Spain (13%) and Sweden (15%). More modest annual growth rates are projected through 2025 for Europe's largest e-com markets in France (9%), Germany (9%) and the U.K. (6%).



E-commerce in Europe continues to shift toward alternative payment methods and away from cards. Digital wallets are the leading e-com payment method, accounting for 26.7% of transaction value in 2021. Credit cards account for 24.7% of Europe's 2021 e-com transaction value, and debit cards an additional 17.2%. Bank transfers represent 14.2% of regional spend, with direct debit driving an additional 4% of regional transaction value. BNPL options continue to appeal to European consumers, accounting for 8.1% of 2021 e-com spend.

BNPL continues its impressive growth in Nordic markets. In 2021, BNPL represented 11.7% of e-com share in Denmark, 12.8% in Finland, 18.1% in Norway and 25.2% in Sweden. The Nordics show strong digital wallet growth propelled by local players [Swish](#) in Sweden, [Vipps](#) in Norway and [MobilePay](#) in Denmark. Digital wallets accounted for 25.6% of Danish e-com spend in 2021 and are projected to overtake debit cards to become the leading e-com

payment method in 2022. Shares of both credit and debit cards are projected to fall throughout the Nordics through 2025.



BNPL projects to nearly double in the U.K. to 12.1% share by 2025.

In Germany, digital wallets (28.7%) and BNPL (19.7%) were the most popular e-com payment methods in 2021, with both methods expected to steadily gain share through 2025. Direct debit is exceptionally strong in Germany (15.8% 2021 share), while bank transfers, cards and cash on delivery (COD) all project long-term declines in market share. Credit cards lead the way in France with 34.9% share in 2021, a lead that is expected to grow through 2025. Digital wallets in France will hold steady near 25%, while BNPL projects growth from 4.1% in 2021 to 7.1% in 2025. Propelled by

[PayPal](#) and local wallet [BBVA Wallet](#), digital wallets in Spain accounted for 30.3% share in 2021 to overtake credit cards as the leading regional e-com payment method. Digital wallets, credit cards and BNPL are all on the rise in Spain, while debit cards, bank transfer and COD shares are expected to decline through 2025.

Cards remain strong in the U.K. with credit (26.9%) and debit (23.9%) together outpacing all other payment methods combined. Digital wallets are now the single largest e-com method, with 32.3% of 2021 transaction value. Credit and debit cards are expected to lose e-com share in the U.K. through 2025, while bank transfers, digital wallets and BNPL all project growth. BNPL projects to nearly double in the U.K. to 12.1% share by 2025. Cards reign in Ireland, with debit (37.7%) and credit (23.6%) combining to account for over 60% of e-com transaction value. By 2025, digital wallets will continue to grow share of Irish e-com to 28.4%, driven primarily by international brands such as [Apple Pay](#), [Google Pay](#) and [PayPal](#).



Bank transfer is the leading e-com payment method in Poland, with the low-cost local option [BLIK](#) propelling bank transfer to a 54.5% share of e-com transaction value, projected to reach 58.6% by 2025. Bank transfer shares are also projected to rise in Russia (to 15% in 2025) and Turkey (to 15.9% in 2025) driven by recent instant payment innovations in Russia's [Faster Payment System \(FPS\)](#) and Turkey's [Instant and Continuous Transfer of Funds \(FAST\) System](#).

Point of sale

The European POS market rebounded strongly in 2021 from the pandemic-driven recession, regaining more than the losses incurred in 2020. Regional POS growth for 2021 is estimated at 14% YoY, with the largest relative expansions taking place in Norway (25% YoY), Belgium (21%) and Spain (20%). The region's largest economies all experienced double-digit percentage growth in 2021, including Russia (16%), the U.K. (15%), Germany (11%) and France (14%).

Cards continue to dominate regional POS spend with debit outpacing credit two-to-one. Debit cards remain the overwhelming payment method preference across Europe, accounting for 39.7% of POS transaction value in 2021. Debit cards are the leading POS payment method in 10 of the 15 markets in this report, with the highest shares for 2021 found in Norway (64.4%), Finland (62.7%), the Netherlands (60.8%) and Denmark (59.2%). Although debit's total region-wide share is expected to decrease slightly to 37.7% by 2025, debit is projected to become the leading POS payment method in Germany and Russia in 2022 and in Poland by 2023. Credit cards accounted for 19.3% of regional POS transaction value in 2021 and are projected to see modest growth to 22.5% in 2025.

The decline of cash – accelerated greatly by COVID-related closures of brick-and-mortar businesses in 2020 – continued in 2021 despite the widespread re-opening of businesses. Cash accounted for 25.6% of regional POS spend in 2021, down from 27.4% in 2020 – and from 40.2% in 2019. Wide disparities exist among countries, from a low of 4% in Norway to a high of 47.1% in Spain; Spain is the only European country projected to have cash as the leading POS payment method by 2025. Several European markets are projected to become nearly cashless by 2025, including Denmark (3.8%), Norway (2.6%) and Sweden (4%).

The declining use of cash will be absorbed by mobile wallets and BNPL, which are projected to see the biggest percentage growth among payment methods in Europe through 2025. Mobile wallets accounted for 7.7% of regional POS spend in 2021, a share that is projected to nearly double to 14.7% by 2025. Swedish consumers have adopted mobile wallets at the highest rate to date, with 12.9% of transaction value in 2021. BNPL earned 1.9% share across Europe in 2021 and projects to 2.8% by 2025, with shares projected to exceed 5% by 2025 in Denmark, Germany, Sweden and the U.K.



Mobile wallets and BNPL are projected to see the biggest percentage growth among POS payment methods in Europe through 2025.





Real-time payments

With over half of the world's real-time payment enabled markets, Europe has readily embraced the new normal. Twenty European countries are signed up to the centralized instant [SEPA credit transfer](#) (SCT Inst) scheme offering multiple clearing and settlement, but of the non-SCT Inst countries live with real-time payments, now including Russia, the U.K. makes the most payments (almost 8 million per day). With 3 million and 2 million payments a day respectively, Switzerland and Sweden hold the second and third positions. Poland saw the largest growth in usage with a 50% increase, but uptake remains sluggish with only 2 transactions per day per million citizens.



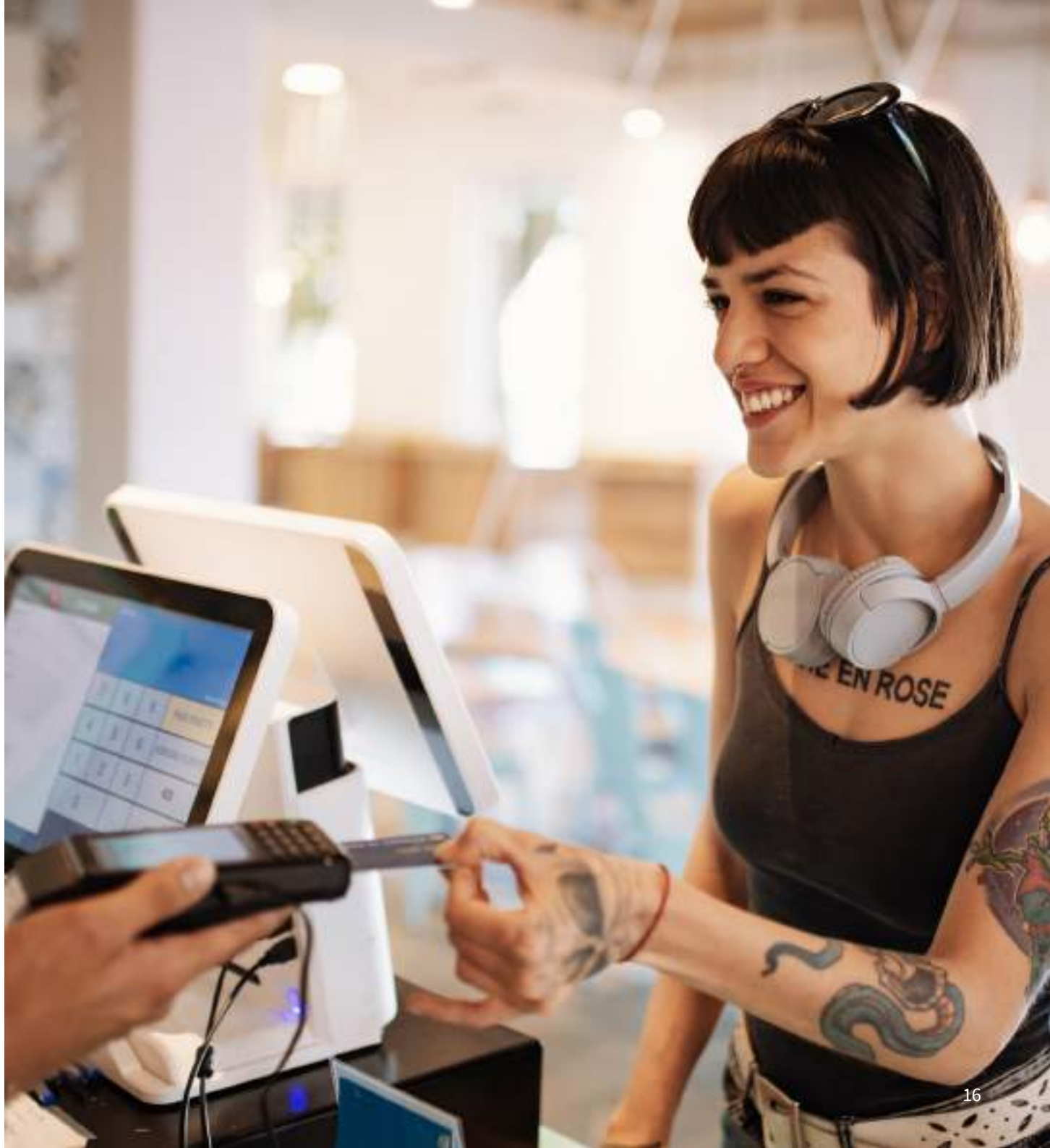
With over half of the world's real-time payment enabled markets, Europe has readily embraced the new normal.

Real-time payments in Europe were initially aimed at the consumer and retail markets, but increasingly, businesses and corporations are leveraging real-time payments to better manage liquidity and risk. Services such as request to pay, account aliases, P2P, payee confirmation and payments at POS have now become standards in almost all live countries, with an increasing number moving toward API-based interfaces and ISO messaging to ease access.

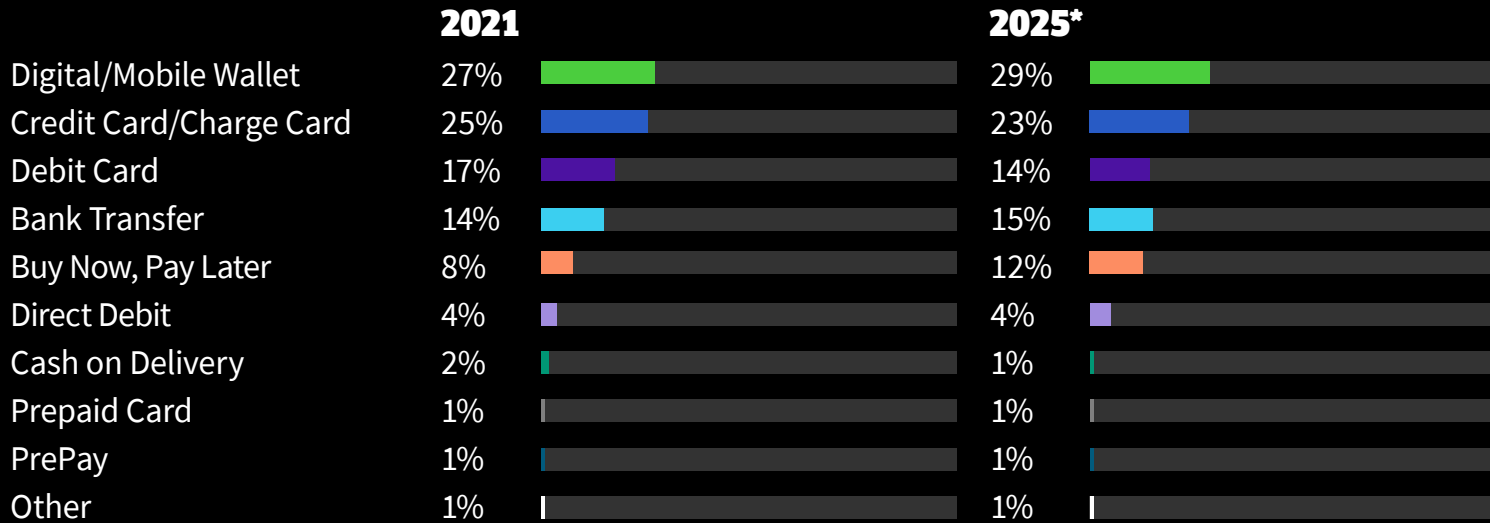
The eurozone SCT Inst scheme processed 10% of all SEPA payments in Q1 2021, up from 1% in 2019. Currently, almost 2,500 payment service providers have joined, encouraged by the increase in transaction limit to €100,000 for higher-value B2B and B2C transactions. The European Payments Council are prioritizing a new request-to-pay service with new guidelines expected to launch soon, and open mobile initiated SCT Inst services. Major European banks from several markets are launching the European Payments Initiative, aiming to initiate a joint payment initiative to create a unified, innovative pan-European payment solution leveraging SCT Inst.

The U.K. is planning a New Payments Architecture (NPA) to replace the current Faster Payments and BACS clearing with a single purpose-built central infrastructure. NPA is currently in a build-and-test phase through 2021, with full rollout planned over the next few years.

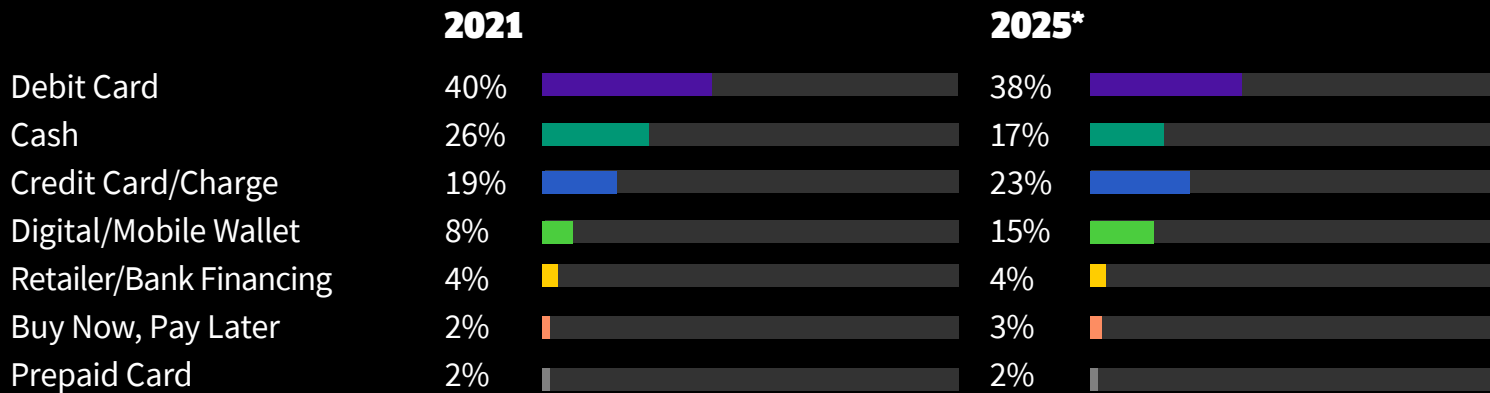
Planned for 2022, the Nordic real-time payment platform P27 will offer unified cross-border real-time payments across Sweden, Finland and Denmark, with Norway being considered later. As a joint venture between several regional banks, P27 will offer P2P, P2B and B2P payments in Nordic markets with services such as request-to-pay and bill payments. Banks can develop applications and offer common products and services for shoppers, retailers and businesses, including mobile solutions that work across borders. P27 could eventually be open for more countries to join.



Europe e-com payment methods



Europe POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted



ASIA-PACIFIC PAYMENT TRENDS



E-commerce

APAC's e-commerce market continues to demonstrate robust growth, albeit at rates that reflect its increasing maturity. Regional e-com growth – averaging 17% CAGR between 2017 and 2021 – is expected to slow to 12% per year through 2025. Vietnam and Indonesia are expected to lead regional growth averaging 22% annually, while e-com markets in South Korea (19%) and India (18%) are also expected to post impressive gains. China's 12% e-com annual growth projects a market size of over US\$3.2 trillion US\$ by 2025. More mature markets will see slower annual e-com growth, including Japan (6%), Hong Kong (10%) and New Zealand (8%).



APAC was where digital wallets first took hold as the dominant e-com payment method; that dominance shows no signs of abating. Digital wallets represented 68.5% of regional e-com transaction value in 2021, projected to expand to over 72% of transaction value in 2025. Led by [Alipay](#) and [WeChat Pay](#), digital wallets are the overwhelming choice of consumers in China, accounting for nearly 83% of 2021 e-com transaction value. Digital wallets are also the leading e-com payment method in India (45.4%), Indonesia (38.8%) and the Philippines (30.5%), with regional wallets including [GCash](#), [GrabPay](#), [LINE Pay](#), [OVO](#) and [Paytm](#) contributing to a diverse and competitive payments ecosystem.



Digital wallets represented 68.5% of regional e-com transaction value in 2021.

Credit and charge cards represented 12.8% of APAC e-com transaction value in 2021 with a modest decline in share to 11% projected by 2025. Credit card shares vary across the region. Mature economies in Japan (58.3% of 2021 share), South Korea (56%) and Hong Kong (42.8%) continue to see strong use, while credit's share of transaction value is comparatively low in China (4.1%) and lags in emerging economies of India (13.3%), Indonesia (10.2%) and Thailand (12.2%). Debit cards accounted for 7.8% of regional e-com spend in 2021, with modest growth projected to 8.6% in 2025. Debit card transaction value shares range from a regional high of 15.3% in Australia to a low of 3% in Taiwan.

While cards and digital wallets dominate e-com payments, a competitive mix of traditional and alternative payment methods make for a diverse regional landscape. Though accounting for only 0.6% of e-com transaction value in 2021, BNPL is projected to grow its transaction value share to 1.8% (or US\$78 billion) of regional e-com by 2025. [Tencent recently launched a BNPL](#) feature within WeChat, and regional players [Atome](#) [Hoolah](#) and [Rely](#) are seeing strong growth in Singapore.

Bank transfers represented 4.7% of regional e-com transaction value in 2021. Steady declines in bank transfer share are projected in APAC, but it remains the leading e-com payment method among consumers in Malaysia (29.8% in 2021 share) and Thailand (36.6%), with strong transaction value shares in Indonesia (23.3%) and Vietnam (23.8%). COD remains an important part of Southeast Asian e-com markets including Indonesia (13.9% in 2021), Thailand (15%) and Vietnam (23.4%), though share declines are projected through 2025.



Outside of China, cash and cards are the leading POS payment method in APAC.

Point of sale

POS transaction value rebounded strongly in 2021 from the COVID-induced recession of 2020, with regional POS markets expanding 15% YoY—higher than the 13% global average. Singapore and Australia saw the largest relative expansions in 2021 at 23%

and 22% respectively, while China (17%), New Zealand (17%), India (15%) and South Korea (13%) all experienced double-digit YoY POS market growth. APAC POS growth is projected at 7% annually through 2025, with Vietnam's 11% CAGR projected to lead the region. China's projected 7% annual expansion would see its POS market near US\$26 trillion by 2025; India and Malaysia are also projected to see strong 7% CAGR through 2025.

Mobile wallets top regional POS payments by transaction value, with volume disproportionately concentrated in China. Mobile wallets outpace all other POS payment methods combined in China, accounting for 54% of 2021 transaction value. Driven by ubiquitous QR codes linked to the dominant mobile wallets Alipay and WeChat Pay, mobile wallets in China represent more than double the POS mobile wallet penetration of the second highest APAC market, India, with 24.8% share. Cash use dropped significantly in China between 2017-2020, a trend that continued in 2021 despite widescale reopening of businesses, falling to 10.3% of transaction value. Cards remain an important part of China's POS payment mix, though both debit (15.6% in 2021) and credit (13.9%) card shares are forecast to decline slightly through 2025. BNPL is making POS inroads, projected to earn 1.1% of POS spend in China by 2025. Mobile wallets are projected to account for nearly two-thirds of POS transaction value in China by 2025 – representing over US\$17 trillion.

Outside of China, cash and cards are the leading POS payment method in APAC. Cash represents 16% of regional POS transaction value, yet remains the top payment method in half of the APAC markets in our report, including Indonesia (51%), Thailand (63.4%)



and Vietnam (53.8%). Despite this, cash is projected to fall to less than 8% of POS transaction value in APAC by 2025.

Credit/charge cards are the second leading POS payment method by transaction value at 18.7%, while debit cards accounted for an additional 15.1% in 2021. Credit cards are the leading POS payment method in Hong Kong (54.5% 2021 share), New Zealand (42%), Singapore (33.9%), South Korea (54.7%) and Taiwan (47.2%), while debit cards lead the way in Australia (41%). Shares of both credit and debit cards are expected to decline slightly through the forecast period but combined will retain upwards of 31% share through 2025.

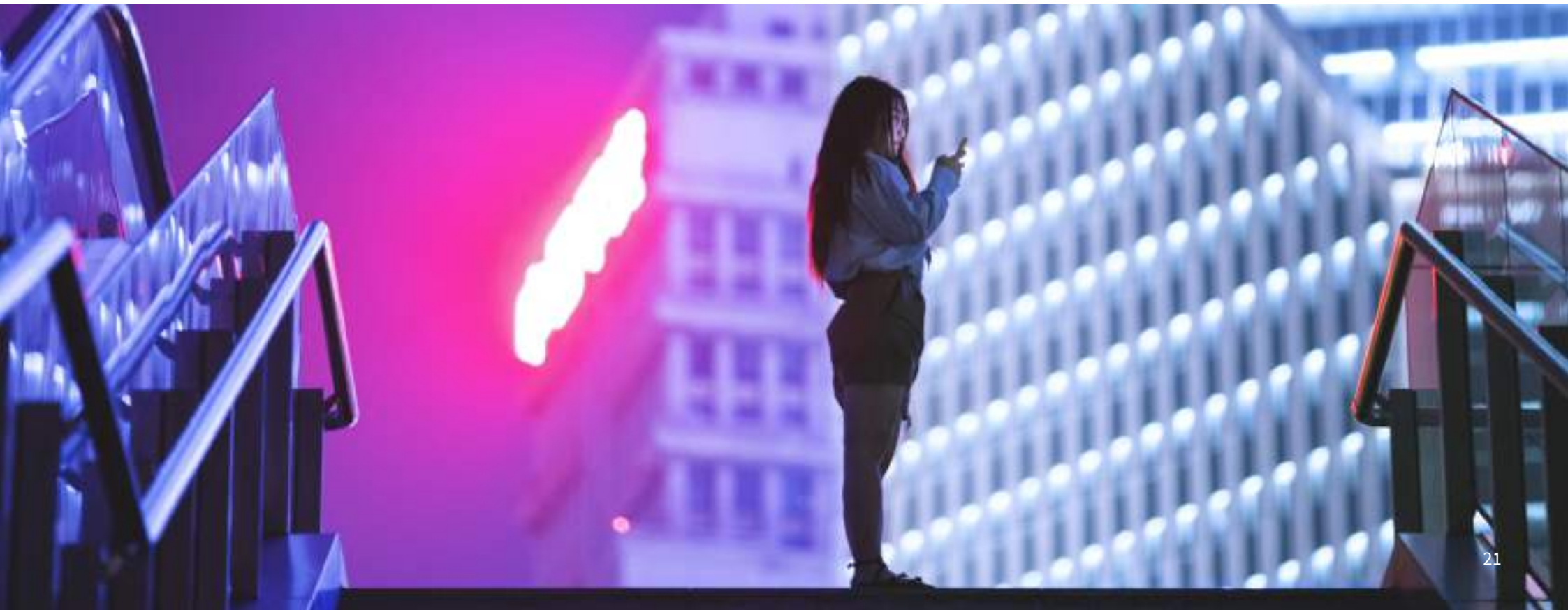
Retailer/bank financing retains an important niche in the APAC payment mix, accounting for 3.8% of POS transaction value, including a 4.1% share in China. BNPL represents only 0.6% of POS transaction value regionally in 2021, though it is increasingly popular in Australia (3.6%), Hong Kong (1.6%) and New Zealand (4.6%).

Real-time payments

With 13 markets offering established real-time payment schemes and New Zealand and Indonesia launching in 2022, APAC continues to lead the rest of the world with innovative applications and growth. India and China lead the world with the volume of daily transactions, averaging 70 and 43 million real-time

daily payments, respectively. But when adjusted for population, South Korea and Thailand show much greater domestic uptake, with more than five and 10-times the number of transactions per day per million population. The Philippines has shown the largest growth in real-time payments use with a 400% annual increase; Hong Kong, Thailand and Australia maintained steadier advances.

Like other parts of the world, real-time payments are increasingly being used in business use cases in addition to consumer and retail applications. Government departments in many markets are already utilizing real-time payments for fee and tax collection and paying out benefits. Request



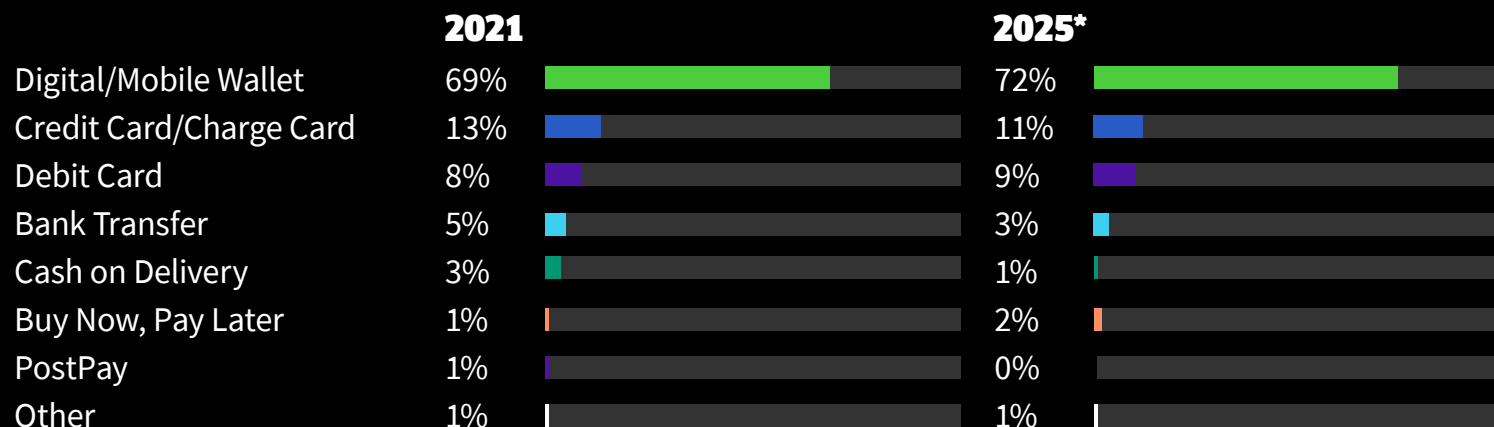
to pay, account aliases, P2P payments, payee confirmation and payments at POS have now become standards in almost all markets. Most markets are implementing standardized QR-code formats, with an increasing number moving toward API-based interfaces and ISO messaging to ease access. Hong Kong launched [electronic direct debit authorization](#) for payer's pre-authorization, and Australia's [Mandated Payments Service PayTo](#) enables third parties to initiate payments from accounts with customer authorization.

Many APAC markets are exploring cross-border real-time payments that link multiple domestic schemes. Pioneered in Thailand, Malaysia and Singapore, Hong Kong and Taiwan are also opening up to international transfers for consumer, remittance, retail and business use. Australia and India have enabled cross-border real-time payments for the domestic leg of inbound international payments.

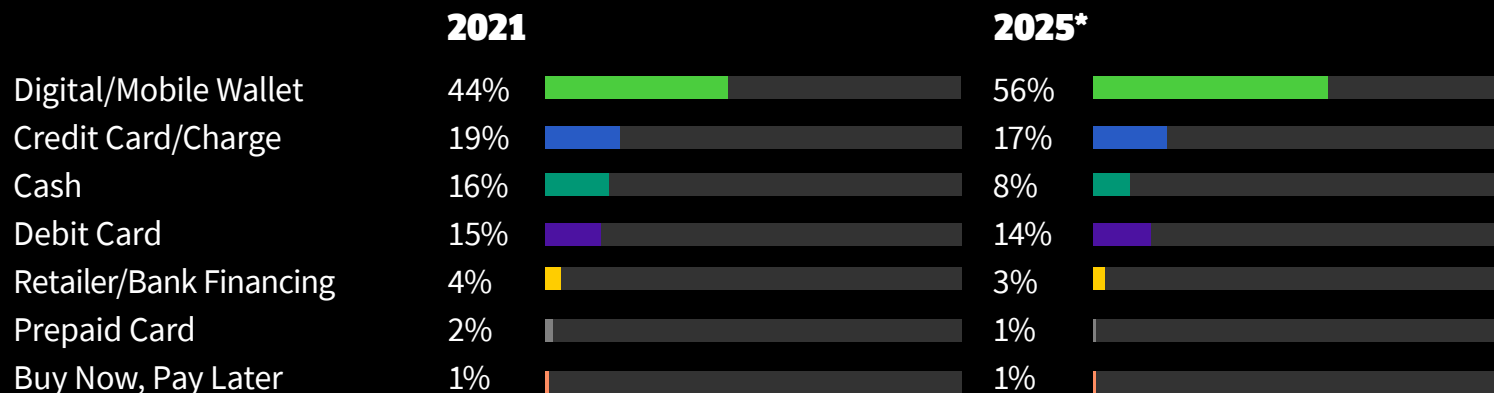
The move to real-time payments in Asia is often driven by strong government support as they try to modernize their economies and bring more citizens into digital finance. Taiwan has set a target of 90% mobile payment penetration by 2025; the Philippines aims for 50% digital transactions and 70% of the population onboarded by 2024. India will soon have a competing service from [National Payment Corporation of India](#) (NPCI) called the [New Umbrella Entity](#) (NUE) to drive competition and lower costs. Japan is looking to modernize with the development of a common platform API gateway (APIGW) in 2022.



APAC e-com payment methods



APAC POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted



MIDDLE EAST AND AFRICA PAYMENT TRENDS

A man with dark curly hair, wearing a bright yellow jacket over a grey sweater, is looking down at a smartphone in his hand. He has white earbuds in his ears. A glowing, multi-colored circular interface is overlaid on the phone's screen. The background is dark and out of focus, suggesting an indoor setting with some lights.

E-commerce

Boasting an e-com market that grew at an extraordinary 26% annually from 2017 through 2021, MEA e-com growth is expected to slow to a still robust 20% CAGR through 2025. Nigeria and United Arab Emirates (UAE) are expected to lead the growth – each at 23% CAGR – with South Africa (16%) and Saudi Arabia (12%) projected to see more modest growth over the next three years. The addressable e-com market size of these four markets is expected to more than double between 2021 and 2025, from US\$52 billion to US\$108 billion. MEA is mobile-first as sales from mobile commerce will account for upwards of 70% of e-com transaction value by 2025.

In e-commerce payment methods, MEA is seeing continued strength in market-leading credit cards, growth in digital wallets, bank transfer and BNPL, and declines in COD. Credit cards remain the single largest e-com payment method across MEA accounting for 31.3% of 2021 transaction value; they are projected to represent one third of e-com spend by 2025. Credit is strongest and continuing to rise in UAE, where it accounted for 38.7% of e-com spend in 2021; it is projected to reach more than 45% share by 2025. Debit cards accounted for an additional 12.5% of regional spend in 2021; while debit's share of regional e-com spend is expected to decline to 10.6% by 2025, total debit transaction values are expected to steadily increase.

Bank transfers accounted for 16.3% of 2021 regional e-com transaction value. The share of bank transfer

is expected to remain steady through 2025, with slight increases in Nigeria and Saudi Arabia but share declines in South Africa and UAE. COD held a strong 13.5% share of MEA e-com spend in 2021, with use of this method highest in Nigeria at 19.7%. Consistent with the broad long-term declining use of cash, COD share is projected to decline to 7% regionally by 2025, with Nigeria projected to maintain an 11% share.

Digital wallets will see the largest payment method share gains through 2025. Representing 17.3% of 2021 e-com spend, digital wallets are projected to account for 25.6% of transaction value by 2025. Led by [PayPal](#) and [KongaPay](#), use of digital wallets in Nigeria is projected to more than double from 7.6% in 2021 to 15.5% in 2025. Saudi Arabia will see the largest gains for digital wallets in MEA, rising from 18.1% in 2021 to

33% in 2025, led by [PayPal](#), [Apple Pay](#) and [STC Pay](#). [CASHU](#) is a leading local wallet in UAE, while [M-PESA](#) is increasingly popular in South Africa.



Credit cards remain the single largest e-com payment method across MEA.

Although accounting for slightly less than 1% of regional e-com spend, BNPL options are available across all markets in our report. The strongest prospect for growth is in Saudi Arabia where BNPL is projected to represent 3.4% of e-com spend by 2025, with firms including [Spotii](#), [tabby](#) and [Tamara](#) competing for this emerging market.



Point of sale

MEA POS transaction values grew 6% YoY in 2021, though that growth was uneven across the markets in our report. POS values in Nigeria dropped 2% in 2021, declining for a second consecutive year. Yet, positive growth is expected to return in 2022 and 6% annual growth is forecast through 2025. Saudi Arabia saw 2% POS growth in 2021 and projects 5% CAGR to 2025, while UAE saw 5% growth in 2021 and projects 6% CAGR through 2025. South Africa saw the biggest POS expansion in MEA with 22% YoY growth in 2021 after two consecutive years of recession. Overall, the markets in this report project 5% CAGR for POS transaction values through 2025.



Credit was the second leading MEA payment method behind cash at the point of sale in 2021.

Payment methods at the POS continue the long-term trend away from cash and toward digital payments. The decline of cash – greatly accelerated by the COVID-19 pandemic – continued in 2021 though at less precipitous rates than in 2020. Accounting for over 70% of regional POS transaction value in 2019 and 51% in 2020, cash fell below 44% in 2021. Cash use retains the highest transaction value share in Nigeria (63%) while it is lowest in UAE (20%). Across MEA, cash use is projected to approach 31% of POS value in 2025. By this time, all the markets in our report will see cash fall below 50% of POS transaction value.

Even cash is going digital, with the [Central Bank of Nigeria](#) launching a CBDC program for the [eNaira](#) in October 2021. The [Saudi Central Bank](#) and [Central Bank of United Arab Emirates](#) are jointly pursuing a CBDC as well as other innovative uses of blockchain technology via [Project Aber](#). The [Bank for International Settlements \(BIS\)](#) is working with central banks globally via [Project Dunbar](#) – including the [South Africa Reserve Bank](#) – to explore the use of CBDCs for international settlements.

Credit was the second leading MEA payment method behind cash at the point of sale in 2021, accounting for 20% of transaction value. Credit use is strongest in the UAE, where it is the leading POS payment method, earning over 38% of transaction value in 2021. Debit accounts for an additional 12.2% of POS value across MEA, with use highest in South Africa where it accounts for just over a third of POS value. Share of cards and total card turnover are rising at the MEA POS, with credit projected to near 22% and debit approaching 14% regional transaction value in 2025.

Mobile wallets continue to rise at the POS, jumping 55% YoY in 2021 to account for 11.8% of regional POS transaction value. Saudi Arabia (13.6%) and UAE (13.4%) lead in mobile wallet adoption, while South Africa trails with 5.1%. BNPL is still being introduced at the POS regionally and is expected to represent 1.4% of POS transaction value by 2025. Local retailer/bank financing is the fifth leading POS payment regionally, earning 6.4% of POS spend; prepaid cards are also an important tool for MEA consumers, accounting for 5.4% of 2021 POS spend.





Real-time payments

Seven markets in the Middle East and Africa now offer real-time payments. While many of the established services continue to grow, volumes remain comparatively low with poor uptake rates per capita across the region.

While transaction volume on Ghana's 2007 real-time payments scheme grew rapidly, by many hundreds of percent, just 18,600 transactions per day are processed. This represents less than one transaction per day, per million population. Meanwhile, Bahrain's service saw 500% growth in volume, with 79% of all electronic fund transfers made in real time. South Africa also saw steady growth of 55%, primarily due to aggressive lower pricing from some banks. Despite this, real-time transactions amounted to only 3% of all electronic transactions.



79% of all electronic fund transfers made in Bahrain are in real time.

Government use of real-time payments is helping to drive growth in the region. Ghana, UAE, Bahrain and Kenya all offer either government collection (for purposes like fines and tariffs) or payout services (for pensions, benefits and similar) in real time. Similar to the other parts of the world, most of the live services in the region offer the use of aliases, request to pay (R2P) and payment initiation through QR codes. As the services mature, more innovative use cases are emerging. Ghana and Bahrain, for example, both

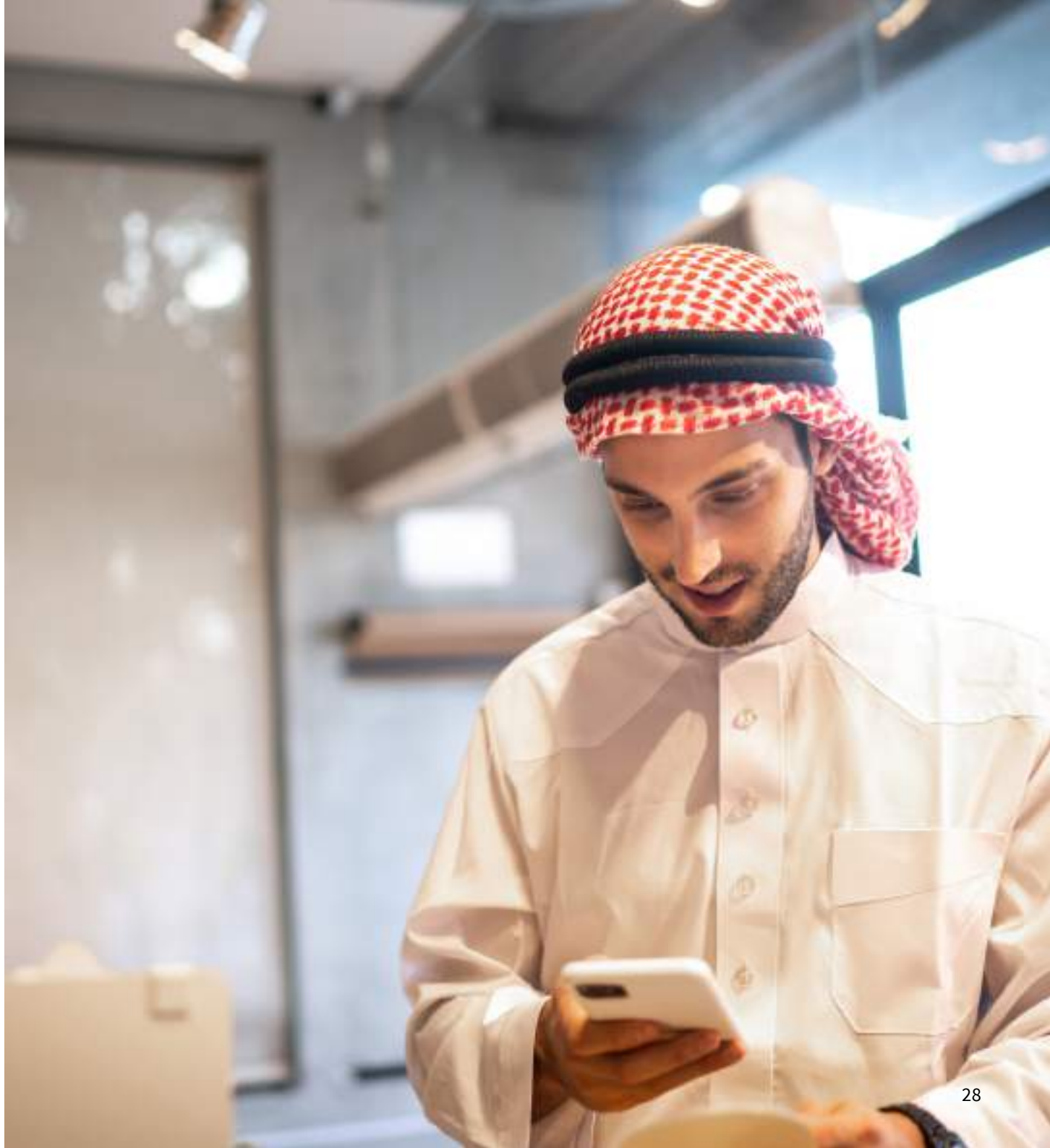
offer e-wallet support for real-time payments, while Kenya allows for foreign exchange transfers in local currency, U.S. dollars or euros.



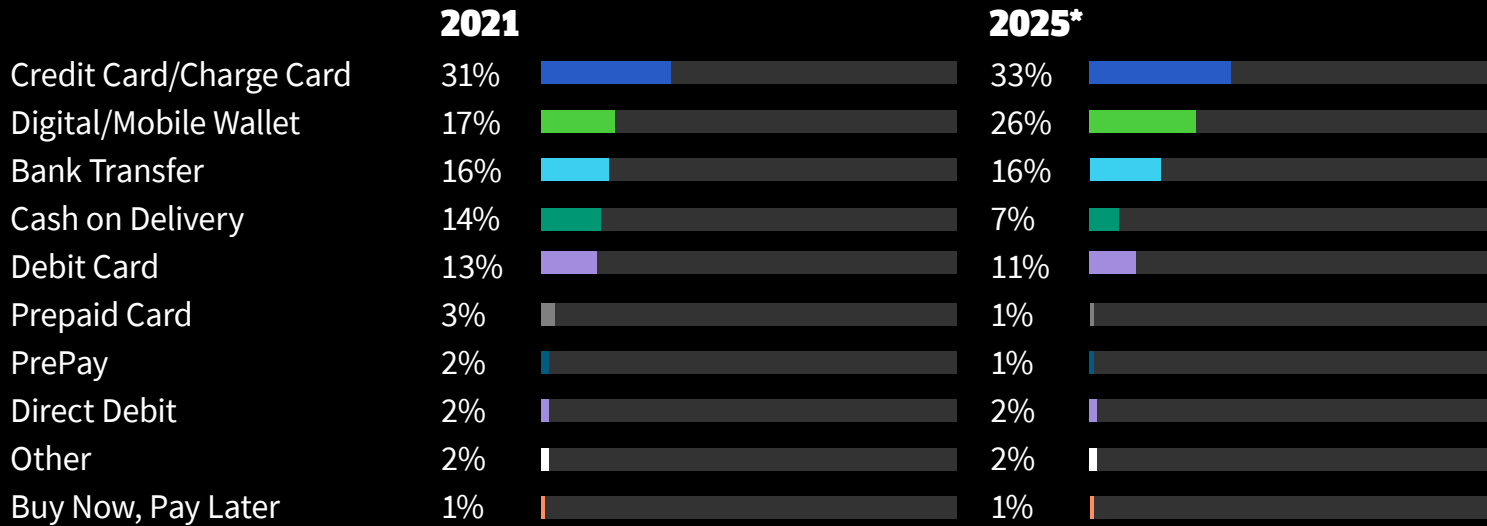
Government use of real-time payments is helping to drive growth in the region.

Matching the global trend of real-time payments and broadening their focus from consumer and retail commerce applications toward business services, Ghana and Kenya offer a suite of services for corporations including automated bulk payments for businesses to pay salaries and pensions and shareholder dividends. Kenya also offers securities trading via mobile phones while citizens of the UAE can invest to participate in an IPO and buy shares at the finalized offering price on a listing day in real time. Electronic billing and direct debits have also emerged as strong drivers of real-time payments, and are operational in Ghana, Nigeria and Bahrain.

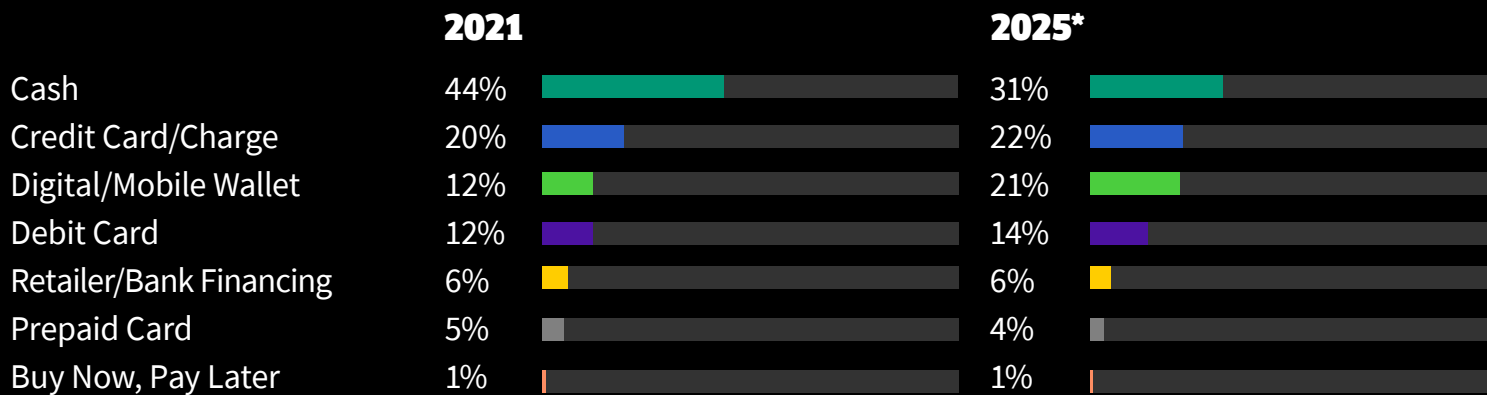
Looking ahead, Nigeria is currently developing a picture inquiry service to boost know your customer (KYC). In order to promote international standardization on open banking, the Bahrain Open Banking Framework has aligned closely to the European Payment Services Directive (PSD2) covering APIs, customer experience guidelines and cybersecurity standards. Meanwhile, South Africa planned to launch a modernized real-time clearing service called Rapid Payments Platform before the end of 2021.



MEA e-com payment methods



MEA POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted



NORTH AMERICA PAYMENT TRENDS

E-commerce

The development of e-commerce in North America showed no signs of slowing in 2021. U.S. e-com transaction value grew 10% YoY in 2021, while Canadian e-com grew by 13%. Regional e-com expansion is projected to average 11% CAGR through 2025 to reach nearly US\$2.3 trillion in annual transaction value. The trajectory of commerce is shifting decisively to e-com with an emphasis on mobile commerce.

Regional e-commerce growth projects to greater than twice the rate of POS growth through 2025 (11% versus 5% respectively), while m-commerce projects annual growth through 2025 (15%) at nearly twice the rate of desktop e-com (8%). In the U.S., mobile commerce as a share of e-com is projected to rise from nearly 37% in 2021 to over 42% by 2025.

Credit cards were the leading e-com payment method among both Canadian (50.4%) and U.S. consumers (30.2%) in 2021. Debit cards represented an additional 20.6% of regional e-com spend, accounting for 21% of U.S. and 13.4% of Canadian transaction value. Regionally, both credit and debit are projected to see slight declines in share through 2025. In the U.S, declining shares for both credit (to 27.4%) and debit (to 20.2%) are projected, though absolute transaction values will steadily rise for each. In Canada, credit cards will lose longstanding majority status in 2022, projected to decline to 42% by 2025. Debit projects a steady rise of more than 5% share through 2025 to nearly 19%.

Digital wallets continue to rise in popularity among North American e-com consumers, accounting for 29.2% of regional transaction value in 2021. Wallets will take the lead over credit cards in the U.S. in 2022 and are projected to account for nearly one third of regional e-com spend by 2025, led by [Apple Pay](#), [Amazon Pay](#), [Google Pay](#) and [PayPal](#). Wallets are projected to remain second choice (behind credit cards) among Canadian consumers, with shares increasing from 21.8% in 2021 to over 24% in 2025. Leading wallets in Canada reflect the growing global reach of Chinese brands, with [Alipay](#) cited alongside [Apple Pay](#) and [PayPal](#) as most popular among consumers.

BNPL continued its dramatic global rise, more than doubling its share of North American e-com in 2021, jumping from 1.6% to 3.8% of transaction value. The growth of BNPL shows no signs of abating, projecting to more than double again to 8.5% of regional e-com transaction value by 2025. In Canada, brands including [Afterpay](#), [Flexiti](#), [PayBright](#) by Affirm and [Splitit](#) compete for a market projected to grow to nearly 7% share by 2025. Dozens of BNPL firms compete in the U.S. market that is projected to represent upwards of 9% share (nearly US\$180 billion) by 2025, including [Affirm](#), [Afterpay](#), [Klarna](#), [PayPal Credit](#), [Sezzle](#) and [Zip](#).



Digital wallets will take the lead over credit cards in the U.S. in 2022.

Bank transfer remains an important component of North American e-com payments with 7.8% of 2021 e-com share, projecting to fall to 6% share by 2025. PrePay (2.4% in 2021), COD (1.9%), prepaid cards (1.1%) and direct debit (0.8%) remain viable e-com payment methods, though are all projected to see declining shares through 2025.

Point of sale

North American commerce at the POS displayed resiliency in 2021, growing nearly 11% YoY to regain losses from the pandemic-driven recession of 2020. Canada POS expanded 15% YoY in 2021, with 3% CAGR projected through 2025. The U.S. posted 10% growth in 2021, projecting 5% CAGR projected for the next four years.





The use of cash continues to decline – to 11% of 2021 regional POS transaction value – though the decline was less dramatic than in 2020 due to the widescale re-opening of brick-and-mortar businesses. Cash accounted for 11.4% of POS value in the U.S. in 2021, down just slightly from 11.9% in 2020. The long-term decline of cash is projected to accelerate, declining by nearly half in 2025 to 5.8%. While cash rebounded slightly in Canada in 2021 to 5.7% share, the long-term decline will resume in 2022, projecting to fall to 3% of POS transaction value by 2025.

While use of physical cash is in decline, the global shift toward digital payments and alternative currencies has prompted interest in CBDCs in both Canada and the U.S. In July 2021 the [Bank of Canada](#) published a report outlining “[The Positive Case for a CBDC](#).” In the U.S., the [Federal Reserve](#) “remains fully engaged in [CBDC research](#) and [policy development](#).”

Cards are expected to retain the leading share of regional POS spend through 2025, while mobile wallets will increase sharply. Credit and debit cards retain over 70% of regional POS spend in 2021 (40.2% credit and 30.3% debit). While overall share of cards will decline only slightly, the gap between credit and debit will close considerably by 2025, with credit projected to nearly 36% and debit to just over 34%. [Visa](#), [Mastercard](#) and [American Express](#) are the dominant schemes in the U.S. while [Visa](#), [Mastercard](#) and [Interac](#) account for 97% of transaction value in Canada. Mobile wallets are projected to rise from 10.3% of 2021 regional POS spend to nearly 15% by 2025, with the vast majority of that increase taking place in the U.S.

Retailer and bank financing options represented a healthy 4% share of regional POS spend in 2021 that projects to maintain through 2025. BNPL is expected to continue increasing at POS as e-com players make the shift to in-store payments. Accounting for less than 1% of regional POS spend in 2021, BNPL projects to more than a 2% share (and over US\$250 billion) by 2025. Prepaid cards continue to be an important part of the POS payment mix in North America with 3.7% share in 2021 with only a slight decline to 3.6% projected by 2025.

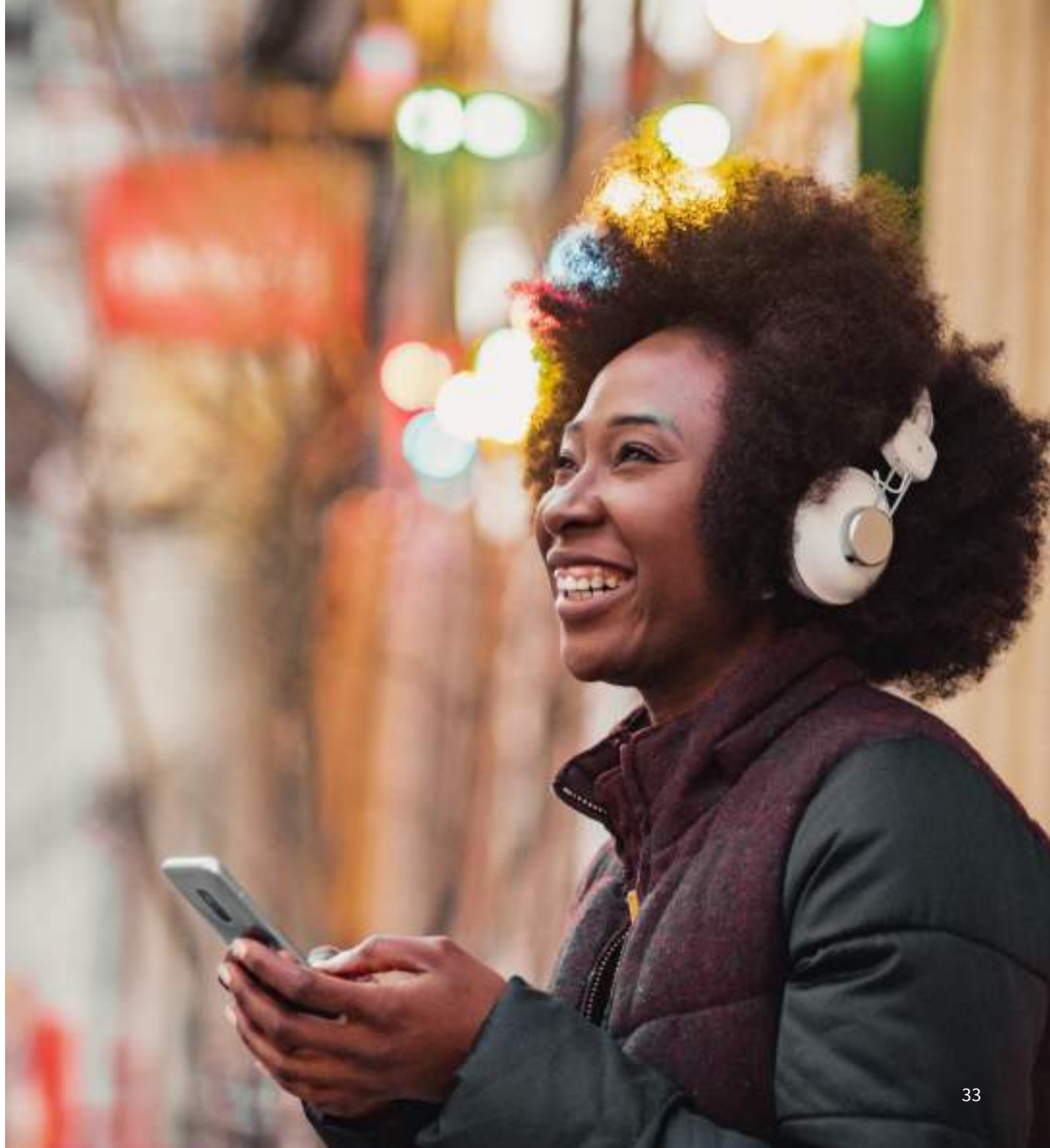


BNPL is expected to continue increasing at POS as e-com players shift to in-store payments.

Real-time payments

The U.S. now has two operational and complementary real-time payment services, with another in the pipeline. The Clearing House's real-time scheme RTP® ensures that U.S. institutions of all sizes have access to its network, while competing scheme Zelle®, from Early Warning Services, offers a mature and highly popular P2P payments service. The Federal Reserve's FedNow scheme is expected to go live within the next two years.

The Clearing House RTP network, launched in 2017, currently offers real-time payment capabilities to 57% of U.S. demand deposit accounts. With a push toward more advanced business, corporate and government agency services, RTP supports real-time bill payments with just-in-time settlement, and instant government payout and collection capabilities. Many insurance





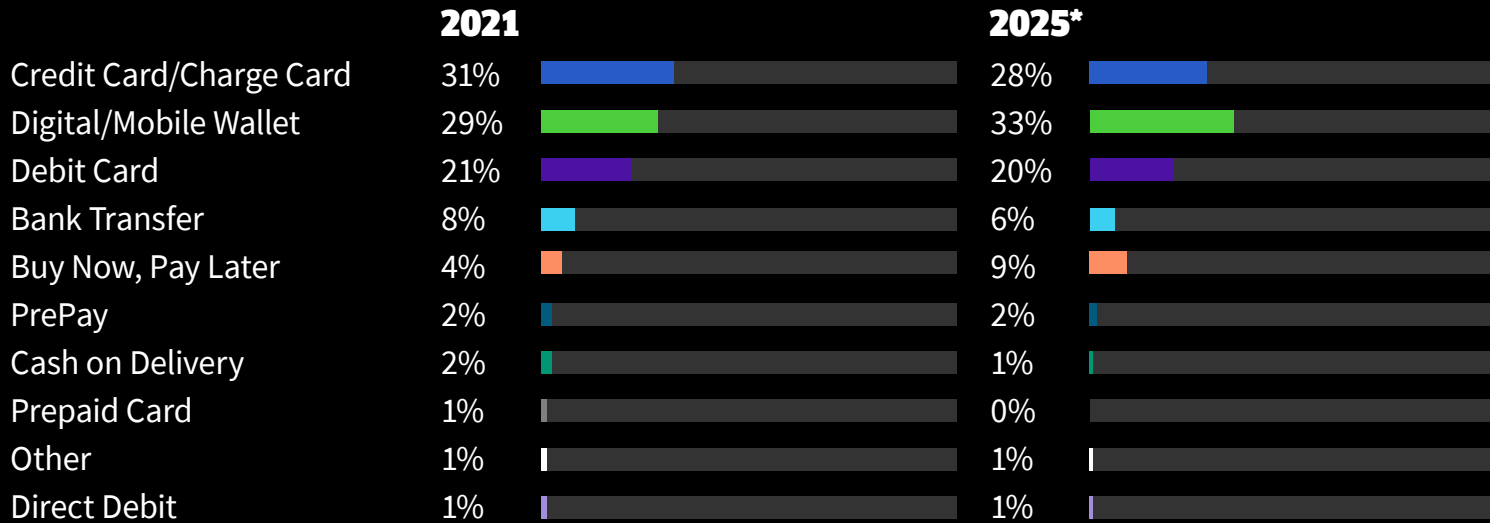
and loan services utilize RTP for instant settlement, and same-day employee wages facilitate the growing gig economy.

Zelle is offered by a private financial services company owned by a group of U.S. banks. It enables individuals to electronically transfer money to another registered user's bank account using a mobile device, or by way of a participating financial institution. Currently, Zelle processes around 3.3 million transactions per day (representing more than 50% annual growth), with more than \$840 million in value transferred.

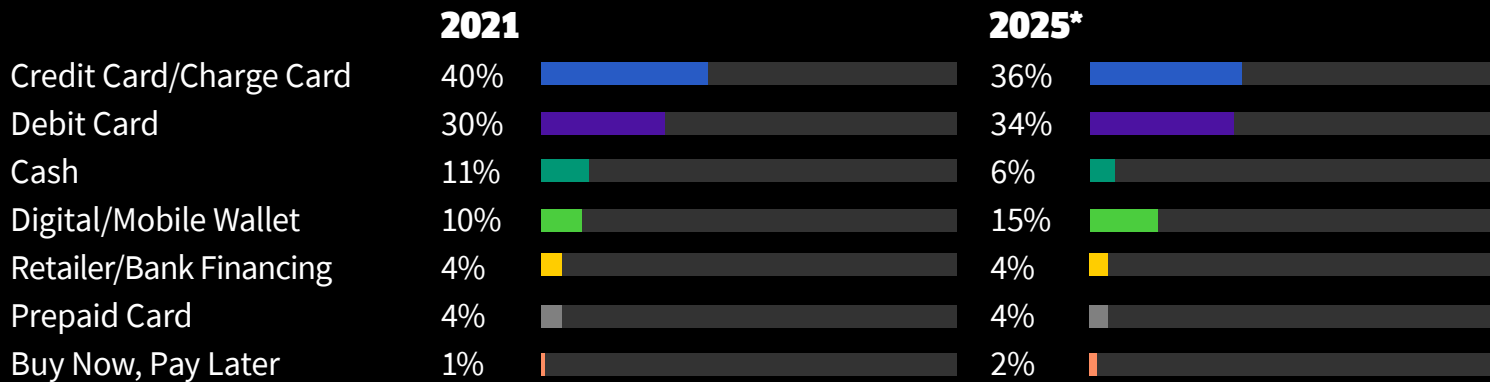
The U.S. Federal Reserve is developing a new real-time payments and settlement service called FedNow. Expected to launch in 2023, there will be a pilot program to support development, testing and adoption of the FedNow service, with expected participation from more than 110 financial institutions. In parallel, the Faster Payments Council is working with industry stakeholders to maximize the use of real-time payments domestically and internationally.

In 2022, Payments Canada is expected to launch its Real-time Payment Rail (RTR). RTR will support the development of overlay services as a platform for innovation for consumer, business and government payment applications through open APIs. To aid more rapid expansion of RTR usage, the government is exploring open banking standards to give customers greater control of their financial data and safe access to a wider range of financial services, while reducing costs.

North America e-com payment methods



North America POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted



LATIN AMERICA PAYMENT TRENDS

A man with a beard and mustache, wearing a blue patterned shirt over a grey t-shirt, is smiling and looking at a tablet computer. A glowing green line is visible on the tablet screen. The background is dark with some bokeh light effects.

E-commerce

Latin America's e-com market continues to build on strong growth momentum of 22% annually between 2017 and 2021. LATAM e-com is projected to average 19% annual growth through 2025. Argentina's e-com market posted the largest global YoY gain among countries in this report in 2021 at 71% and is projected to set the global e-com growth pace at 26% annually through 2025. E-commerce expansion will be broad-based, with all LATAM markets in this report projecting double-digit annual e-com growth through 2025, including the region's largest markets Brazil (18%) and Mexico (17%).



Credit cards remain the leading regional e-com payment method, accounting for 39.3% of 2021 transaction value. Led by Brazil at 44.7%, credit cards earned top e-com payment method share in 2021 for every LATAM market in this report. Debit cards represented an additional 18.2% of 2021 regional transaction value. Peru and Chile are seeing growth in their banked populations, contributing to projected increases in card use through 2025. Though credit card share is projected to decrease slightly, credit will remain the single leading payment method in all markets of the region through 2025, excepting Mexico. In 2024, digital wallets are projected to surpass credit cards in Mexico as the leading e-com payment method by share of transaction value.



Led by Brazil at 44.7%, credit cards earned top e-com payment method share in 2021 for every LATAM market in this report.

Although cash remains an important part of the payment mix in LATAM, e-commerce payments are shifting away from COD and cash-based PostPay. COD accounted for 3.8% of regional e-com spend in 2021, a figure projected to fall by half in 2025. PostPay methods including [Boleto Bancário](#) and [Rapipago](#) rebounded slightly in 2021 to account for 7.1% of regional e-com transaction value, projecting a slight decline to 5.4% share by 2025.

Digital wallets accounted for 19.2% of LATAM e-com spend in 2021 and are projected to approach one-quarter of transaction value by 2025. LATAM consumers are gravitating to global brands [PayPal](#), [Apple Pay](#) and [Google Pay](#), regional wallets [Mercado Pago](#) and [RappiPay](#), and local options including [Yape](#) and [Tunki](#) in Peru. Mexican consumers transact the most through digital wallets among their regional peers, with wallets accounting for nearly 27% of 2021 transaction value and are projected to approach 36% share by 2025.

Bank transfers accounted for 9.7% of regional e-com spend in 2021. Though shares will remain essentially flat – projecting to 9.4% by 2025 – use of bank transfers have widely varying trajectories across the region. The regional trend is for bank transfers in e-com to decline; for example, in Peru bank transfers are projected to decline by more than half from 8.8% in 2021 to 3.8% in 2025, and in Colombia from 16.5% in 2021 to less than 10% in 2025. An opposite trend is rather dramatically taking hold in Brazil, owing to the introduction of the [Pix](#) instant payment system. Introduced by the [Central Bank of Brazil](#) in November 2020, Pix currently facilitates a large volume of P2P payments and a fast-increasing number of bank transfer-based consumer to business payments. Bank transfers are, therefore, projected to rise significantly in Brazil, from 10.9% to nearly 18% share in 2025.

BNPL options are beginning to gain traction in LATAM e-commerce. Transaction values remain low – below 1% – yet increasing investments and marketing efforts from BNPL companies including [Addi](#), [Atrato](#) and [Nelo](#) contribute to increasingly robust competition and consumer interest in markets including Colombia and Mexico. LATAM will see the fastest BNPL growth rates

of any region to increase a projected 98% from 2021 to 2025 when it will account for an estimated 2.2% of LATAM e-com transaction value.

Point of sale

POS growth rebounded strongly in LATAM in 2021 following the pandemic-induced recession of 2020. The value of POS transactions across the region increased 12% year-over-year in 2021, with strongest growth in Mexico (19%), Chile (17%) and Colombia (13%); lowest POS market size growth occurred in Peru (1%). Regional growth in POS transaction value is projected at 8% annually through 2025, with strongest growth in Argentina and Brazil, both at 9% annually. Sustained expansion of LATAM's largest commerce market is projected to drive Brazil's POS transaction value above US\$1 trillion annually by 2025.

By 2025, Mexico is the only LATAM market covered in this report where cash will continue to be the leading POS payment method.



Cash remains the leading POS payment method in LATAM as a whole, yet that longstanding leadership is fading. Cash accounted for 35.6% of 2021 POS transaction value – nearly US\$600 billion. The declining trend of cash use continues, though leveled off from its precipitous drop in 2020 and projected to less than 24% of POS sales by 2025. Cash has already fallen to be the second POS transaction value share



behind credit cards in Brazil and behind debit cards in Chile. By 2025, Mexico is the only LATAM market covered in this report where cash will continue to be the leading POS payment method.

Card payments now account for an outright majority (51.8%) of regional POS transaction value – credit (28.4%) and debit (23.4%) – with each projected to grow share through 2025. At that time they will represent an estimated 57% of POS value. [Visa](#) and [Mastercard](#) are the top two card schemes in all LATAM markets in this report except Chile, where local debit scheme Recomprou edges out Visa for second position. Credit usage is highest in Brazil at 35%, while debit is highest in Chile at nearly 34%.

LATAM consumers continue to gravitate to mobile wallets to pay for goods and services at the point of sale. Mobile wallets now account for 7.6% of regional POS spend, with usage highest in Argentina (12.4%) and Peru (10%). Sustained growth averaging 27% annually across LATAM will see mobile wallets nearly double between 2021 and 2025 when they are projected to account for 14.7% of transaction value.

Local retailer and bank financing remains an important part of the POS payment mix in LATAM, catering to a long-standing preference of installment payments among regional consumers. Bank/retailer financing represented 3.7% of POS transaction volume in 2021, a share that is expected to maintain through 2025. BNPL

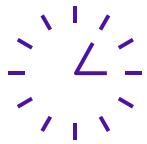
options are slowly being introduced at the POS and are projected to earn less than 1% of POS transaction value through 2025. Prepaid cards remain a viable payment method in the region, accounting for 1% of transaction value in 2021.

Sustained growth averaging 27% annually across LATAM will see mobile wallets nearly double between 2021 and 2025.



Real-time payments

The Latin American real-time payments market is in a period of strong growth and renewal. Argentina and Colombia have recently joined the long-established schemes that were operational in Chile, Brazil and Mexico, with the latter two both launching wholly modernized services that will act as platforms for innovation. Chile led the pack with a 140% increase in transaction volume (almost two million per day), with Mexico and Brazil both growing healthily at 66% and 33% respectively (four and five million transactions daily).



Chile has seen a 140% increase in real-time transaction volume.

Latin America is following the global trend of supporting business, corporate and government agency payments through real-time schemes as well as consumer and retail payments. The new Colombian service will soon be adding business payments capability, and Pix in Brazil brings real-time payments to businesses while enabling government agencies to collect from and payout to businesses and citizens instantly.

Real-time services such as request to pay, account aliases, P2P and payee confirmation have now become commonplace in all markets with live schemes. Similarly, the use of QR codes for payment initiation is available in most, with Colombia planning to add QR code payments next year. In a bid to speed up acceptance and improve the customer

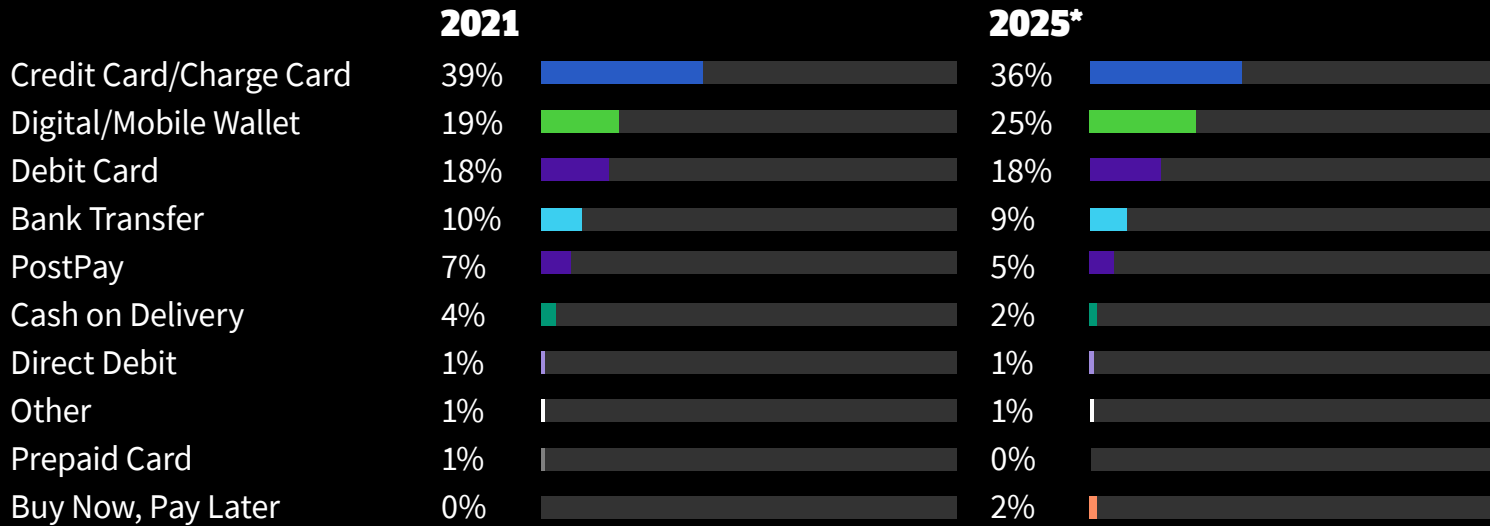
experience at retail points of sale, Brazil and Mexico have added NFC-initiated payment capability backed up by real-time payments. Security was a strong driver for Brazil and Mexico to upgrade their long-established services and is a cornerstone of the newly launched schemes in Argentina and Colombia; Argentina has incorporated biometric identification capabilities such as fingerprint recognition.

To further promote use of Pix, Brazil is mandating that all institutions, including fintechs, participate in Pix if they have more than 500,000 active customer accounts; participation remains voluntary for payment institutions that do not meet the criteria. Pix will largely replace the existing SITRAF mechanism that has consequently seen daily volumes almost halve between the end of 2020 and mid-2021, since Pix started gaining momentum.

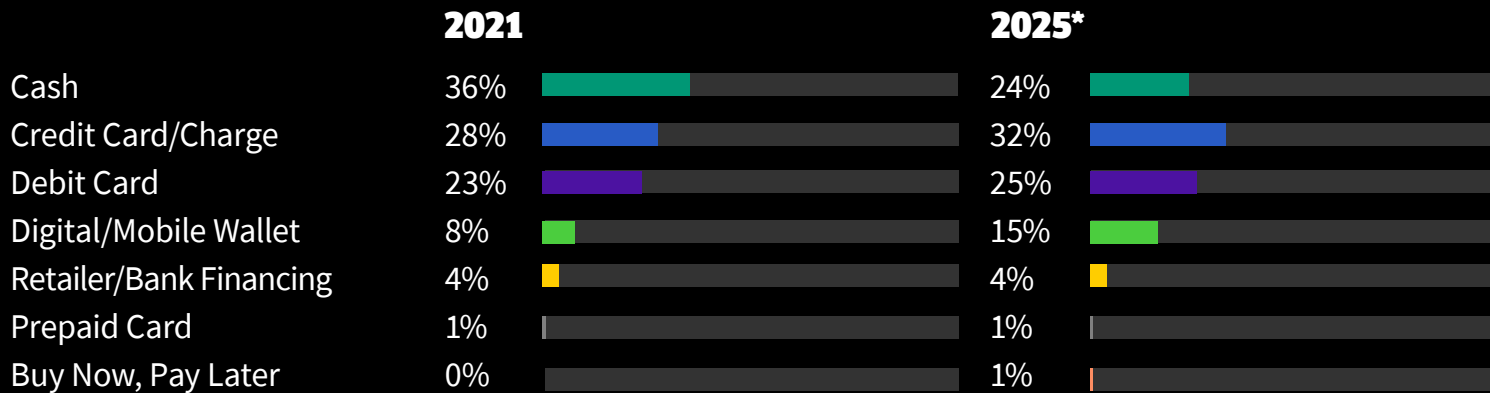
Peru planned to join the world of real-time payments toward the end of 2021 with a scheme offering payment services to consumers, retailers, businesses, financial institutions and government agencies using internet or mobile devices. As an open service intended to breed innovation, third parties will be able to connect to the new scheme via modern APIs.



Latin America e-com payment methods



Latin America POS payment methods



Numbers adjusted for rounding may impact totals.

*Forecasted





KEY INSIGHTS

Powering the next payments frontier

CRYPTOCURRENCY, CBDC AND THE FUTURE OF PAYMENTS

Bitcoin is the original cryptocurrency, released in 2008. While it's still the most popular cryptocurrency, there are now thousands of other digital assets. There is no centralized payment service when cryptocurrency is involved. Depending on who you are in such a transaction and your motivation for using cryptocurrency, that could be viewed as positive or negative. Requiring no currency conversion, crypto has proven to be a means to move funds across the world in a matter of seconds, and for a fraction of the costs associated with traditional methods such as wire transfer.

Crypto trading, whether in the form of direct trading or futures, has become such a popular form of investing that some mainstream brokers are making it possible for users to buy and invest crypto within their platforms. With the [aggregate market value of cryptocurrency exceeding \\$2 trillion](#), it's not a passing trend.

Contradictions in the global crypto response

The role that cryptocurrencies will play in the future global economy, including what parts of the world will deem it legal and which will intervene to restrict cryptocurrency, has become nearly as unclear as the value that any volatile cryptocurrency will command. In September 2021, the People's Bank of China (PBoC) said all cryptocurrency transactions are illegal. Financial institutions in Colombia are not allowed to facilitate Bitcoin transactions. Russia passed laws in July 2020 to regulate cryptos. The Central Bank of the Republic of Turkey issued a regulation banning cryptocurrency in April 2021.

But the view is very different in other parts of the world. In October 2021, the United States Federal Reserve Chairman said he has "no intention" of banning cryptocurrency, but the Federal Reserve is extensively examining how to best regulate cryptocurrencies.

At the same time, large merchants are increasingly moving toward cryptocurrency acceptance.

In early 2021, PayPal announced that it would enable nearly 300 million consumers to use cryptocurrencies to buy from the platform's merchants – without exposing sellers to currency risk. Venmo and Square Cash App now allow users to buy and/or sell crypto.

Microsoft accepts it, Tesla has an on-and-off stance on crypto acceptance and Starbucks customers can use the Bakkt app to pay with converted Bitcoin. Visa recently announced plans for a hub that would accommodate multiple blockchain networks to improve crypto interoperability.

Nabil Manji, senior vice president and head of Crypto and Emerging Business at Worldpay from FIS expects that the momentum will continue. "Cryptocurrency users are becoming more comfortable with the technology that operates a cryptocurrency wallet, and some now have a significant amount of money in it that they would like to be able to use to transact. We're seeing many large merchants, particularly in the United States, show interest in how they'll accommodate that."



Cryptocurrency users are becoming more comfortable with the technology that operates a cryptocurrency wallet.

The rising role of central bank digital currency (CBDC)

Whether driven by the desire to offer a competing yet stabilized form of digital currency, reclaim influence on monetary policy, rein in criminal activity, reduce payments friction, enhance payments security, improve inclusion or all of the above, the [Bank for International Settlements reports](#) that 86% of central banks are actively researching central bank digital currency (CBDC) as of 2021. CBDC is issued as a legal tender, like





cash is today. But unlike bank deposits, CBDC would represent a claim on the central bank.

Central banks are in the race to launch a fully functional CBDC because of various private cryptocurrencies. But much like real-time payments adoption, a country's unique financial infrastructure, existing payment preferences, levels of access to them and involvement by regulators influences the speed of innovation and uptake of a new payment option. Yet, there are many potentially useful benefits CBDC could serve, including:

- A mechanism for new monetary policy tools and greater transmission of monetary policy for central bankers
- Enhanced financial stability, in the case of a [black swan event](#)
- Increased penetration of central bank money in the economy
- Greater innovation to the payments landscape with new features like [programmable money](#)
- Reduction of existing payment frictions, especially in wholesale and cross-border applications

Following China's digital yuan live trial, Alibaba's online grocery stores now allow some clients to pay using the digital currency, and some retailers are accepting digital yuan physically where the trials have been carried out. In [certain regions of China](#), 21 million users have opened a virtual wallet and transacted up to US \$5.3 billion, as of July 2021. [The Bank of Japan](#) has completed its digital yen trial, and Sweden's phase

one e-krona pilot is also complete. The Bahamas and Cambodia have issued their own quasi CBDCs.

How regulation will influence the digital currency future

Cryptocurrency, [stablecoins](#), CBDC and [non-fungible tokens](#) (NFTs) are very different things, but ultimately, all are digital assets that could be used to exchange value. Through that lens, **Aman Cheema**, FIS senior vice president for Global Real-time Payments, Strategy and Innovation, says the real question is, "which of them have demand going forward?" Cryptocurrency may have been founded on the idea of decentralized and unregulated currency, but he predicts regulation will be exactly what influences which digital currencies reign supreme. "The world watches what China, the United States, Europe and the United Kingdom does. We've seen this before when new payments instruments have been introduced. There's been uptake, and then regulation follows to make sure it doesn't create any instability in the financial markets. This digital asset category will be no different."

Regulators in some regions are grappling with how to handle cryptocurrency, in order to provide basic consumer protection and address instability of the financial system without hindering innovation. But Manji thinks the perceived guardrails and rate at which they do come into effect could be key enablers to more mainstream adoption if they relieve consumer and merchant concerns with cryptocurrency. At the same time, the regulation could also create space for central banks to accelerate their activities around CBDC. With regulation, a country may have more freedom to



focus on how to potentially complement their financial system, without having to necessarily solve the cryptocurrency issues they currently face.

The domino effect on payments

Regulation may determine how (or whether) consumers are able to use cryptocurrency and/or CBDC moving forward, but it will have a trickle-down effect throughout the value chain. The consumer side will likely lead the way, but that will act as a catalyst to the impact that has on institutions and businesses. “Institutions, much like consumers, are going to become familiar with the technology because they have to — either by market or regulatory forces. As a result of that, they’re probably going to realize the potential for other use cases within their business, whether it’s internal treasury management, cross-border payments or vendor payments,” says Manji.

Many governments and central banks that are considering CBDCs are also experimenting with different design and technology options. “Central banks, motivated by a decline in cash usage and the threat posed by cryptocurrencies, are seriously considering whether they should launch a digital version of cash. They are also looking at whether CBDCs can advance their economies and have societal benefits such as greater financial inclusion. CBDCs would give consumers and business greater choice to a new innovative format of money and would ensure that public access to central bank money is maintained,” says Cheema.

THE SWEEPING POWER OF SUPER APPS

Super apps are the always-open front door to a new generation of immersive digital experiences. One that uses data, artificial intelligence and the cloud to give users a contextually relevant experience that spans well beyond a single need or purpose, whether that be making a payment or communicating with a friend. The rise of super apps raises competitive stakes for brand experiences everywhere. They're shaping a new future of commerce that redefines how consumers shop, pay and connect with brands.





What makes an app super?

Super app is an umbrella term to describe combinations of popular digital services all housed within a single app. A super app provides a single entry point and user experience to access many services consumers expect – under one roof. From social interactions and shopping to delivery and ride hailing, banking and investing to budgeting and payments, super apps combine an ever-expanding range of services in a singular immersive experience.

Many super apps begin as digital wallets, search engines, messaging, taxi or even delivery services and then undergo an evolution by attaching different products and services. “The growth of a super app requires a balance between offering a strong localized version of the product, along with the ability to use that localized product globally,”

says **Phil Pomford**, Worldpay from FIS senior vice president and general manager of Global E-commerce for APAC.

Once super apps build sufficient scale, they have the power to use their volumes of rich first-party data to create a comprehensive customer profile and experiment with new ways to transform and elevate the customer experience.

Asia’s super app leadership

Super apps first emerged in Asia as powerful disruptors and economic innovators, and the region remains the primary hub of super app leadership. The rise of super apps in China followed a development pattern that leveraged the best technologies of the time. Lacking legacy banking and payment infrastructure, growth in large

APAC economies coincided with the widespread availability of inexpensive mobile technology. Hundreds of millions of consumers were coming online at once. Relatively few emerging APAC consumers had access to bank accounts or physical credit cards, but virtually all of them had a mobile phone.

For consumers in China, it’s becoming difficult to go through a typical day without using WeChat or [Alipay](#). The same is true of [Grab](#) for consumers in Singapore, [Gojek](#) in Indonesia and [KakaoTalk](#) in South Korea.

For APAC consumers, a single app opens doors to virtually everything they need or want to do, from social media to payments, ride-hailing and gaming. Super apps are not just a glimpse into the future – 48

they're the living future. From [Paytm](#) in India to [Zalo](#) in Vietnam, the world will continue to look to APAC for leadership in super app best practices. India's [proposed Consumer Protection \(e-commerce\) Rules, 2020 amendment](#) could soon change super app strategies for Indian players, if rules around related parties, data sharing and cross-selling are impacted. Because the amendment would not allow e-commerce providers to sell their own goods on their own platform, for example, The Tata Group announced in September that it would postpone the launch of its planned super app until there is further clarity.

Super apps have also come to address critical financial inclusion. China's COVID-19 tracking system, [Health Code](#), was implemented as a mini program within WeChat and [Alipay](#). The app was [downloaded more than 50 million times](#) within the first two weeks

of release, reaching more than 90% of the population of Hangzhou, Zhejiang province.

Payments anchor the experience

Safe, reliable, consistent payments are the glue connecting super app experiences. Super apps use security best practices to authenticate users. Once safely inside the walled garden, payments are simple, secure and, in many cases, instant. Super apps are growing adept at leveraging trust with customers established through critical touchpoints like payments to broaden and deepen customer engagement and bring a growing share of their spend within their apps.

The role payments play in the growth and success of super apps is seen in the number of prominent super apps that started as payment tools: [Alipay](#) in China,

[Paytm](#) and [PhonePe](#) in India, [PayPal](#) and Square's [Cash App](#) in the U.S. Adding a native payment platform unlocks the "super" achievement for super apps such as Grab's [GrabPay](#) and Gojek's [GoPay](#).

Super apps are innovation multipliers, helping open payments become more accessible and driving adoption beyond traditional acceptance networks. Payment innovations like QR codes have gained broad global acceptance in large part by the wide exposure offered by super apps. [China-based UnionPay](#) reports that 85% of their users paid via a QR code in 2020.

The table stakes of financial super apps

Once a super app gains the trust of the consumer to manage their payments, that brand may leverage the trust it has established toward adjacent services,



including traditional banking and functions like insurance and financing. Particularly now that it's so easy to move money with nothing more than a mobile phone, Pomford says super apps bring about yet another form of serious competition to card rails. Financial institutions, neobanks, person-to-person (P2P) payment companies and even retailers could all find themselves caught in the crossfire of super app competition. "For retailers, keeping up with the pace of interaction with all the different payment methods in a super app requires a very different marketing approach. It's not just the 'set up and leave it' like you do with a credit card network. You've got to work with various different tools, including data and information about your customers you didn't necessarily know before, that could impact your approach these customers."



For retailers, keeping up with the pace of interaction with all the different payment methods in a super app requires a very different marketing approach.

The unprecedented competitive advantages super apps offer has spurred U.S. and other technology and fintech firms to catch-up to their APAC counterparts. [Amazon](#) [Facebook](#) [PayPal](#) [Square](#) and [Walmart](#) have all taken steps to morph their existing offerings into super apps. Yet, there are currently broad regional differences in the prevalence super apps play and, perhaps, the cultural comfort level that comes with relying on one app to handle so many parts of a user's life. "People in the East tend to be very happy to have a single source for everything, but in the U.S. and Europe, that's not necessarily the case. People also have data and privacy concerns that exist in the West that don't exist at that level in the East. That may be one of the challenges that any super app faces in becoming truly global," says Pomford. Whatever the future holds for super apps, competitive pressures are enormous as they push the industry toward bundling, consolidation and simplicity. These platforms are shaping the next frontier of commerce and payments.



EMBEDDED DISRUPTION

A woman with dark hair, wearing a dark red and black striped long-sleeved shirt and a blue and white striped apron, is looking down at a tablet computer she is holding. The tablet has a glowing green ring around it. The background is a blurred indoor setting, possibly a kitchen or a retail store, with warm lighting.

Embedded finance is disrupting financial services by blurring traditional lines between financial and non-financial companies. Read on to learn how embedded finance is empowering businesses and consumers – and changing the strategic equation for financial institutions.

What is embedded finance?

Embedded finance involves banking and other financial services being placed in contexts other than financial institutions themselves. Embedding financial services breaks down the barriers that once guarded traditional banking by making financial services available to customers when and where they need them most. From e-commerce platforms to quick-serve restaurant apps, embedded finance puts tools that once required a trip to the bank within a single tap or click.



Embedded finance puts the banking experience into the same front end and same workflow and experience businesses use most.

Matt Colliccoat, vice president of Strategy and Business Development for B2B at FIS, explains the impact embedded finance can have on a small business. “Consider a seller on an e-commerce marketplace who uses half a dozen tools every day – like banking, accounting and payroll – to operate their business. Now imagine all of those services in one central place – where they’re all most useful. Embedded finance puts the banking experience into the same front end and same workflow and experience businesses use most,” says Colliccoat.

Embedded finance in action

Embedded finance is all around us, seamlessly blending into the flow of everyday consumer and business journeys. Embedded payments are most familiar to consumers, so much so that it’s easy to

forget that they’re still in their infancy. Embedded payments make ordering coffee or breakfast via their favorite quick-serve restaurant effortless, their payment rendered virtually invisible in the background. From paying for cars, subway fares and scooters to groceries, take-out restaurants and weekly grocery shopping, embedded payments make once complex multi-party transactions instant and effortless.

In the same way, embedded finance makes banking processes faster, simpler and more convenient. If a business owner wants to pay a bill or a supplier, transfer money, manage payroll or apply for insurance, embedded finance enables all those functions to happen in one place. As importantly, the business owner gains one view of money coming in, payments going out and a single snapshot of cash flow. If there is a cash flow concern, the business owner knows immediately – and has options to address it. Through embedded finance, consumers can apply for bank account overdraft protection, obtain short-term financing or move money in from another account without disrupting their journey.

But Colliccoat says that’s also the secret sauce embedded finance offers. Regardless of how the user wants to pay or send out an invoice, the underlying complexity should be mostly invisible to payer and payee. “The business owner doesn’t need to understand the complexities beneath the surface. They should be able to express what they want – and the embedded finance experience delivers. If they want to get paid as fast as possible, they’ll see only options that deliver that. If they want to get paid as cheaply as possible, they’d see only low or no-cost options. It’s about being able to let them make really





simple business decisions about how they want money to move in and out,” says Colliccoat.

Embedded finance is empowering brands

There are many non-financial companies that want to make embedded finance part of their experience, with good reason. Consumers are embracing financial services offered by the businesses they trust most and that offer attractive combinations of service and convenience. By leveraging their brand equity and customer loyalty, companies across industries can deepen those relationships by offering payment and deposit accounts, and value-added services like insurance, credit cards and financial advising.

“We’re seeing more non-financial companies brand their financial services offering as their own. Rather than making the experience complex for the consumer by exposing that they’re actually working with several different companies, embedded finance keeps the complexity in the background,” says Colliccoat. Also known as white label banking or banking as a service, embedded finance lowers what have historically been impenetrable barriers to entry for non-financial companies.

Changing the competitive equation for financial institutions

Embedded finance is empowering non-banks to boost revenues by delivering lucrative value-added services, reshaping the competitive landscape and opening new distribution channels for traditional financial institutions. For financial institutions, embedded finance demands a shift in thinking. While financial institutions will continue to own and operate their unique brands, and some customers will want to continue to work directly with them

for some or all of their financial needs, embedded finance will begin to push some financial services toward commoditization. That’s the double-edged sword of embedded finance: it enables financial institutions to vastly expand their distribution channels but also invites entirely new classes of competition that displace the customer ownership that financial institutions have long enjoyed.



Financial institutions still expecting all of their business to come to them directly will miss out. They have to be able to provide the services but also make their services available for others to sell. There’s a real marketplace there.

Embedded finance will serve as a catalyst that changes how banks, non-banks and technology partners collaborate. If a fintech company is building an app using Amazon Web Services and there is a workflow where the end user is offered the option to open a bank account, for example, the app developer may potentially turn to an API marketplace to plug in an “open bank account” module. As demand for embedded finance increases, partners that understand the risk appetite, goals and capabilities of both players could also play a critical facilitation role in establishing mutually beneficial arrangements between banks and technology companies.



Benefits of embedded finance

Consumers:



Embedded finance greatly expands financial services options for consumers, making the movement and management of money easier and more convenient. Consumers follow their own individual journeys without leaving traditional banks behind.

Financial institutions:



Embedded finance helps banks reach more customers with lower costs of acquisition, expanded distribution channels and the development of new value-added services, creating unprecedented opportunities of scale.

Non-financial brands:



Without bearing the burden of being a bank, businesses can leverage their ability to deliver financial services at a fraction of the costs of incumbent financial institutions, helping non-financial companies expand into adjacent services and increase lifetime customer value.



FURTHERING THE FUTURE OF FINANCIAL INCLUSION

Financial technology products and services are essential tools to promote inclusion in the financial systems of the future, helping communities around the world build long-term economic resilience and enable financial growth. Given the dynamic challenge of financial inclusion and its connectivity into many global social and economic goals, it is recognized as a target in eight of the 17 UN 2030 Sustainable Development Goals.





Financial inclusion includes efforts to make products and services accessible and affordable by removing barriers that prevent participation in the financial sector. In order to do so, technology plays an important role in overcoming historic barriers to the financial system with new digital and innovative ways of reach more consumers. In its [High-Level Principles, the G20 Global Partnership for Financial Inclusion](#) (GPII) notes that digital financial services combined with effective supervision are an essential aspect to closing the gaps that remain.

While the COVID-19 pandemic created incredible hardships for people around the world, it also helped catalyze fintech-enabled digital solutions that play a critical role in improving access to financial products and services for underserved populations. Recognizing the need to limit physical

contact and expedite the distribution of funds, [nearly 60](#) low- and middle-income markets have used digital payments to deliver emergency relief since the pandemic began. Brazil, which has an estimated 34 million consumers outside of the formal financial system, used its recently launched real-time payments system, Pix, to help distribute COVID-19 relief funds. In that process, [70 million new accounts](#) were opened – many by unbanked Brazilians.

Martin Boyd, FIS president for Fintech Solutions, explains that using technology to deliver financial capabilities that the underserved can easily access, engage with and already know how to use is key to improving financial inclusion through fintech. “No matter the capability it provides, the technology needs to be embedded into a process someone is

already comfortable with, but that enables them to do something more. That’s fundamental to how you reach and spread your service to include people who can’t otherwise afford it,” says Boyd. This also requires understanding the full scope of the barriers that lead to exclusion – demographics, education, credit worthiness or location – and addressing them as part of the solution.

Financial inclusion entails far more than just payments. Improving access to the financial system for unbanked and underbanked populations around the world is the first step in achieving broader financial inclusion goals. [The World Bank](#) notes that access to transaction accounts is essential to financial inclusion, allowing people to store digital funds and exchange payments.



Beyond payments, consumers and businesses are seeking additional tools, such as access to credit and insurance, to help them achieve their overall professional and personal goals. That might entail building a new business, investing in their education and careers, or building wealth to help create a more sustainable financial future for their family and community. Supporting global efforts to improve access to financial tools and solutions will open new opportunities for fintech to continue building the innovative solutions of the future. In 2020, FIS developed a [comprehensive framework for financial inclusion built on four pillars](#) to help drive transformational and sustainable change for clients and communities. Solutions and services are at the forefront of that framework, as they, directly and indirectly, increase the accessibility and affordability of financial services for end users.

A rising tide lifts all boats

Financial inclusion disproportionately impacts markets with developing and emerging economies, but it's a broad and multifaceted issue to which no market is immune. For example, countries such as Morocco, Vietnam, the Philippines and Mexico [have large underbanked populations](#), yet [approximately 13% of consumers in the United States](#) also qualify as underbanked, and 5% are fully unbanked. Methods to promote financial inclusion are as varied as the populations themselves. For some, financial inclusion can be improved with more access to basic payment and money movement tools. In others, education that helps to overcome cultural obstacles like a lack of trust in modern financial infrastructure may be required.

For underbanked consumers who can't access traditional credit, financial technology helps promote inclusion by offering alternatives to predatory lending products. Financial technology also provides tools that encourage users to save money incrementally, by automatically setting aside small change from each purchase, or even investing through the purchase of fractional shares. These types of services highlight the many ways fintech is making a positive impact in traditionally underserved communities.

On its own, fintech won't be able to solve the complex challenges of poverty or inequality. However, it's increasingly clear that it will play a central role in promoting a more inclusive future. The U.K. fintech charity [Pennies](#), for example, allows users to donate a penny to charitable causes whenever they make a digital payment. Its chief executive officer, **Alison Hutchinson**, says the concept was inspired by the fact that the world was moving away from paying with cash, yet dropping change into a jar or box was how people were accustomed to donating. All those microdonations add up to make a real impact. "It all starts with the penny," says Hutchinson. "If every banked adult in the U.K. donated the equivalent of a chocolate truffle once a week, that would be 10% of all the giving in the U.K. You springboard that onto a global scale and you could transform communities across the globe."

Financial technology that promotes inclusion isn't limited to moving money. It can also be a means to teach people how to use money in a way that positively supports their life long before they're concerned with it. **Louise Hill**, co-founder and chief operating officer of [GoHenry](#), a prepaid debit card

and financial education app for kids as young as six years old, is doing exactly that. “When it comes to financial education, the best way to learn is by doing in a real-life environment. This is where fintech comes in, particularly as the pandemic has accelerated the move to a cashless society,” says Hill.

Tackling the next frontier of financial inclusion

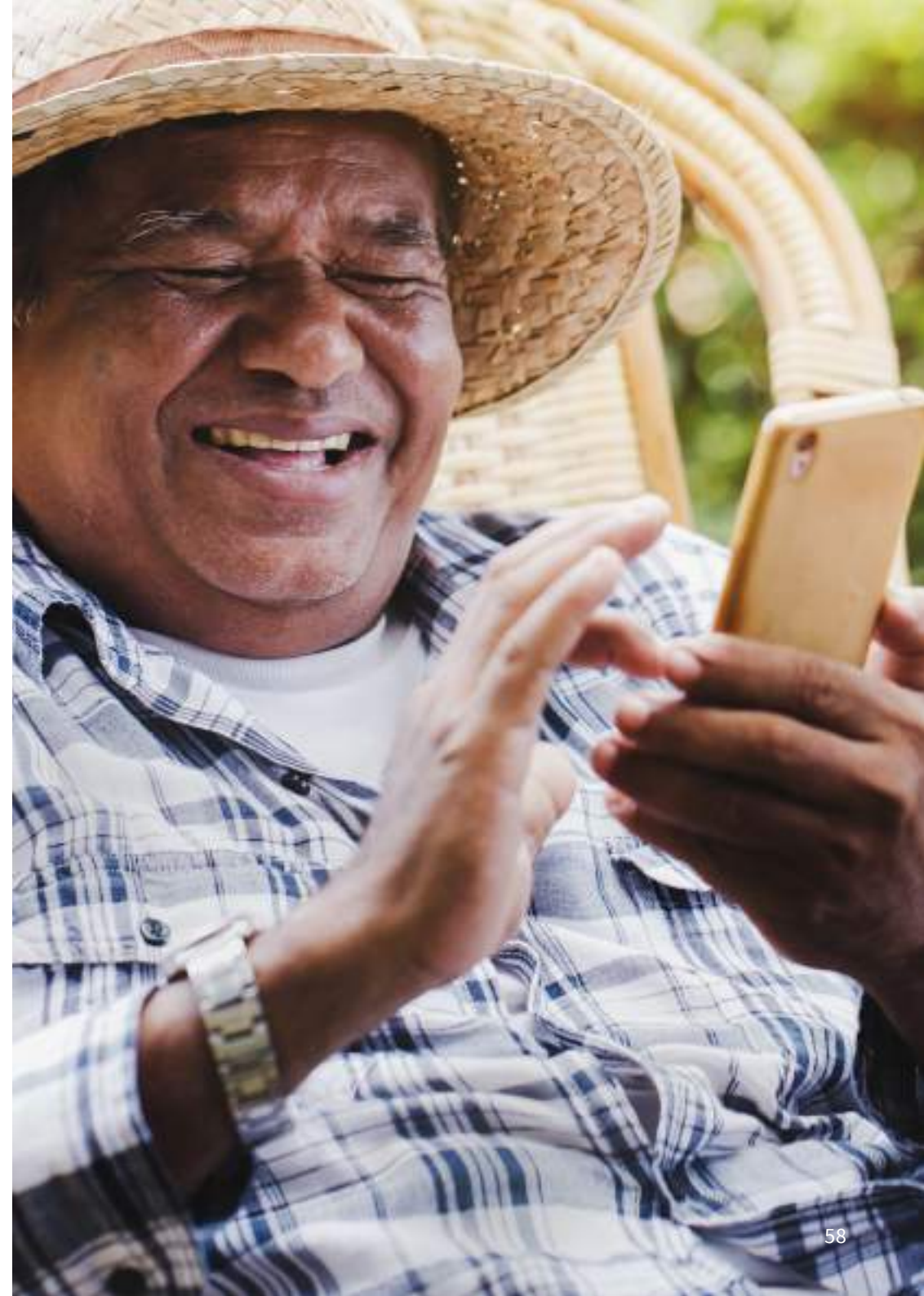
The United Nations Capital Development Fund ([UNCDF](#)) works to connect last-mile financial services to underserved individuals, businesses and municipalities in 39 countries around the world. For UNCDF, [financial inclusion is a means to an end](#):



Meaningful digital financial inclusion has to provide outlets for low-income account holders to engage in the economy in order to meet their daily needs and improve their skills, productivity and marketability in the digital-economy age.

Financial technology continues to make great strides in positively influencing financial inclusion, particularly with increased mobile penetration and the accelerated adoption of digital and contactless payments. In the future, Boyd predicts we’ll see financial inclusion expand across even more channels, including connected devices like smart speakers and TVs, making it easier for people to access and manage their money.

By improving access to bank accounts, transactions, credit or even financial literacy content, fintech is providing a digital lifeline that’s closing the accessibility gap and fueling opportunity by enabling connections that transcend distance. It’s helping promote a sustainable future by providing broad access to the essential tools that individuals and businesses need every day to help power the next payments frontier.



THE REAL-TIME RACE TO REVOLUTIONIZE PAYMENTS



Real-time payments have been a reality to financial industry insiders for nearly fifty years, beginning with Japan's real-time payments system in the 1970s. It would take another several decades until markets like the United Kingdom, China and India would introduce their own real-time payment rails. But the momentum started to take off in the years that followed. When FIS published our first Flavors of Fast report in 2014, we counted 14 live faster payments schemes in the world.

By 2020, 56 markets were live with real-time payments. Since then, four more schemes have launched in Russia, United Arab Emirates (UAE), Argentina and Colombia. Now, up to 72% of the world has a live real-time payments infrastructure, or one soon to launch.

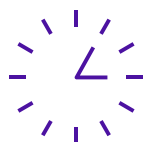
“More and more, we are moving into a real-time economy. Real-time payments have been the catalyst in actually creating the real-time economies we are starting to see implemented in markets like Europe,” says **Bernd Richter**, FIS senior vice president for the Global Real-time Payments Network in Europe.

The regional influence of real-time payments

The pandemic accelerated the use of real-time payments, but regional differences are significant. India led the world in the largest daily real-time payments volume in 2021 with 70.2 million, followed by China with 42.8 million. The U.K., which has had a real-time payments infrastructure since 2008, ranked fifth for daily real-time payments volume of 7.9 million. In the U.S., where real-time payments are still a fairly new concept outside of P2P use cases, **Norm Marraccini**, FIS senior vice president and group executive for Commercial and Retail Payments, thinks it may be another 12 to 18 months until consumers, merchants, corporates and financial institutions see their true potential.

For real-time payments to become truly global, says Marraccini, the many different schemes and real-time payment methods that currently exist eventually need to lead to a common way to accept and move money in real time. This past year has

brought greater collaboration among regions, with the shared goal of increasing interoperability. [In July 2021](#), P27 in the Nordics received the EU commission’s merger approval to start preparing to onboard customers. It is intended to create a future-proof, digital highway of sorts that will enable domestic and cross-border, multi-currency, real-time payments initially across Sweden, Denmark and Finland, with Norway considered later. Expected to facilitate economic growth and trade, it could serve as a blueprint of sorts for how other regions approach their real-time payments.



India led the world in the largest daily real-time payments volume in 2021 with 70.2 million, followed by China with 42.8 million.

In October 2021, EBA Clearing, SWIFT and The Clearing House [completed a proof of concept as part of a new initiative, Immediate Cross-Border Payments \(IXB\)](#). Using ISO 20022 messaging standards, it would synchronize settlement into one instant payment system with settlement in the other and convert real-time messages between both systems. There is no official timeline for next steps, but the move demonstrates how existing infrastructure could facilitate cost-effective, transparent and real-time cross-border payments. Aiming to launch [sometime in 2022, according to Fortune](#), the European Payments Initiative (EPI) also seeks to create a new pan-European payments





network intended to enable seamless in-store and online purchases, debit and credit payments and instant peer-to-peer money transfers.

Overlays encouraging real-time use

Government agencies are increasingly using real-time payments for pensions, benefits, fees and fines. In the U.S., APAC and EU regions, business/corporate use cases related to salary, accounts payable, mandates for direct debits and bulk payments are bringing high-volume/high-value payments into real time. Richter says companies are now realizing that real-time payments can change their business model, how they interact with companies and suppliers, and how they conduct business. “With real-time payments, a business can actually innovate and enter new markets to sell to customers they don’t sell to today,” says Richter. Consider an insurance policy company based in Europe that wants to serve customers in Asia, as an example. With real-time payments, the insurance firm can advertise ad-hoc insurance underwriting and activate the policy immediately, when receiving the activating premium payment for the policy as a real-time payment. Many insurance companies are also using the real-time rails for instant payout of approved claims, even globally where available, adding a competitive edge to their proposition – fueled by payment innovation.



With real-time payments, a business can actually innovate and enter new markets to sell to customers they don’t sell to today.

Overlay services that sit atop real-time payments rails, like Request to Pay (R2P) and e-invoicing, are also stimulating new use cases and uptake by consumers, merchants and corporate customers. As a standardized financial messaging scheme that allows a payee to digitally initiate a payment request from a payor via bank channels or third-party fintech applications, R2P can be a cheaper, faster, more efficient and potentially lower risk means of moving money, compared to traditional methods. It enables straight-through processing of e-invoices and payments for corporates, and for merchants, could mean avoiding card interchange fees, reducing chargeback risk and expediting funds transfer. Depending on how the secure R2P messaging reaches the end user (which could be from a banking app or a third-party app), it could also be used to deepen customer relationships and add new revenue streams. When a customer’s R2P due date is near, for example, a bank could present the customer with new and/or flexible payment options like short-term installment loans, a business version of the BNPL wave that’s changing retail payments currently across the globe.

The role of real-time payments in commerce

Real-time payments are being used in e-commerce in some parts of the world, but **Sri Kothur**, general manager and head of Enterprise Payments at FIS, says it’s still very much in its infancy. Once they do become more commonly used globally online and at the point of sale, he expects they’ll be yet another payment type – not one that will displace other mechanisms. Ultimately, the role real-time payments play in commerce will depend on what it offers each specific party involved in the transaction.



“It’s tricky because there are different economics behind payments and each participant has their own desired outcome,” says Kothur. Artificial intelligence (AI) will play a crucial role in facilitating intelligent payment routing on the front end and resolving conflicting needs of all involved in a real-time payment transaction. “The payor can easily choose the payment type, and the payee can decide how to receive the money based on when they want funds to move and what they are willing to pay for that method,” says Marraccini.

BNPL has had a significant impact on banks, large merchants and card schemes, and real-time payments will play a similar role in continued payments innovation. “We’ve seen that BNPL is not just about payments. It was a way to get into the relationship and create a fantastic customer experience,” says Richter. The combination of open banking and real-time payments infrastructure will create new payment alternatives for customers, and new ways for merchants and corporates to accept payments. The payments innovation already underway will continue; real-time payments will help fuel growth and the redistribution of market shares and payment types.

ALLEYES ON EUROPE

As a historical leader in payments innovations, the European payments community continues to be home to many of the leading solutions on the cutting edge of global payments change. Home to 45 markets, each with its own unique mix of regulatory, demographic and economic variables, Europe is a wellspring of payments innovation. The intentional patchwork of diverse organic solutions in Europe is a microcosm of the global payments landscape.





As multiple payments solutions are causing simultaneous and overlapping disruption, Europe can be considered an early indicator of global payments trends. The remarkable growth of BNPL and the emerging importance of open banking and real-time payments are leading all eyes of the global payments community to Europe.

BNPL enters the mainstream

BNPL solutions found fertile ground in Europe, where they've grown in just a few short years from fringe upstart to the very center of the mainstream of contemporary global payments options. BNPL solutions accounted for over 8% of Europe's regional e-com and nearly 2% of regional POS transaction value in 2021, each more than twice the value of the next highest regional BNPL tallies. The three top e-com markets for BNPL are all located in Europe,

with BNPL as the leading e-com payments option in Sweden (25%) and among the leaders in Germany (20%) and Norway (18%).

"Consumers are clearly embracing the ease of use and flexible financing BNPL offers. Now it seems like every merchant is looking to offer BNPL to satisfy growing demand," said **Peter Wickes**, FIS general manager, EMEA, Enterprise. "The bigger companies are prepared and may even welcome appropriate regulation, whereas smaller providers may find regulation burdensome. I think that's when you may start to see some consolidation of those companies."

Yet, the rush to share in BNPL success has created a market that's increasingly saturated. "There are now so many companies that offer BNPL services, some form of consolidation in the market feels inevitable,"

says Wickes. "Merchants need help to make decisions about the number of payment methods they actually need to offer. There's no need to offer six BNPL options on their payments page when two will more than suffice."

Another challenge for the biggest providers is how many countries they can expand to, and how quickly. "That may well supplement organic growth with acquisition of targeted competitors in local markets, where it's going to take them one or two years to expand," says Wickes.

Open banking's heyday delayed, not necessarily denied

There's a big focus on open banking in Europe and appropriately so given collaborative pan-European efforts including [Open Banking Europe](#) and [PSD2](#), 64

the EU's second Payment Services Directive, which seeks to increase security and stimulate competition among payment service providers.

“We haven't seen a material movement toward open banking that many had predicted. Some of the open banking products and solutions can cause significant disruption in the market, not only from an e-commerce payments point of view, but also from a point-of-sale and omnichannel payments point of view,” says Wickes. Ultimately, the success or failure of open banking will come down to consumer choice, and whether consumers see open banking as a payment method that creates a positive experience and provides additional benefits that surpass other options.

Getting real about real-time payments

The European story on real-time payments is one of innovation and renovation. Europe continues to wholeheartedly embrace real-time payments. With over half of the world's real-time payments enabled countries, it continues to be positioned as a global leader and center of excellence and innovation.

“I think you are going to see the availability of real-time payments becoming a requirement across the whole ecosystem – not just for real-time payments going out but also coming in,” says Wickes.

A decade ago, Europe led the world with instant clearing and settlement of payments. Today, the need to offer innovative overlay services on top of the real-time payment rails is obliging many of these early adopters to adapt once again. Europe's center of gravity for real-time payments is the [European Payment Council's SEPA Instant Credit Transfer \(SCT Inst\)](#). SCT Inst develops services including a request-to-pay service launched in 2021, as well as the





The ability to transact instantly will evolve from innovative convenience to baseline expectation among consumers and merchants alike.

forthcoming availability of an API open gateway. API-focused architectures are fueling innovation and enabling a wealth of use cases, including e-invoicing, supply chain finance and trade finance.

All eyes are on Europe's continuing innovation in real-time payments solutions. A decade ago, the [UK Faster Payments](#) scheme sent a strong message of modernization to the world, but the service is already being reviewed. Pay UK is planning a replacement with the [New Payments Architecture \(NPA\)](#). Further north, [Project 27 \(P27\)](#) aims to establish a single pan-Nordic payments infrastructure for the region's 27 million inhabitants. This infrastructure will enable real-time payments over a secure platform between Denmark, Finland and Sweden, with Norway showing an increasing interest in joining.

“The card schemes and payments providers will need to react to the development and adoption of real-time payment rails. The major card schemes will need to improve the speed at which money passes to the acquirer and, ultimately, on to the merchant,” says Wickes. “The ability to transact instantly will evolve from innovative convenience to baseline expectation among consumers and merchants alike.”

MARKET GUIDES

Powering the next payments frontier

ARGENTINA

Argentina boasted the world's strongest e-commerce growth in 2021, expanding 71% YoY from 2020 with 26% CAGR projected through 2025. Cards accounted for a majority of e-com payment value, with credit (37.2%) outpacing debit (18.4%) two to one. Digital wallets surpassed 25% of e-com transaction value in 2021, while debit, credit and digital wallets combined are projected to account for 87.5% of e-com payments by 2025. Cash's decline slowed in 2021 but will account for less than one-third of POS payments in 2022; it will resume a steeper decline in 2023. Mobile wallet's share of POS spend is expected to nearly double to 23% by 2025.

Argentina's new real-time payment service Transferencias 3.0 was built on the 2017 scheme Pagos Electronicos Inmediatos and launched in December 2020. Operated by four private companies and monitored by Banco Central de la República Argentina, consumers and businesses can make payments with debit card, prepaid card and QR codes. The system is open and interoperable with payments from any platform for all accounts (bank and virtual wallets). Two months after the launch, more than 100,000 businesses and 50,000 shops now accept QR code payments. By 2023, 1.5 billion new transactions are expected, growing at 5% per year over the next three years.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
15%	55%	26%	9%	23%	64%

Real-time payments

Name	Year live
Transferencias 3.0	2020

Average daily volume	Average daily value
N/A	N/A

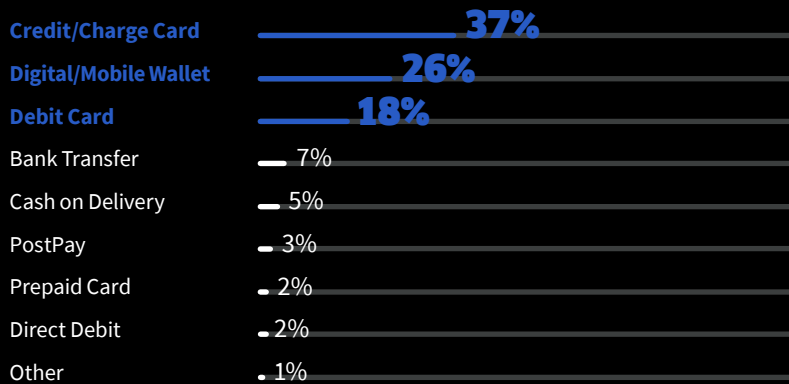
Overlay Services:

QR code payments, alias based on national ID, request to pay, biometric security, guarantee confirmation

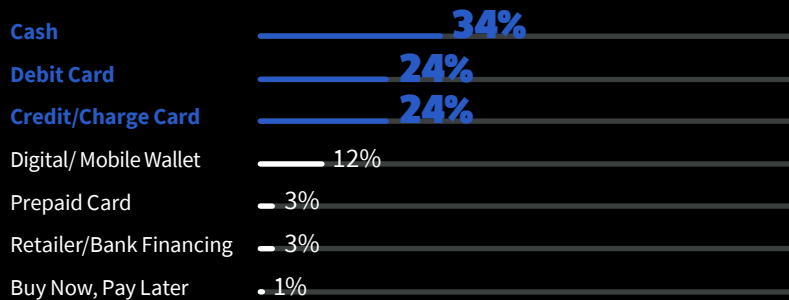
Did you know?

The digital and mobile wallet [Mercado Pago](#) is the most popular alternative payment method among Argentine consumers. Part of Latin America's largest online marketplace, [Mercado Libre](#), Mercado Pago is expanding to offer banking and credit services. Look for Mercado Libre to emerge as the regional super app.

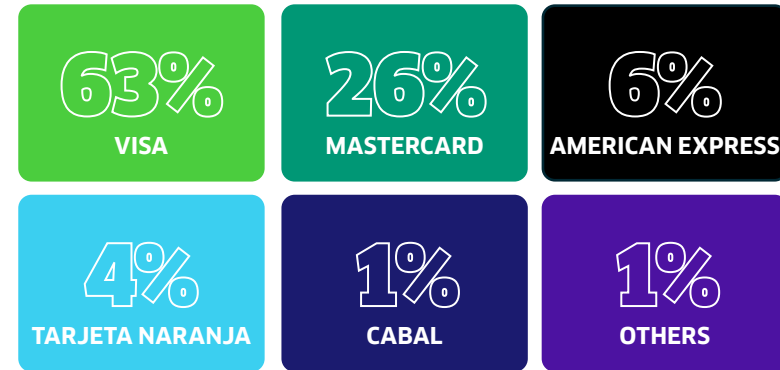
2021 e-com mix by payment method



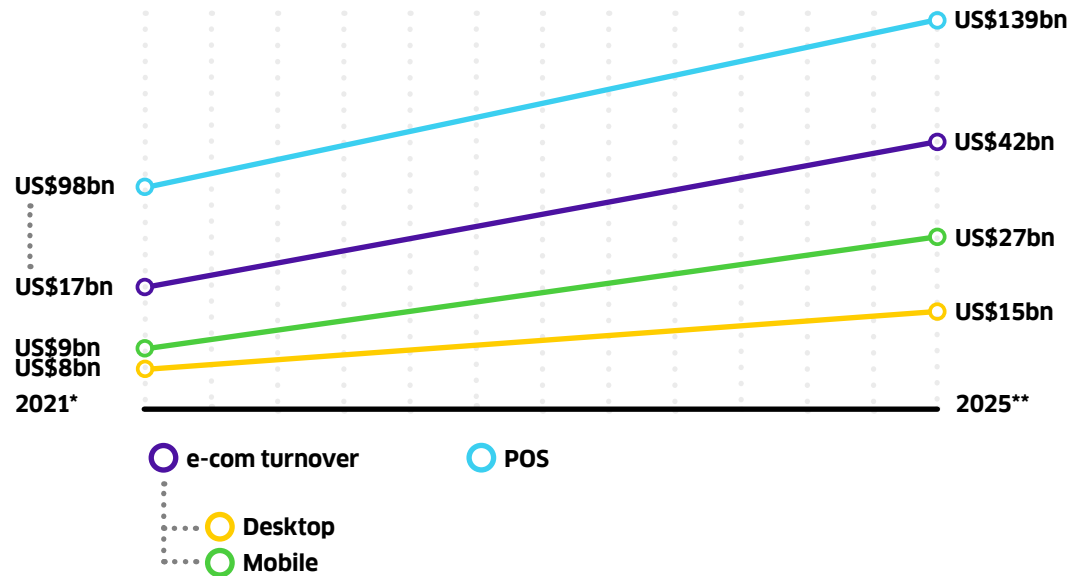
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



AUSTRALIA

Credit cards retained favored status among Australians online in 2021, accounting for nearly a third of e-com payment value. Led by PayPal, digital wallets passed 25% of e-com spend in 2021 and will lead online by 2024. BNPL use is strong down under, earning more than 10% of e-com payments, led by [Afterpay](#), [Klarna](#) and [Zip](#). Cards dominate in-store with credit and debit representing 76% of POS spend; mobile wallets and retailer/bank financing will see sustained POS growth through 2025.

On Australia's New Payments Platform (NPP), real-time payments volume and value transacted more than doubled. With more than 100 financial institutions allowing customers to link a PayID to their accounts, it has attracted nearly seven million registered PayIDs (app. 60,000 new registrations per month).

Currently under development, the PayTo initiative will allow third parties to initiate real-time payments from bank accounts with customer authorization. The NPP 2022 roadmap also includes cross-border payments for the domestic leg of an inbound payment, procure-to-pay with structured invoice-related data and pre-authorized payments or mandates. NPP will also move to ISO 20022 for cross-border and high-value domestic payments.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
6%	57%	11%	5%	8%	64%

Real-time payments

Name	Year live
NPP (New Payments Platform)	2018
Average daily volume	Average daily value
2M	AUD 1.97B (US\$1.36B)

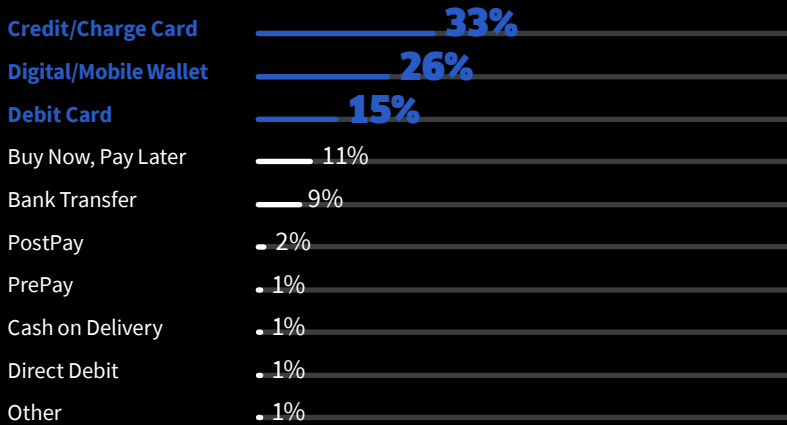
Overlay Services:

Account alias service using a Pay ID for P2P payments; P2B payments (Azupay); B2B Payments (Monoova)

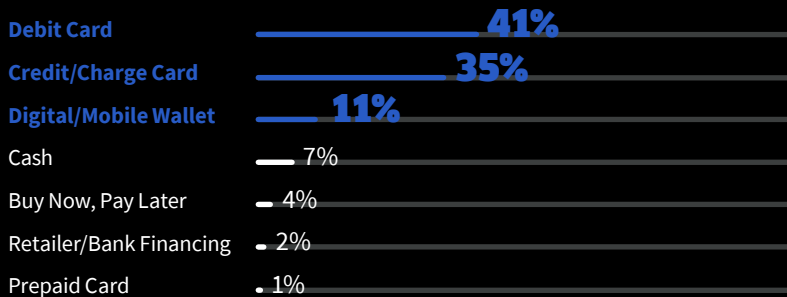
Did you know?

Selling to Australian consumers demands a broad mix of payment methods. Visa, Mastercard and [eftpos](#) are essential, while Apple Pay, Google Pay, WeChat Pay and Alipay are increasingly expected. Don't forget BNPL, which can boost conversion rates.

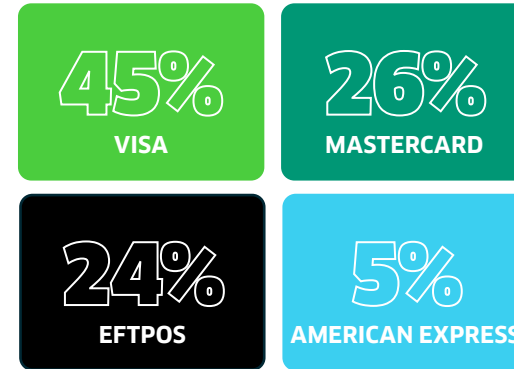
2021 e-com mix by payment method



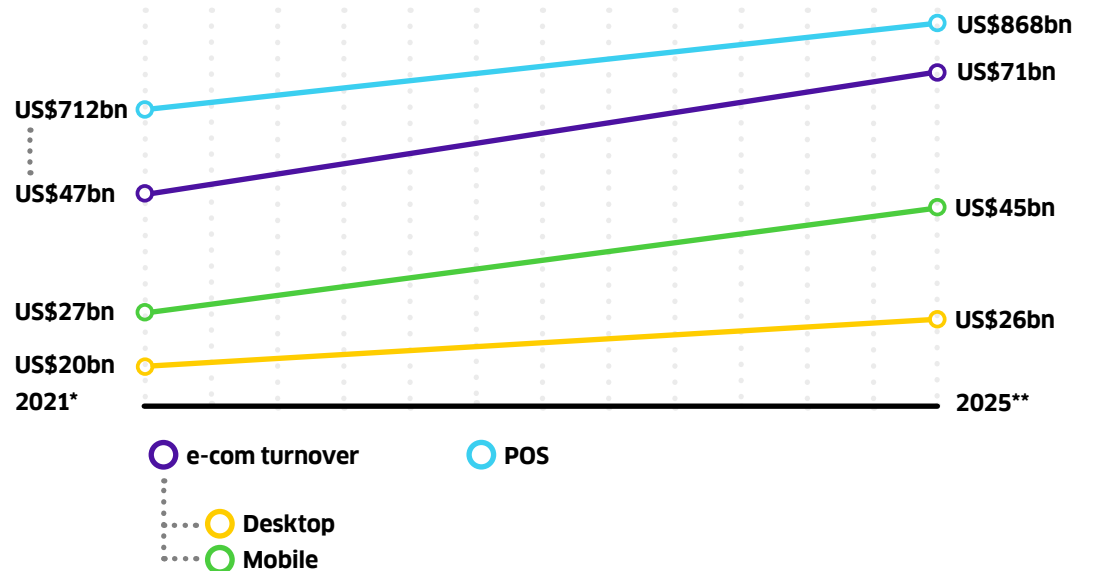
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



BELGIUM

Cards earn a majority (51.8%) of e-commerce spend in Belgium, with debit representing 34.8% and credit/charge cards accounting for 17% of 2021 transaction value. Led by Bancontact, debit cards are projected to maintain their lead through 2025, while digital wallets, bank transfers and BNPL will steadily increase share. At the POS, debit cards are forecast to increase majority share from 50% in 2021 to 52.8% in 2025. Cash's steady decline continues and is projected to fall below 10% of POS spend by 2024; mobile wallets will climb to 14.3% by 2025.

Belgium saw a 67% rise in real-time payment volumes, with almost 100 million instant credit transfers. Real-time payments make up almost 15% of all transfers in Belgium with an average value of €574. Belgians can make real-time person-to-person payments, send transfers for services, re-activate mobile devices and games, make charitable donations and pay on delivery of goods. Businesses can reimburse consumers, settle invoices, automate cash and liquidity management, and pay salaries on the same day. The country is also planning to add an API to enable additional services.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
7%	31%	10%	2%	9%	38%

Real-time payments

Name	Year live
SCT Inst	2019

Average daily volume
273K (FY20 -Belgium Instant Credit Transfer Transactions)

Average daily value
N/A

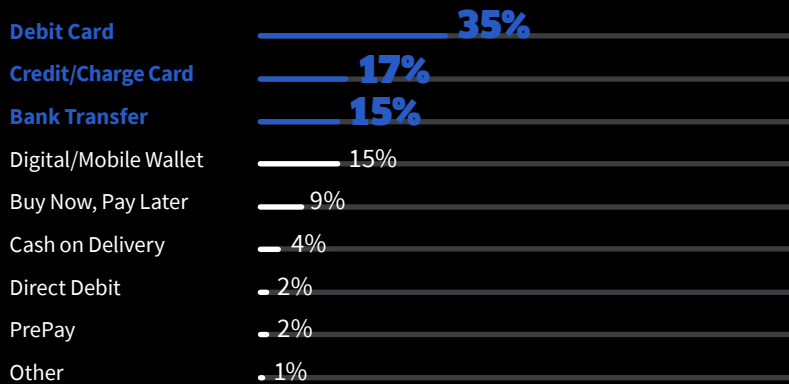
Overlay Services:

Mobile payments app for contactless payment via NFC, static and dynamic QR code payments, Payconiq (by Bancontact) enables debit card holders to make smartphone payments and transfers in-store and online

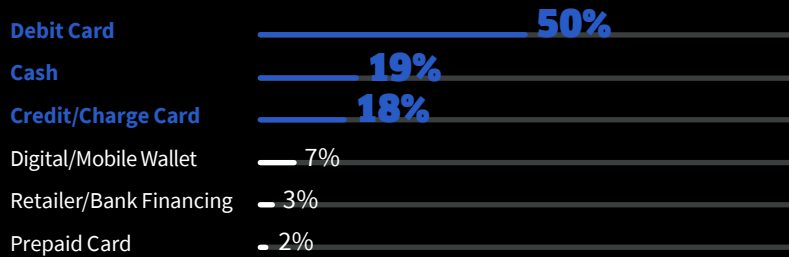
Did you know?

BNPL offerings continue to gain share of e-commerce spend in Belgium. Segment leaders include [AfterPay](#), [Klarna](#) and [Sezzle](#); BNPL is expected to earn more than 14% of e-com and 0.4% of POS spend by 2025.

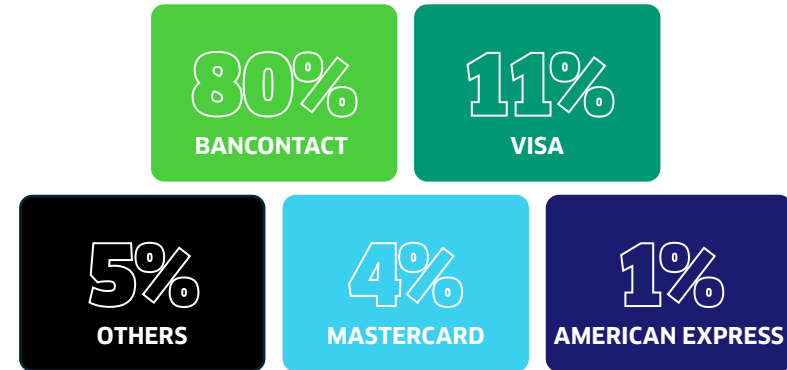
2021 e-com mix by payment method



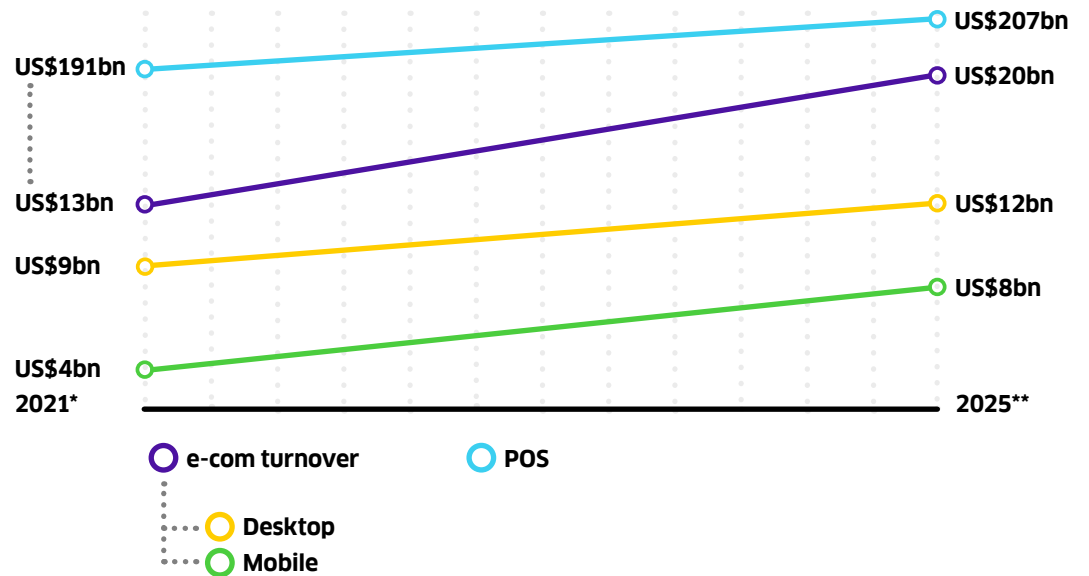
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



BRAZIL

Latin America's largest economy continues to experience rapid e-commerce growth, at 16% YoY in 2021. Brazilian consumers turn mostly to credit cards, which accounted for 44.7% of 2021 e-com transaction value. Bank transfers, debit cards, digital wallets and post-pay options led by [Boleto Bancário](#) each garnered more than 10% of e-com spend. Representing a majority of POS payments as recently as 2018, cash fell below one-third of POS payments value in 2021; it's projected to fall below 25% by 2024. Slight increases in credit (35% in 2021) and debit (21.6%) will account for over 60% of POS spend by 2025.

The new real-time payments service Pix (live in November 2020) is set to largely replace the long-standing SITRAF service (live in 2002) with improved service, availability, openness and a range of overlay services; Pix already has twice the volume of SITRAF. Pix offers peer-to-peer money transfers, bills, tax and service payments, through mobile or internet, and at the POS in physical stores and e-commerce. It also offers business payments between companies and suppliers, and government agency payments such as fines, taxes, refunds, social benefits and grants.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
5%	57%	18%	9%	7%	65%

Real-time payments

Name
Pix

Year live
2020

Average daily volume
10M+

Average daily value
R\$6.8M (US\$1.3M)

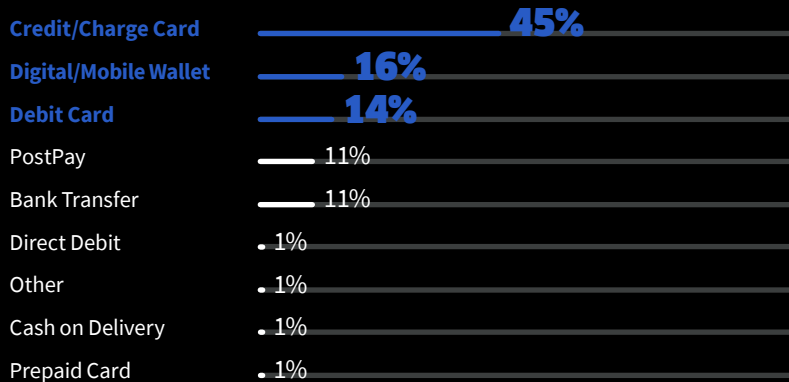
Overlay Services:

Account aliases with mobile phone number, taxpayer ID or email, QR code payments and additional invoice information, NFC initiated payments, API for FIs enables collections, settlement verification, reconciliation and return processes, transaction limits set by account holders

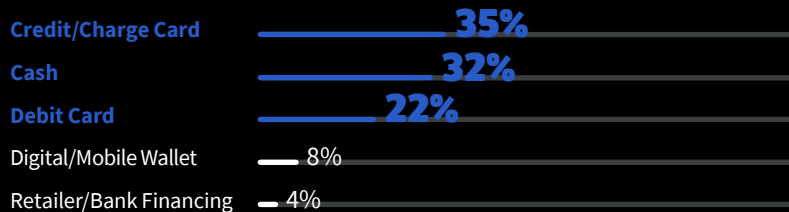
Did you know?

Pix has attracted more than 110 million Brazilian users (more than half the population) in its first year of existence. Currently, Pix is mainly used for P2P payments but is increasingly being used to purchase goods and services as well.

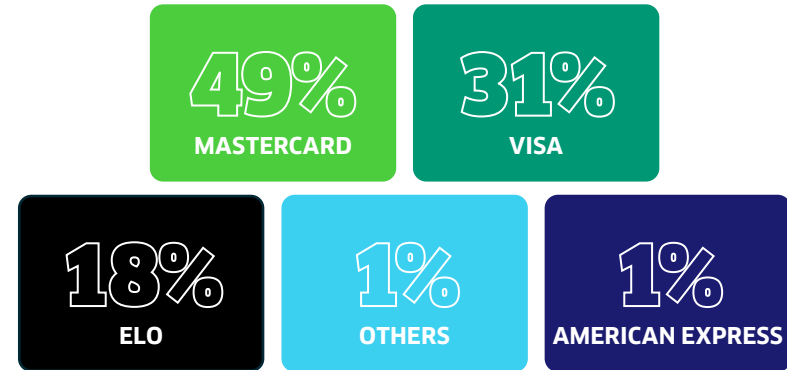
2021 e-com mix by payment method



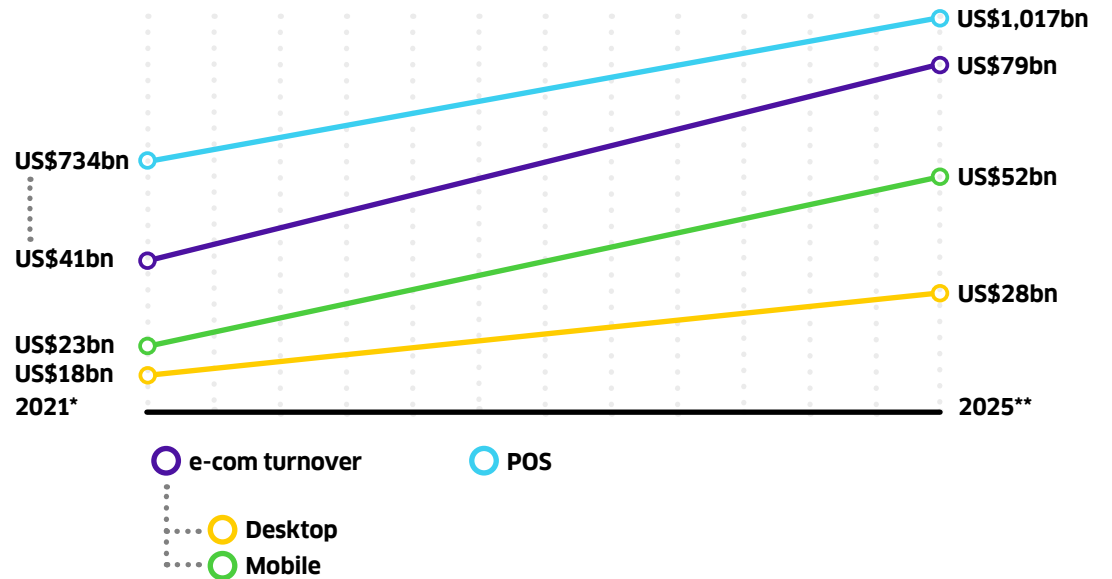
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



CANADA

Canadian consumer spending thrived in 2021, with e-commerce projected to reach 15% CAGR through 2025. With 50.4% of 2021 share, credit cards remain Canadians' first choice for e-com payments, outpacing all other methods. But through 2025, credit cards and bank transfer will both see declines, while debit cards, digital wallets and BNPL will see increasing share of e-com spend. At the POS, credit and debit cards combined account for more than three-quarters of spend, with share of each projected to see slight increases through 2025.

Payments Canada is expected to launch its Real-time Payment Rail (RTR) in 2022. While RTR was originally planned for multiple releases beginning in 2020, Payments Canada determined after consulting with industry partners that a single release would be more efficient. RTR will support the development of overlay services to serve as a platform for innovation for consumer, commercial and government payment services. The government is also exploring open banking mechanisms to give customers greater control of their financial data and safe access to a wider range of financial services at reduced costs.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
9%	35%	15%	3%	13%	41%

Real-time payments

Name

RTR (Real-time Payment Rail)

Year live

Planned for 2022

Average daily volume

N/A

Average daily value

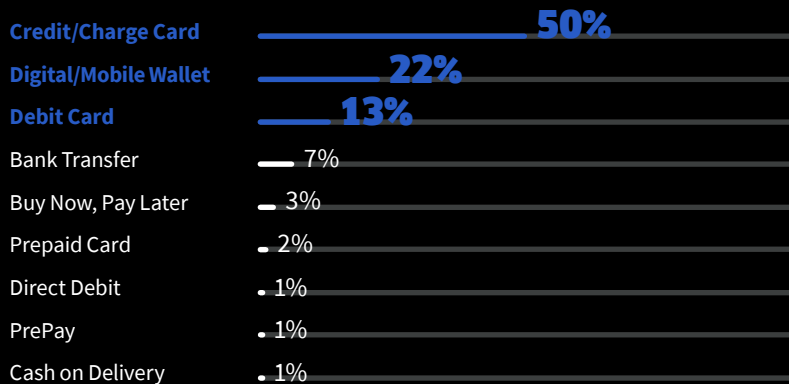
N/A

Overlay Services: N/A

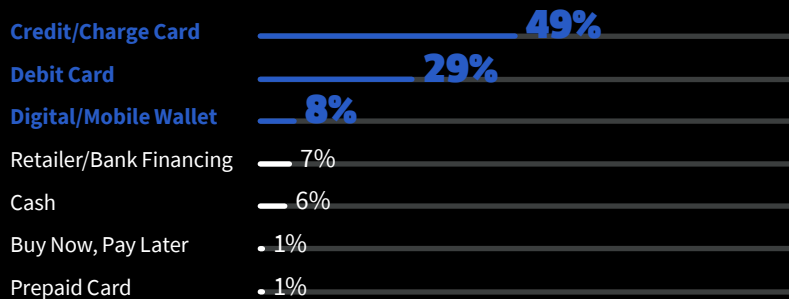
Did you know?

Cash still matters to Canadian consumers but the shift to electronic payments at the POS is expected to continue after a brief respite in 2021. By 2025, cash's 3% projected share of POS transaction value will be among the lowest in the world.

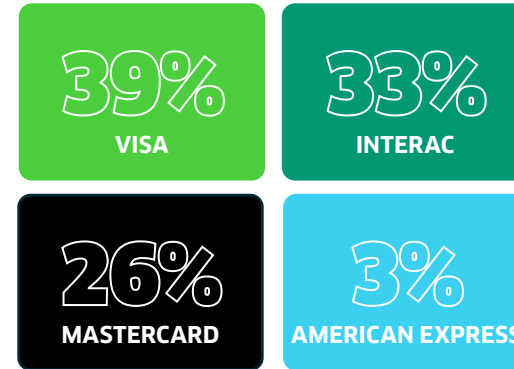
2021 e-com mix by payment method



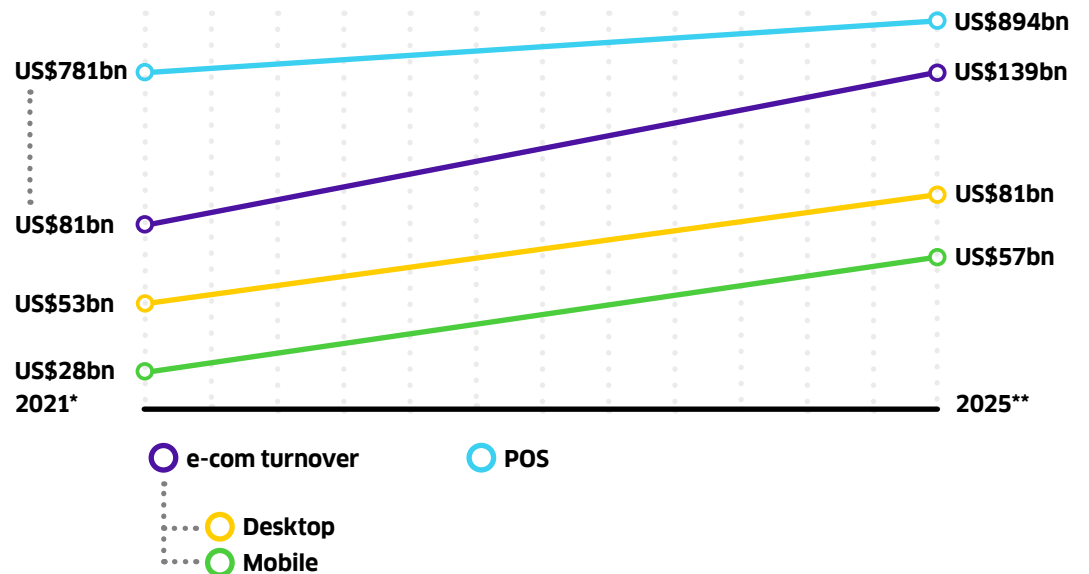
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



CHILE

Though comparatively small, Chile's e-commerce is growing fast, nearly doubling since 2019. That growth is fueled mostly with cards: 41.1% for credit and 28.1% for debit in 2021. Bank transfers remain popular, though falling below 10% share in 2021, while digital wallets growth reached 11.7% e-com share in 2021. Cash continues its pandemic-accelerated fall: dropping from 53.5% in 2018 to 27% in 2021, it is projected to drop to 13.1% by 2025. POS gainers are expected to be retailer financing, BNPL and mobile wallets; the latter is expected to nearly double from 6% to 11.5% of POS share by 2025.

After a long gestation, real-time payments are on the rise with strong growth, and doubling the volume of payments over last year. TEF allows Chilean consumers and businesses to initiate instant retail payments with a response time of around 10 seconds. The Central Bank of Chile published the new regulatory framework to compensate and settle low-value payment operations in March 2021. The initiative intends to ensure the continuity of the payment system and improve financial inclusion in a country with a very disparate population.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
8%	50%	18%	8%	11%	59%

Real-time payments

Name

TEF (Transferencias Electrónicas de Fondos)

Year live

2008

Average daily volume

1.95M

Average daily value

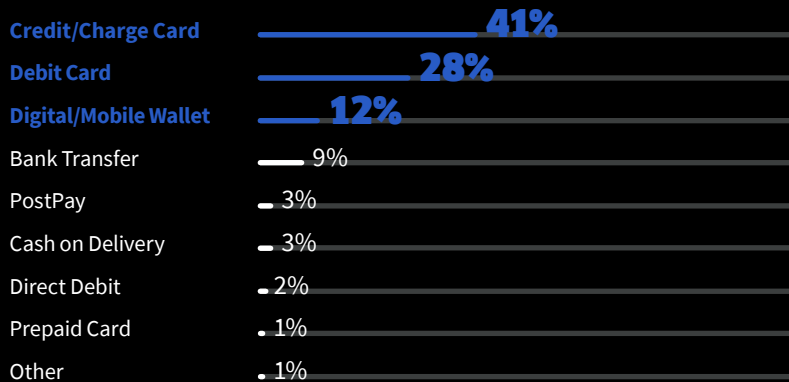
N/A

Overlay Services: N/A

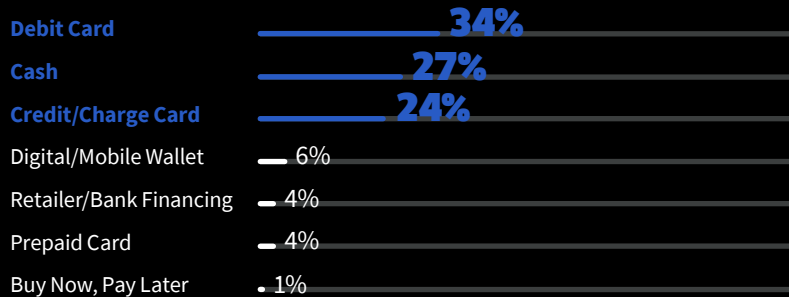
Did you know?

Chile features a vibrant, fast-growing and highly competitive market among digital and mobile wallets. Chilean consumers have a wide array of choices, including [PayPal](#), [MACH Pay](#) (from digital bank [MACH](#)) and [FPay](#) (from regional retail giant [Falabella](#)).

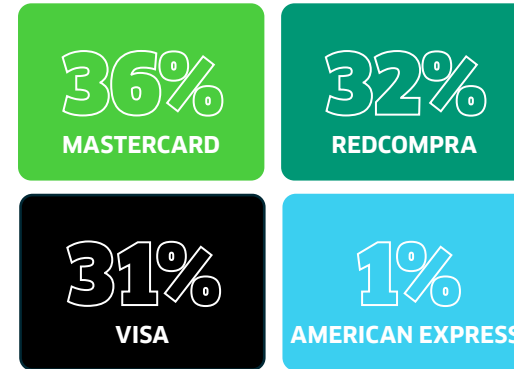
2021 e-com mix by payment method



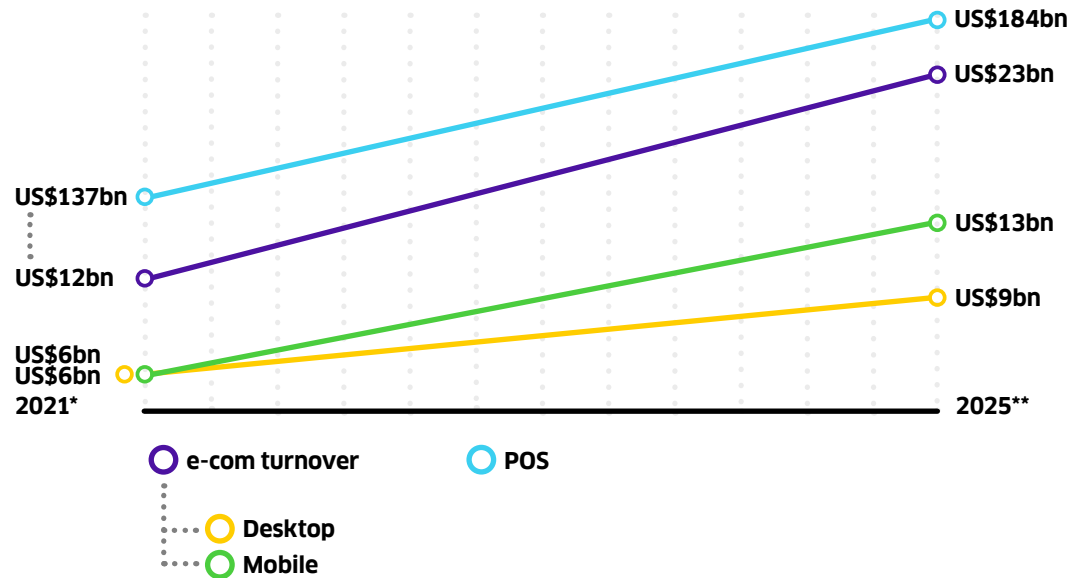
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



CHINA

E-commerce in China is overwhelmingly dominated by digital wallets, representing nearly 83% of e-com transaction value, a jump of more than 10% share since 2020 alone. Connecting with Chinese consumers requires accommodating the leading digital wallets, [Alipay](#) and [WeChat Pay](#). These same wallets also represent a majority (54% in 2021) of POS transaction value, primarily via QR codes. Credit and debit card payments accounted for nearly 12% of e-com and 30% of POS payments in 2021. Cash will fall below 10% of POS transaction value in 2022, though the [looming introduction of a CBDC](#) by [The People's Bank of China](#) will significantly disrupt the current payment landscape.

On the real-time payments front, China's Internet Banking Payment System (IBPS) grew volume by only 11%, but the value transacted has increased by more than 80%. IBPS has no open API interface but supports P2P, P2B and B2P payments and bill payment, direct debits and corporate sweeps. The second generation of IBPS will feature inter-bank cash advance for credit cards and real-time agent collection from contracted accounts at other banks in corporate internet banking.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
10%	69%	12%	7%	11%	75%

Real-time payments

Name

IBPS (Internet Banking Payment System)

Year live

2010

Average daily volume

42.8M

Average daily value

RMB 557.5B (US\$80.8B) (FY20)

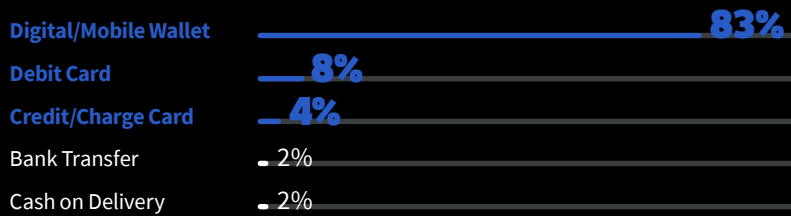
Overlay Services:

Enables credit-card and other e-commerce transactions; inter-bank account inquiry for cross-bank account management for multiple accounts; consumer mobile phone number payment function

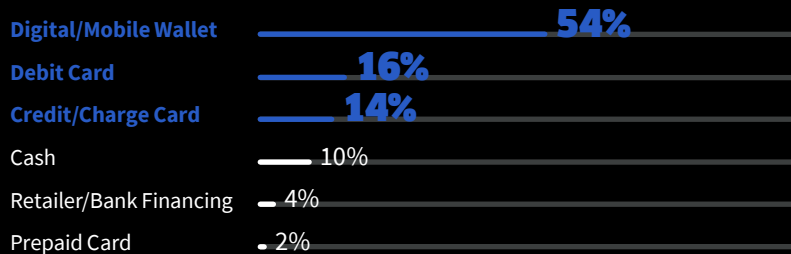
Did you know?

E-commerce in China is unlike anywhere else. Marketplaces, “minis” (in-app programs) and super apps are everything, with [Baidu](#), [Tmall](#), [Taobao](#), [JD.com](#), [WeChat](#) and Weibo being the most popular destinations. Selling in China requires an experienced payment partner to navigate local complexities such as setting up a Wholly Foreign Owned Enterprise (WFOE).

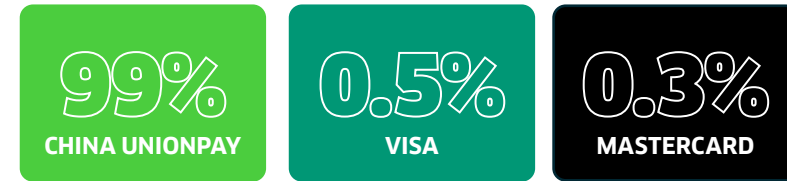
2021 e-com mix by payment method



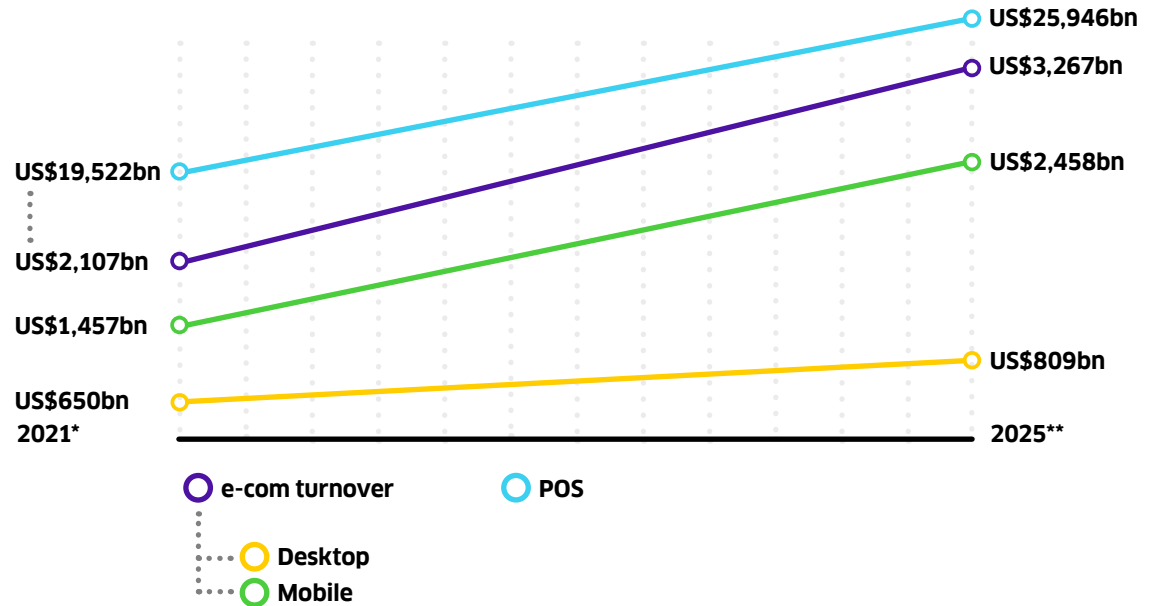
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



COLOMBIA

The Colombian economy rebounded in 2021 from the pandemic-induced recession with 9% overall and 14% e-com CAGR projected through 2025. Cards accounted for over half of e-com transaction value in 2021, with credit (34.7%) outpacing debit (18.9%). Bank transfers earned 16.5% share in 2021, digital wallets continue to grow (13.6%) and COD is holding strong with 10.4% share. Cash remains essential among Colombian consumers, rebounding from a dip in 2020 to represent 42.4% share. Gradual increases in credit (25.1%) and debit (21.5%) will lead to cards accounting for a majority of POS payment transaction value by 2023.

Initially only supporting small merchants, the new real-time payments service in Colombia is soon expanding with business-focused payment services through its open API. Developed by Bogota-based fintech Minka and ACH Colombia, Transfiya is a blockchain-based instant payment solution. It already has 11 participants, including seven banks (covering most of the domestic market), two mobile wallets, a financial cooperative and fintech Sedpe. With a maximum of 250,000 Colombian pesos per transaction, users can make up to five transfers daily, equivalent to a maximum of 1.25 million pesos per day.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
6%	54%	14%	8%	8%	62%

Real-time payments

Name
Transfiya

Year live
2019

Average daily volume
3,560

Average daily value
N/A

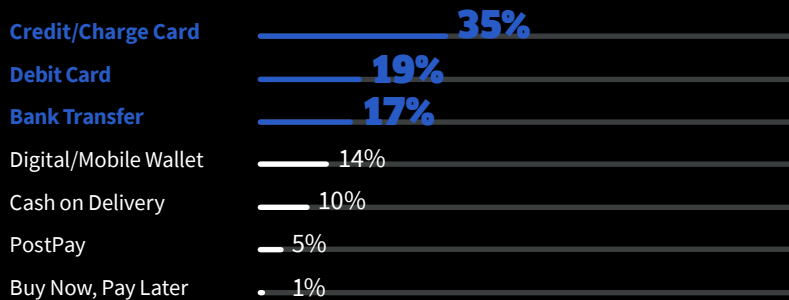
Overlay Services:

Proxy for payments using mobile number (recipient must accept and indicate which institution should receive the money), B2B payments with request to pay, QR code payments are in development

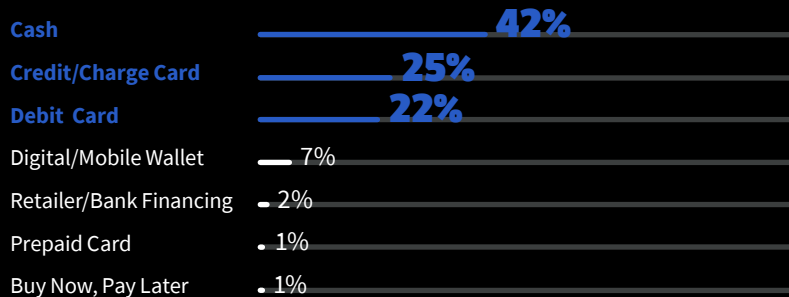
Did you know?

Colombian consumers are embracing innovative payment methods, especially in e-commerce. [Pagos Seguros en Línea \(PSE\)](#), a bank transfer method that works on ACH, is the most popular alternative payment method. Bogotá-based [Rappi](#) is an emerging super app capturing the imagination – and spend – of consumers across Colombia.

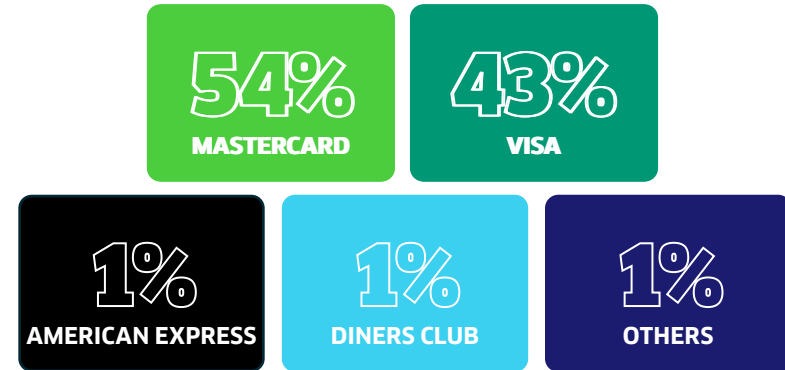
2021 e-com mix by payment method



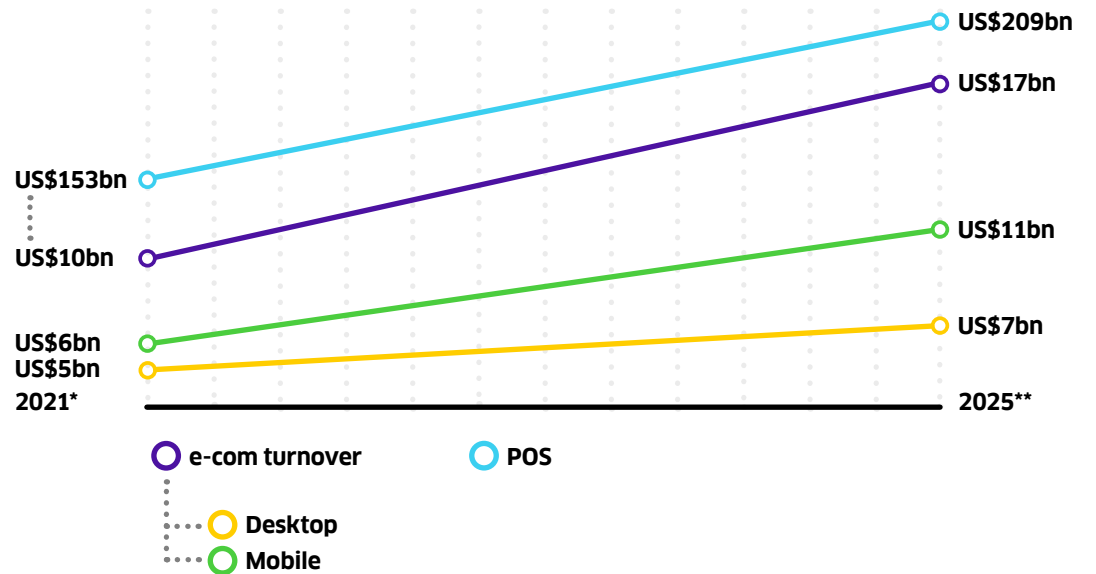
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



DENMARK

Card payments continue to lead the way among Danish consumers when shopping online. Led by issuers [Danske Bank](#) and [Nordea](#) (Nordea Bank Danmark A/S), debit cards (26.8%) and credit cards (23.2%) combined account for half of all e-commerce payment value. Danske Bank's [MobilePay](#) leads among digital wallets that are projected to surpass debit cards in 2022, reaching nearly 30% e-commerce share by 2025. Debit dominates the POS with 59% share, while cash continues to decline. In 2021, cash fell below 10% of POS payment volume and is projected to fall below 4% by 2025.

Mastercard now manages the Straksclearingen real-time payment service RealTime 24/7, having acquired the majority of Nets corporate services business (clearing and settlement, instant payment infrastructure, bill payment and e-invoicing applications). RealTime 24/7 is a member of SEPA and is fully aligned with the SCT Inst rulebook. Denmark is part of the forthcoming P27 pan-Nordic real-time payment platform that will establish links to eurozone payments. It's expected to go live in 2022 with its first transaction.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
20%	53%	10%	2%	25%	59%

Real-time payments

Name

Straksclearingen (also RealTime 24/7)

Year live

2014

Average daily volume

N/A

Average daily value

DKK 1.6B (US\$245M)

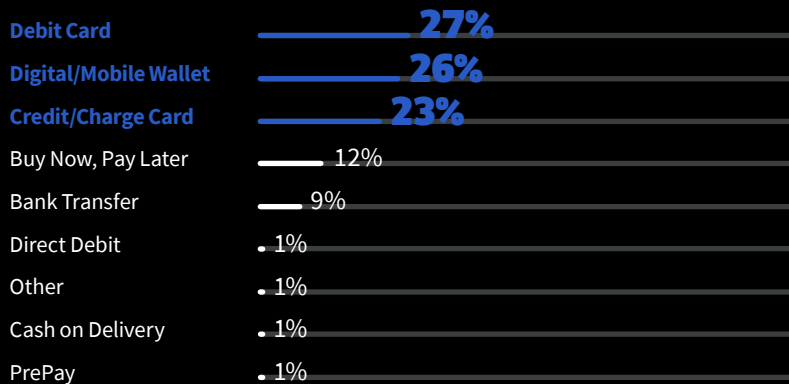
Overlay Services:

Aliases using mobile number or email; mandate management service to approve payments on behalf of debtor; request to pay; StoreBox app makes it possible to receive all receipts digitally

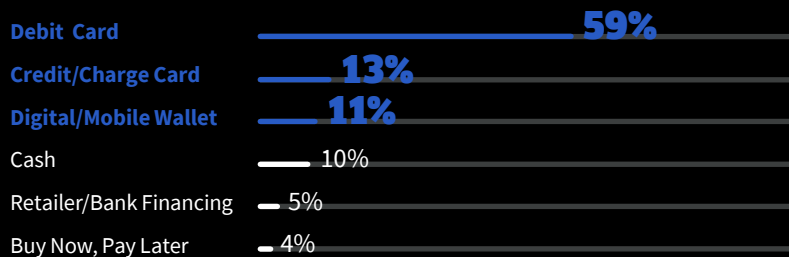
Did you know?

BNPL is wildly popular in Denmark. Led by [AfterPay](#), [Cashper](#), [Divido](#), [Klarna](#) and Danish firm [ViaBill](#), BNPL grew by more than 50% in 2021 to account for 11.7% of e-commerce sales, while earning 3.6% of transaction value at the POS.

2021 e-com mix by payment method



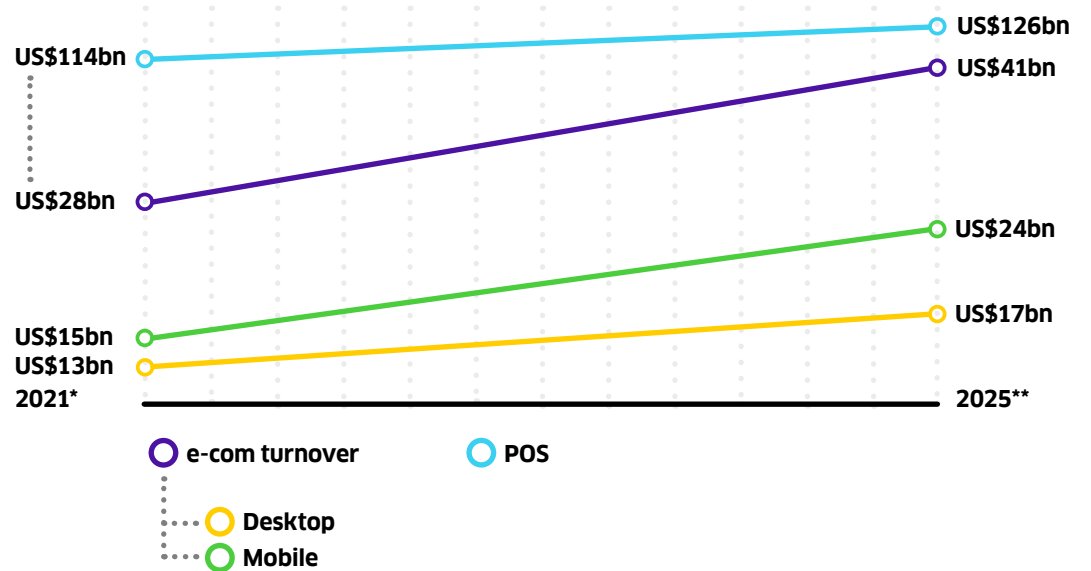
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



FINLAND

Payment methods show remarkable balance and stability among Finnish consumers shopping online. Led by bank transfers (31.3%) and digital wallets (22.6%), credit cards, debit cards and BNPL each earned at least 10% share. Credit and debit card shares are projected to fall slightly through 2025. Digital wallets will make the largest jump, growing to approximately 32% share by 2025. In contrast, debit dominates POS spend, earning more than 60% share in 2021. Cards in total account for 79% of POS spend. Mobile wallets are expected to more than double POS share, from 6.8% in 2021 to 15.6% in 2025.

Automatia, operator of the Finnish nationwide ATM network and acquired by Loomis AB in 2020, launched a highly successful mobile payment multi-banking platform, Siirto, in 2017. This mobile-only service is separate from the SCT Inst service currently being rolled out, with different terms, rules, contracts, pricing and technical interfaces. Banks operating in Finland have agreed to remove the upper limit for SCT Inst transfers within Finland, and each bank can decide its own implementation timeline for SCT Inst.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
15%	40%	11%	4%	19%	45%

Real-time payments

Name	Year live
SCT Inst	2019 (ARPP in 2017)
ARPP (Automatia Real-time Payment Platform)	

Average daily volume	Average daily value
35,000	€5M (US\$5.5M)

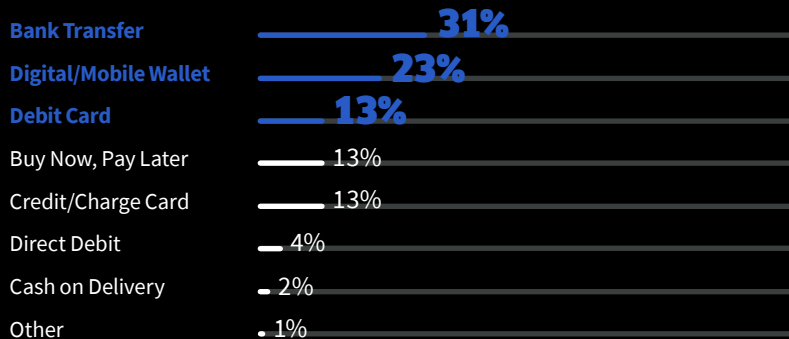
Overlay Services:

On Siirto mobile service: Alias/proxy payments through mobile number, request to pay, employee salary payments and pension contributions, insurance premiums, withholding taxes and reports to the authorities, QR code payments, payee identification through Siirto phone number

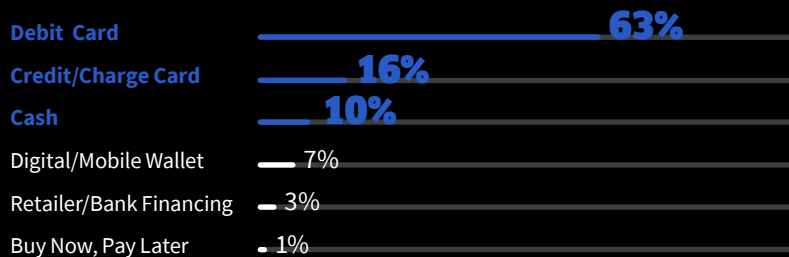
Did you know?

Bank transfers are the most popular way for Finnish consumers to pay for e-commerce. Connecting with shoppers online in Finland starts with offering bank transfer services such as [Paytrail](#) and [Trustly](#), along with popular digital wallets like [PayPal](#), [MobilePay](#) and [Nordea Wallet](#).

2021 e-com mix by payment method



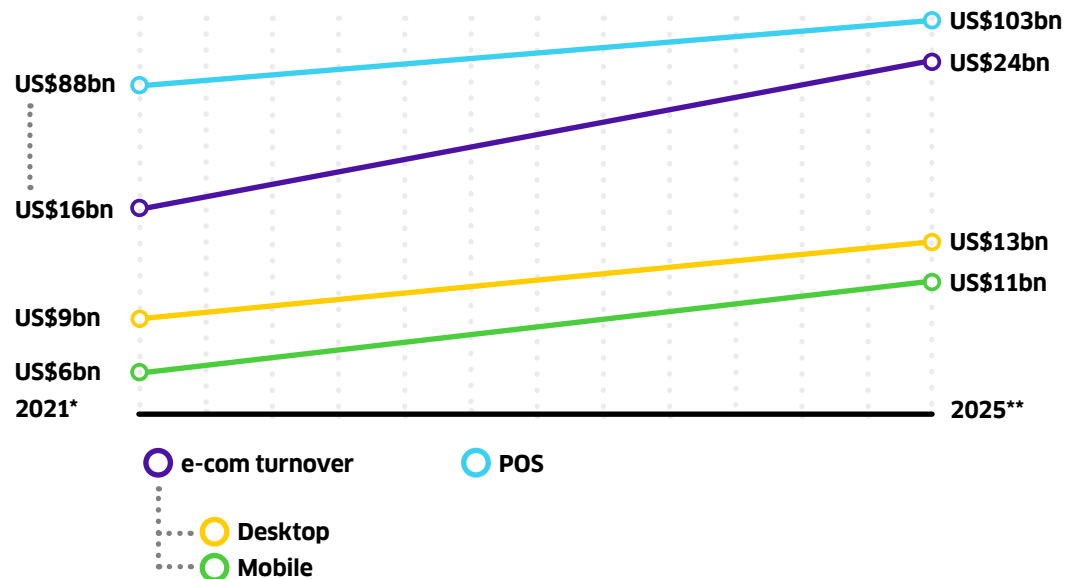
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



FRANCE

French e-com expansion of 9% CAGR is projected through 2025, while payment methods demonstrate stability. Cards combined accounted for slightly more than half of e-com transaction value in 2021, with credit (34.9%) outpacing debit (16.6%). By 2025, credit cards are projected to account for 38.1% share, remaining the most popular e-com payment method. Digital wallets account for more than 25% of e-commerce share which is expected to remain stable through 2025. Cards are even more dominant at the POS, accounting for 82% of transaction value in 2021.

124 French banks offer real-time payment connectivity through EBA Clearing and STET, representing 46% of banks and 90% of accounts. These payments only represent 2% percent of all transactions. Offering consumer, retail, e-com and bill payments (P2P and B2P), the insurance and travel markets use real-time payments for quick payouts and ticketing, with plans to add an API to enable additional services. In 2020, Banque de France and Monetary Authority of Singapore completed a cross-border payment and settlement using central bank digital currencies on a common network.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
13%	28%	9%	3%	16%	36%

Real-time payments

Name
SCT Inst

Year live
2017

Average daily volume
N/A

Average daily value
N/A

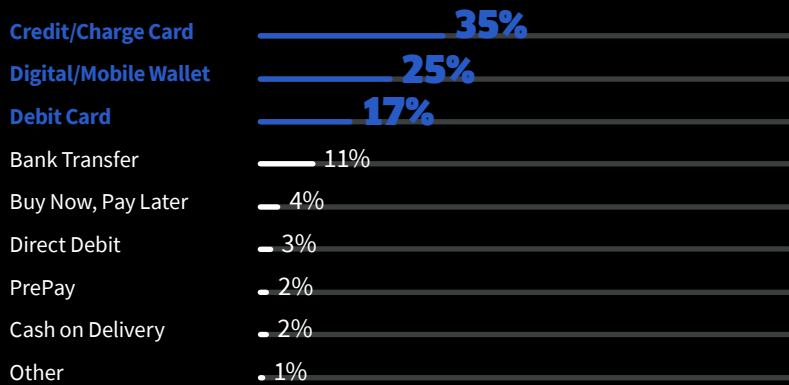
Overlay Services:

Instant compensation of insurance losses after presenting insurance claims in real time (Natixis Assurances), flight tickets and services (Air France and Natixis Payments), cross-border payments, aliases via proxy lookup with mobile number or email

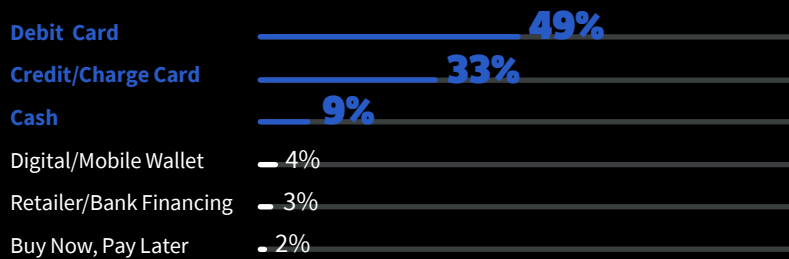
Did you know?

Point-of-sale payment transactions continue migrating to digital methods. Mobile wallet use is projected to more than double among French consumers at the POS, from 4% in 2021 to over 9% in 2025. Cash continues to decline, falling below 10% POS share in 2021 and projected to below 6% by 2025.

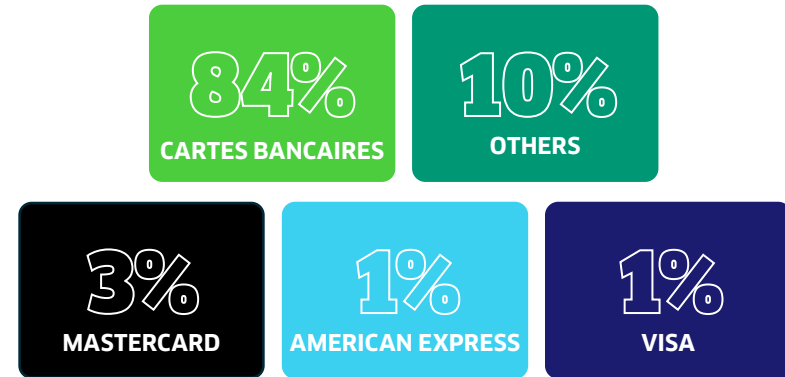
2021 e-com mix by payment method



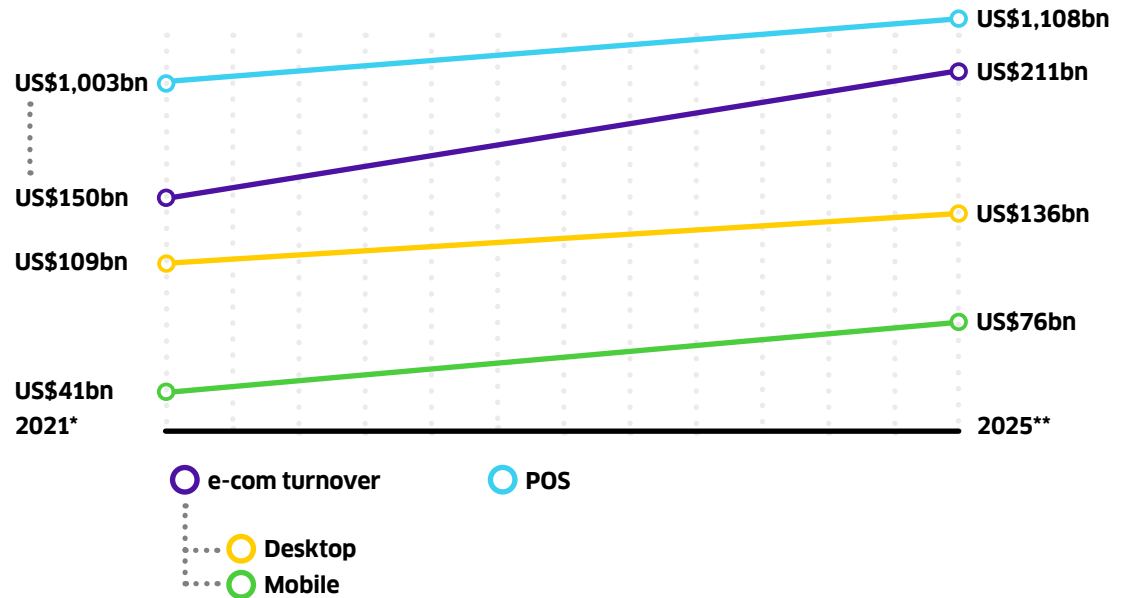
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



GERMANY

German e-commerce payments lean heavily to digital wallets and BNPL, together accounting for nearly half of all transaction value online. Bank transfers account for nearly 13% of e-commerce transaction value, while direct debit represented 15.8% in 2021 – among the highest rate in the world. Cash’s long reign will end in 2022, when debit cards are expected to become the leading POS payment method. Mobile wallets are projected to more than double from 2021 to account for 9.5% of POS spend by 2025.

Since German banks began offering SCT Inst payments, more than 1,250 payment service providers have joined, but when they begin offering the service is purely at their discretion. There is currently no API layer to facilitate overlay services, but one is planned. German banks joined with other major European banks from Belgium, France, the Netherlands and Spain to launch the European Payments Initiative (EPI). Its ambition is to create a unified, innovative pan-European payment solution leveraging SCT Inst, a card for consumers and merchants across Europe, a digital wallet and P2P payments.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
11%	37%	9%	4%	13%	46%

Real-time payments

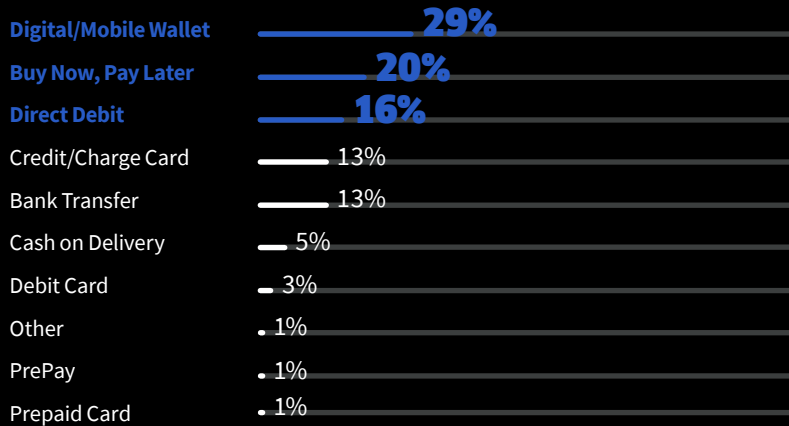
Name	Year live
SCT Inst	2017
Average daily volume	Average daily value
N/A	N/A

Overlay Services: N/A

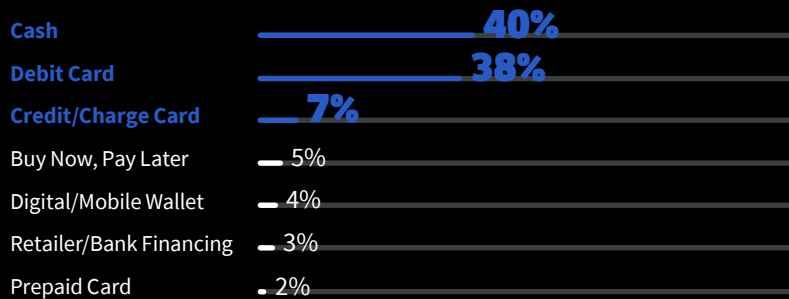
Did you know?

German consumers use cash at nearly four times the rate of those in France, and five times that of the Swedish.

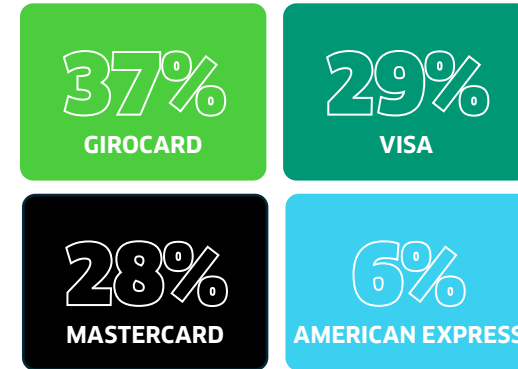
2021 e-com mix by payment method



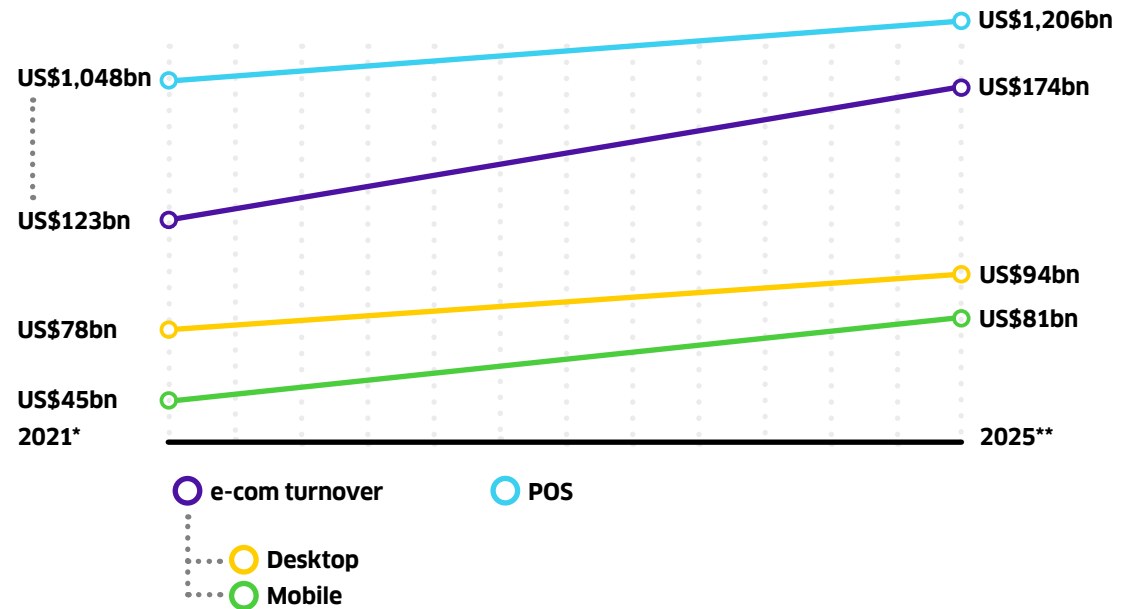
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



Direct Debit

Invoice Payments

* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



HONG KONG

Credit and charge cards remain the leading payment method among consumers in Hong Kong. Accounting for 42.8% of e-com transaction value in 2021, credit cards are projected to decline through 2025, yielding share primarily to digital wallets. Led by [AlipayHK](#) and [WeChat Pay HK](#), digital wallets will surpass credit as the leading e-com payment method by 2024. Credit cards will retain majority POS share through 2025, with mobile wallets increasing from 24.2% to 35.7% of POS value. Rebounding slightly at the POS in 2021, the long-term decline of cash is projected to continue, falling below 10% in 2022.

The real-time Faster Payments Service (FPS) in Hong Kong continues to grow, with volumes almost tripling and the value transacted almost doubling. FPS overlay services include proxy addressing (mobile number or email), interoperable QR codes, e-wallet support, multiple currency payments in Hong Kong dollar (HKD) and Renminbi (RMB), electronic direct debit authorization and HKID number linking.

With strong government support, many departments accept payments through FPS for paying fees and charges, including via FPS QR codes. Real-time cross-border remittance payments are set to rise as these services are added to FPS.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
10%	59%	10%	5%	12%	67%

Real-time payments

Name	Year live
FPS (Faster Payment System)	2018

Average daily volume
465.0K in HKD
618 in RMB

Average daily value
HKD 5B (US\$ 644.61M)
RMB 69.3M (US\$ 10.24M)

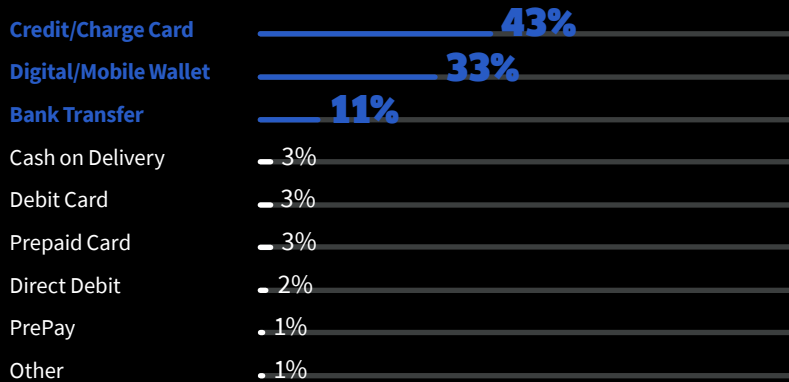
Overlay Services:

Account alias service; QR code payments; transfers between digital wallets; currencies; direct debit for bill payment and e-commerce

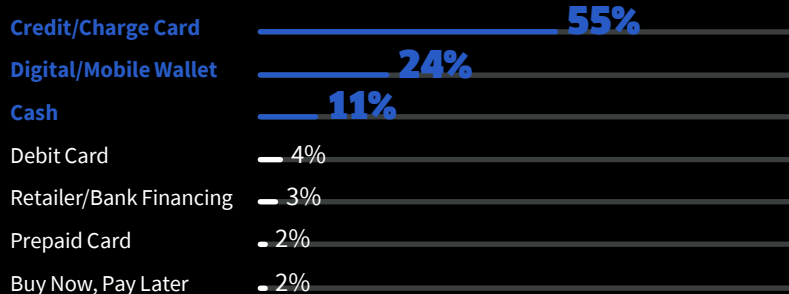
Did you know?

Credit cards in Hong Kong are essential, and the schemes are diverse: [American Express](#), [UnionPay International](#), [EPS](#), [Mastercard](#) and [Visa](#) are all widely used by e-commerce consumers. Digital wallets, including AlipayHK, Apple Pay, [O! ePay](#), [PayMe](#) and WeChat Pay HK are on the rise – and they're critical to capture sales.

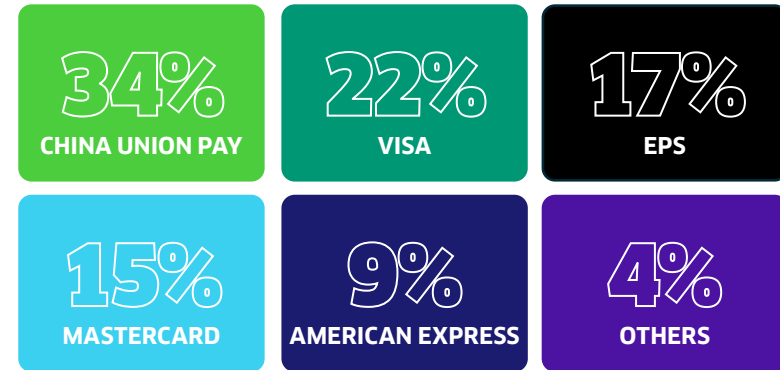
2021 e-com mix by payment method



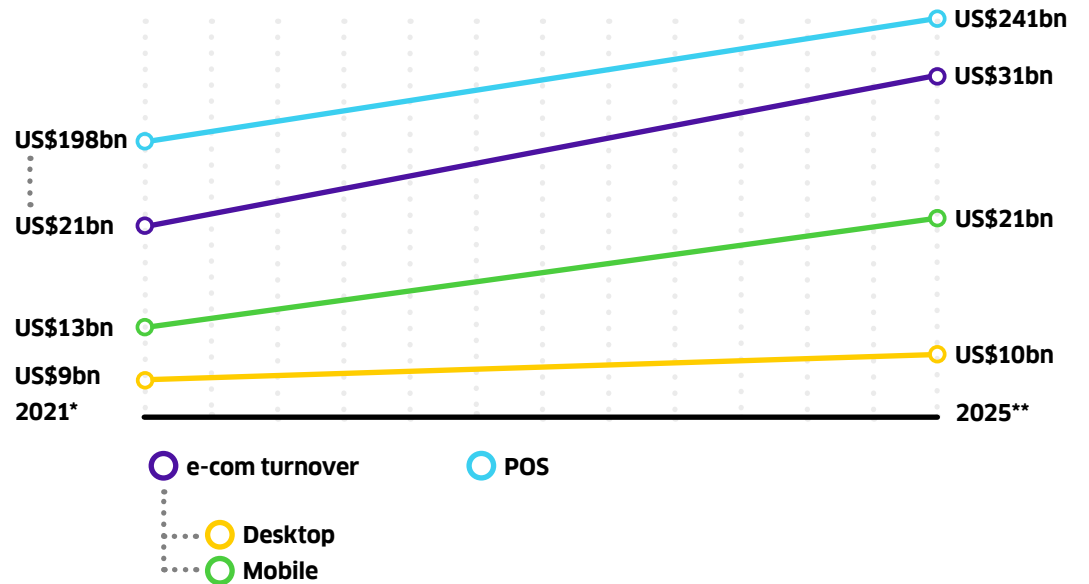
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



INDIA

India's e-commerce market continues to see double-digit growth rates and will nearly double by 2025. Digital wallets are the leading e-com payment method and are expected to retain majority share through 2025; local wallets [Paytm](#) and [PhonePe](#) compete with [Google Pay](#), [Amazon Pay](#) and others for this growing market. Though declining, bank transfers, COD and credit cards still retain meaningful e-com share, while debit cards are on an upward trajectory. While the long-term trend of digital payments replacing cash continues, cash remains a vital component of POS payments; the Indian rupee is projected to retain leading share at the POS until 2023 when it is surpassed by mobile wallets.

India continues to show strong real-time payment growth. The Immediate Payment Service (IMPS) from National Payment Corporation of India (NPCI) drives an ever-expanding suite of API-overlay services through the Unified Payments Interface (UPI), including invoice in a box for merchants to share invoices before a transaction. Corporate use cases include sharing payment links over SMS, email and WhatsApp, accepting payments for website or mobile app, and payouts and refunds directly to the source UPI ID.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
7%	58%	18%	7%	10%	64%

Real-time payments

Name

IMPS (Immediate Payment Service)
UPI (Unified Payments Interface)

Year live

IMPS 2010
UPI 2016

Average daily volume

70.2M

Average daily value

INR 193B (US\$2.64B)

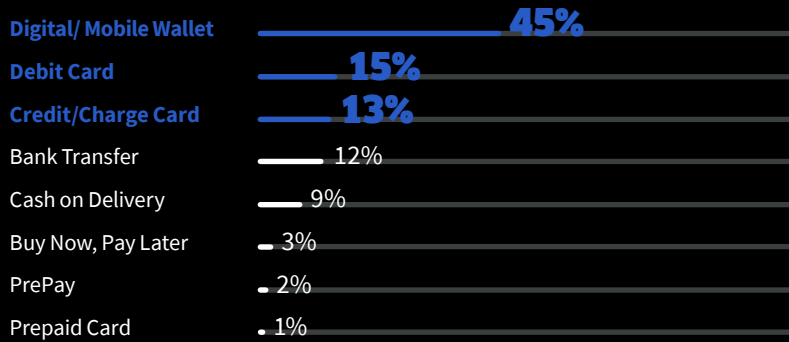
Overlay Services:

Link of overdraft account; UPI Autopay for recurring payments; balance inquiry; and QR code payments, split/share bill; foreign inward remittance to process the domestic leg; IPO subscription using UPI ID; UPI mandate with one time execution block funds; account alias services; request to pay; payments through WhatsApp and Google Pay

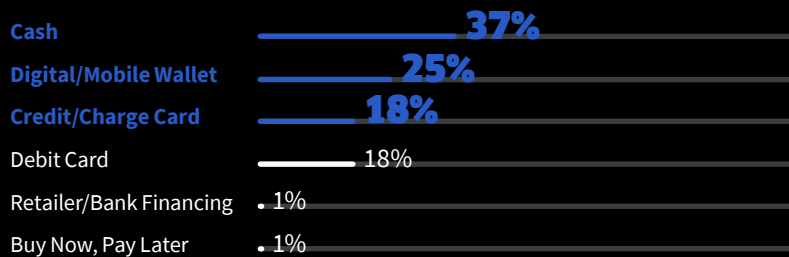
Did you know?

The [Reserve Bank of India \(RBI\)](#) and [National Payments Council of India \(NPCI\)](#) are active regulators in managing financial transactions. The Reserve Bank of India established the New Umbrella Entity (NUE) for private companies to manage retail payments. Six consortiums have applied for NUE licenses, including Facebook, Amazon, Alphabet, Paytm, Visa and Mastercard.

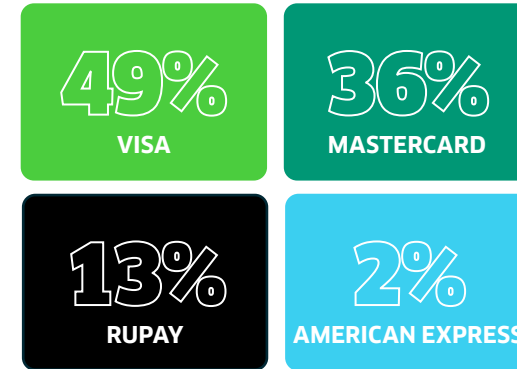
2021 e-com mix by payment method



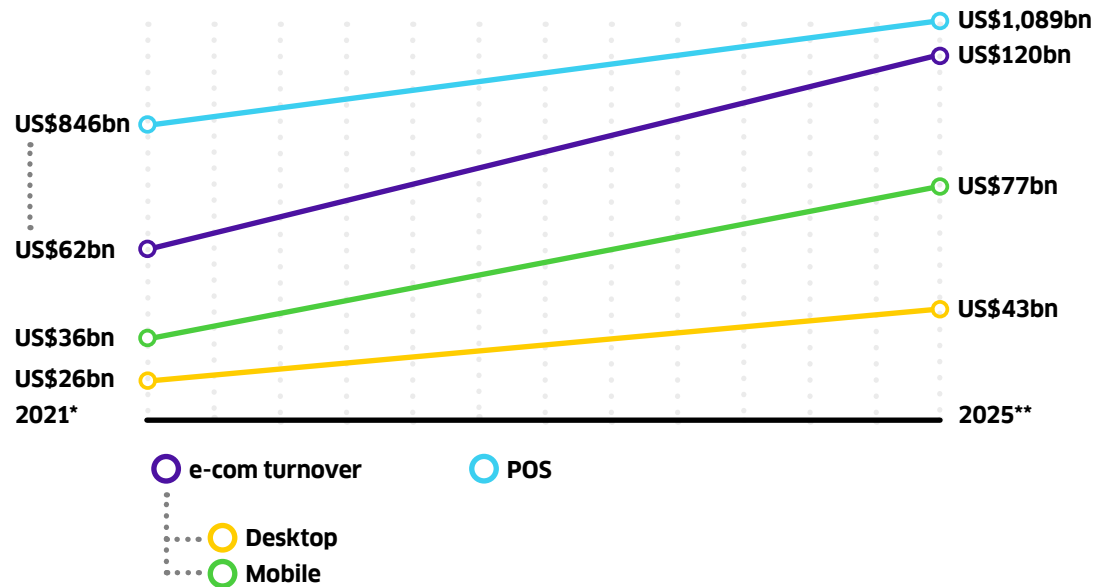
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



INDONESIA

Among the world’s fastest growing e-commerce markets, Indonesian e-commerce is increasingly concentrated in the super apps [Grab](#) and [Gojek](#). Super apps thrust digital wallets such as [OVO](#) and [DOKU](#) to a leading e-com payment share of 38.8% in 2021. Bank transfers, COD, credit card and debit cards – important components of the e-com payment mix in 2021 – are projected to lose share through 2025, mainly to digital wallets. Cash retained a majority (51%) share at the point of sale in 2021; that dominant position is projected to decline steadily, yielding leading share to mobile wallets by 2025.

Indonesia is not yet live with its BI-FAST blueprint for a real-time payment service, but full implementation is planned for 2022. BI-FAST is part of the Indonesian Payment System Blueprint 2025, and Bank Indonesia plans to develop an open API-based platform that integrates all payment channels. All payment service providers will use a standardized payment QR code (QRIS).

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
8%	63%	22%	4%	13%	70%

Real-time payments

Name	Year live
BI-FAST	Planned 2022
Average daily volume	Average daily value
N/A	N/A

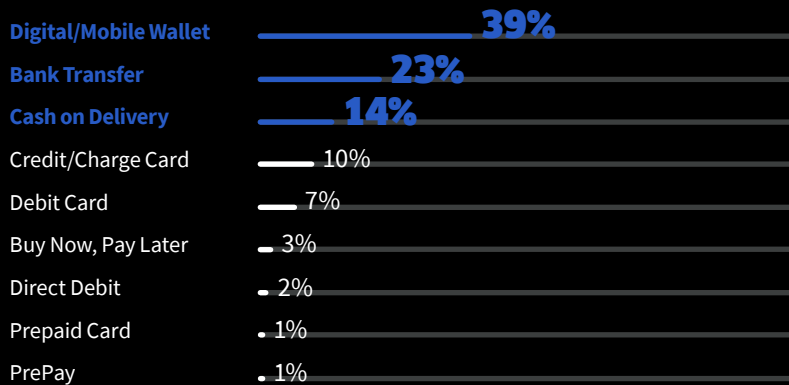
Overlay Services:

Planned: Proxy addressing with mobile number, residence number, email; real-time transaction notification; request to pay; single interface for mobile interoperability that connects payment instruments and channels

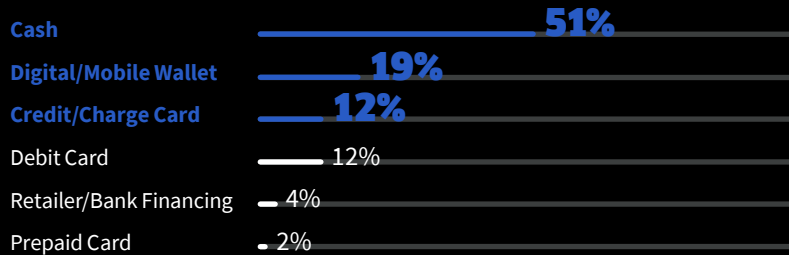
Did you know?

Indonesia has the world's fourth largest population, behind only China, India and the United States. Though its economy is a fraction of the size of those economic giants, Indonesia has an addressable market size comparable with Thailand. Indonesian consumers are quickly integrating into the global economy via mobile devices.

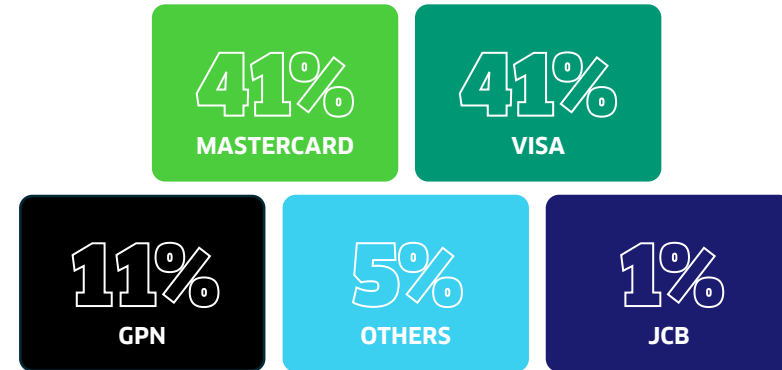
2021 e-com mix by payment method



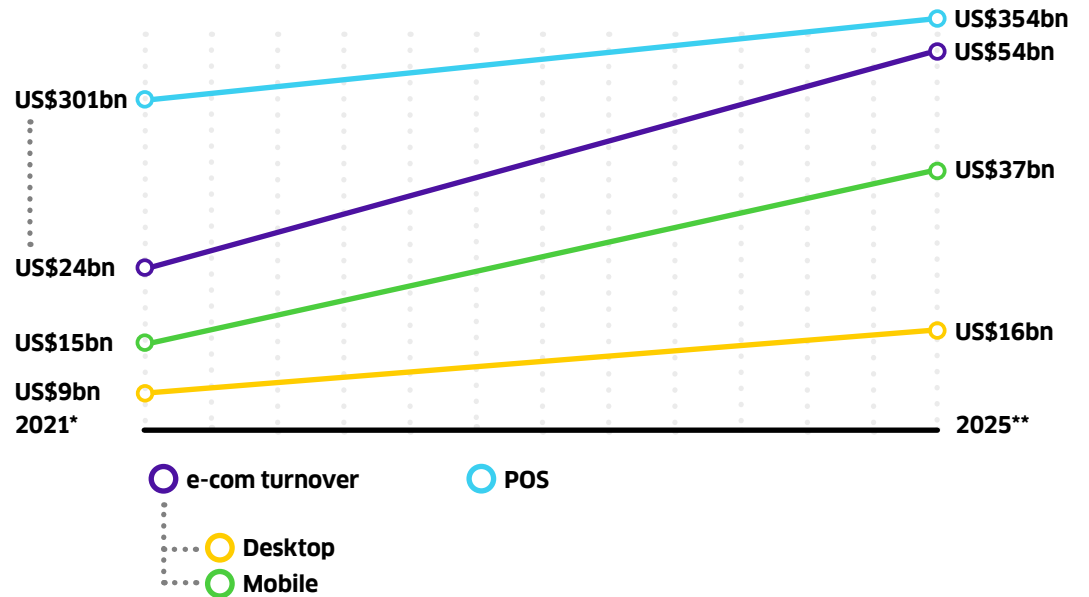
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



IRELAND

Led by [PayPal](#) and [Apple Pay](#), digital wallets exceeded 23% of e-com payment share in 2021 and are projected to increase to at least 28% by 2025. Credit and debit cards represent over 60% of e-commerce transaction value in 2021, with relative percentages (debit at 37.7% and credit at 23.6%) remaining essentially flat through 2025. In-store cards are even more dominant, accounting for more than two-thirds of POS spend. Both credit and debit card use are projected to grow at the point of sale, with debit passing the 50% threshold by 2023.

Ireland is one of the few countries in Europe that does not currently offer real-time payments. The bank collaborative Project Pegasus intends to address this with a mobile payment app called Yippay, offering SCT Inst payments routed via the current STEP2 SCT rails. Yippay will be an industry-wide open payment service that can be used by all financial institutions, including smaller financial institutions that issue euro-denominated IBANs to Irish customers. Meanwhile, a number of foreign banks and fintech disruptor apps in Ireland offer SCT Inst in Ireland via RT1 operator.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
10%	44%	10%	6%	12%	48%

Real-time payments

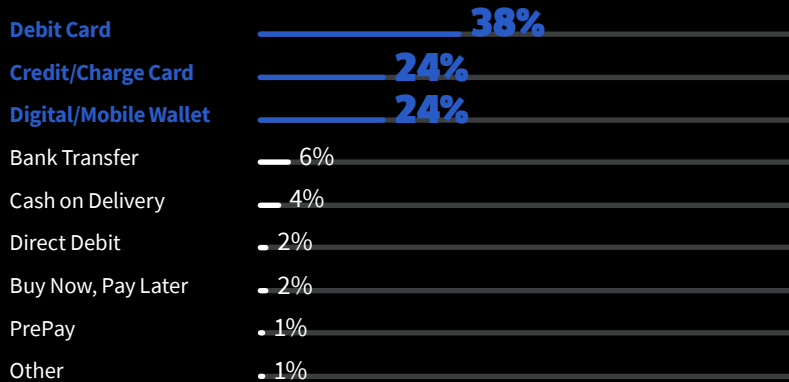
Name	Year live
SCT Inst	Available but not offered
Average daily volume	Average daily value
N/A	N/A

Overlay Services: N/A

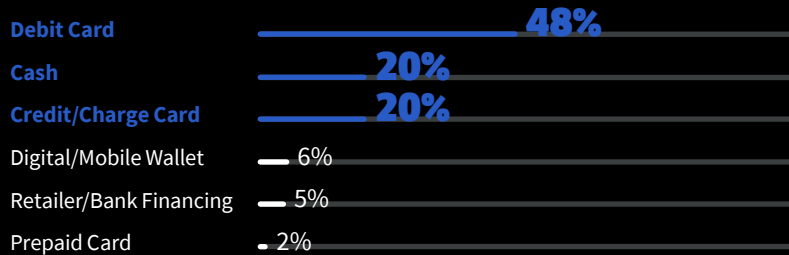
Did you know?

Irish consumers are quickly turning away from cash. The use of cash in Ireland fell by more than half between 2018 and 2021 – from 42.3% to 20.2% – and is expected to drop by half again by 2025 when it will fall below 9% of POS transaction value.

2021 e-com mix by payment method



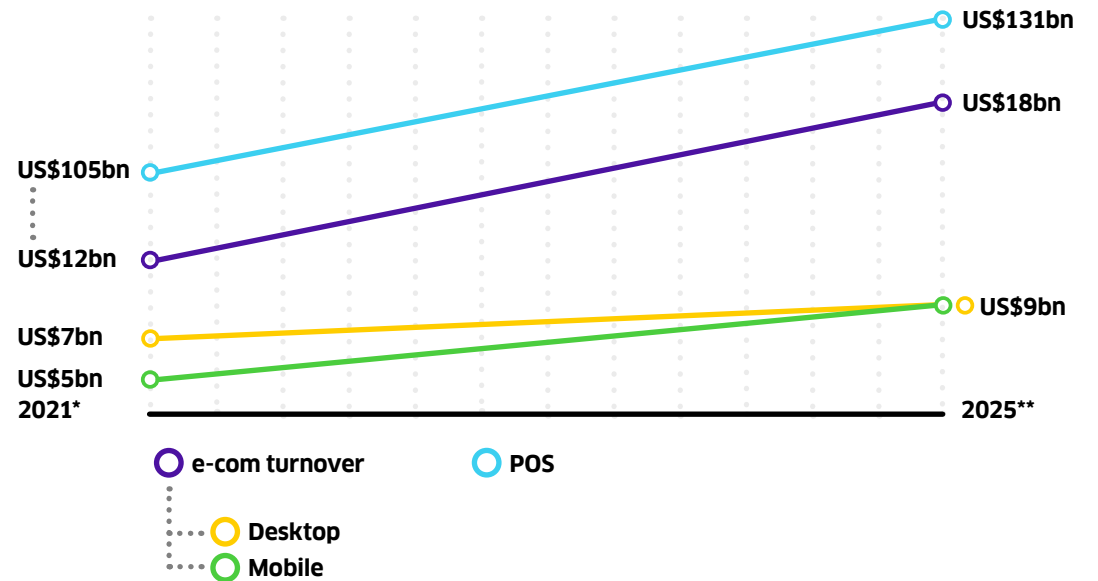
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



ITALY

Italy is experiencing powerful e-commerce growth, projecting 16% CAGR through 2025. Digital wallets are Italians' preferred payment method when shopping online, accounting for 33.6% of e-commerce transaction value. Credit cards (23.9%) are projected to decline through 2025, while debit is forecasted for a slight uptick from a 7.6% 2021 share. Cash remains strong at the POS at over 27.2% in 2021 and is expected to maintain nearly 20% share through 2025. Mobile wallets surpassed 10% POS share in 2021 and will continue to rise, while credit, debit and retailer/bank financing will maintain steady share through 2025.

As part of SEPA, Italy has adopted the SCT Inst real-time payment scheme through RT1 and TIPS. As of 2020, 272 payment service providers have registered. To boost uptake, an API service is planned, and domestic automated clearing houses will have to transfer to TIPS to offer instant payment services. Fintech SIA has developed Jiffy, a solution for domestic and European payments as SEPA Credit Transfers to both pan-European instant payment platforms (RT1 and TIPS) for P2P and P2B payments in Italy. It has also enabled a request to pay service through EBA Clearing for Banca Sella.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
7%	58%	16%	4%	10%	61%

Real-time payments

Name	Year live
SCT Inst	2017

Average daily volume	Average daily value
N/A	N/A

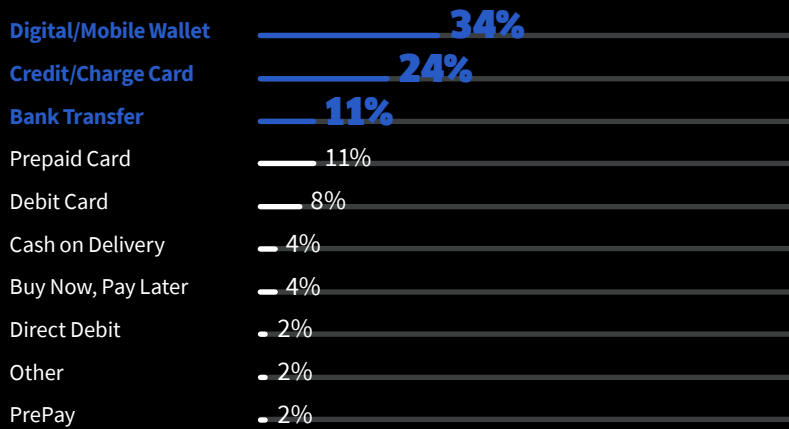
Overlay Services:

Account alias services, request to pay (under development)

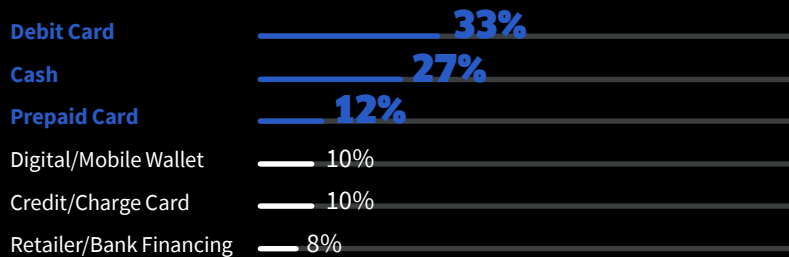
Did you know?

Italy is among the world's strongest markets for prepaid cards. Prepaid cards led by [Nexi](#) and [PostePay](#) account for more than 10% share in both e-commerce and at the point of sale, shares that are expected to remain steady through 2025.

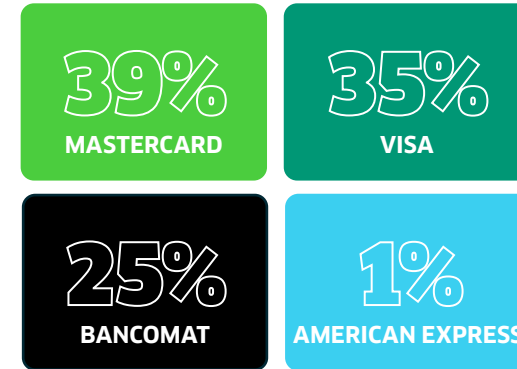
2021 e-com mix by payment method



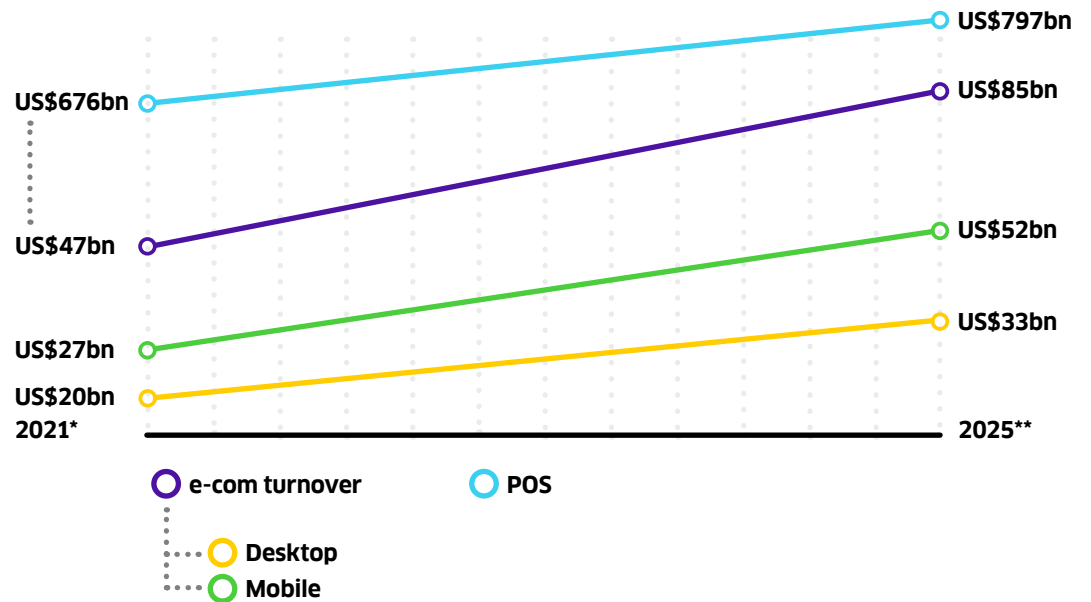
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



JAPAN

In Japan's mature economy, e-commerce is expanding at twice the rate of POS. Credit and charge cards lead the way among Japanese consumers, accounting for 58.3% of e-com payments in 2021. Digital wallets are the only other payment type to earn double-digit e-com share, 12.4% in 2021. Digital wallets and BNPL are projected to gain share through 2025 at the expense of bank transfers and COD. Cash fell below 50% POS share in 2021 but will retain the POS share lead through 2025; credit cards and mobile wallets such as [PayPay](#) continue to gain share.

Despite the expansion of the operations window to include weekday nights, weekends and holidays, the Japan Payment Clearing Network (Zengin) had only modest growth in real-time payment volume and value transacted. Zengin covers all non-card-based electronic payments for consumers, retailers, businesses and government agencies, including credit, payroll, remittance, collection, government fines and fees, bonus, stock dividends and benefits. Its Next-Generation Payment Systems task force report includes a scheme to develop a common platform API gateway (APIGW) to Zengin System, planned for 2022.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
11%	32%	6%	2%	12%	37%

Real-time payments

Name

Zengin

Year live

1973

Average daily volume

4.46M

Average daily value

JPY 8.4T (US\$78.3B)

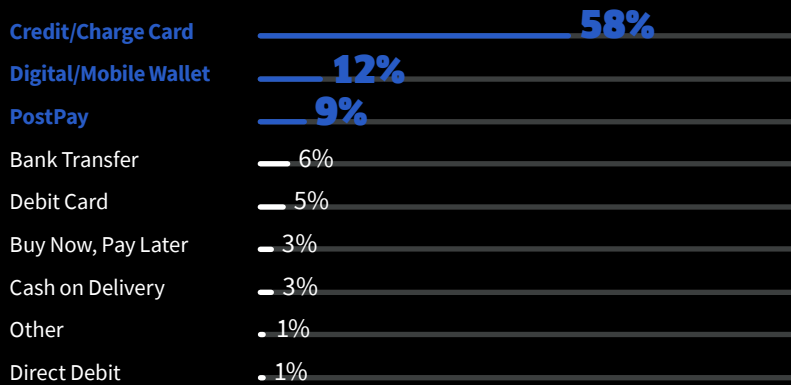
Overlay Services:

Bulk and pension payments, post-dated credit, payroll, benefits and bonus transfers, dividend payouts, pension payments. Links with Zengin Electronic Data Interchange System, allowing EDI information (payment notification numbers, invoice numbers, etc.) to attach to transfer messages

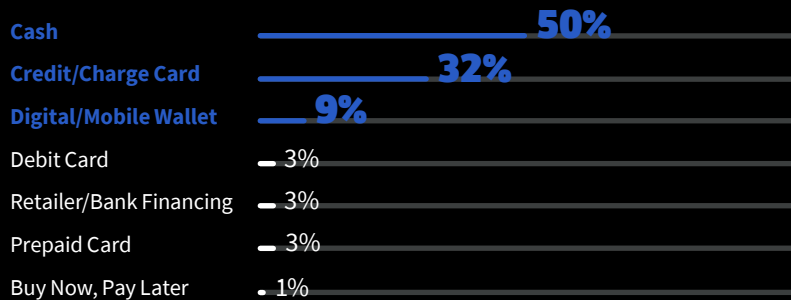
Did you know?

Japan's May 2021 Amended Payment Services Act provides greater regulatory flexibility for non-bank institutions to engage in banking and payment services. This new three-tiered system for money transmitters invites competition by non-bank actors and recognizes a new global financial landscape of diverse financial agents.

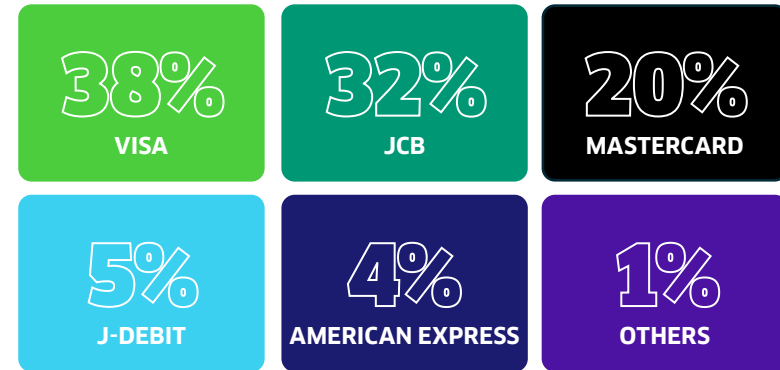
2021 e-com mix by payment method



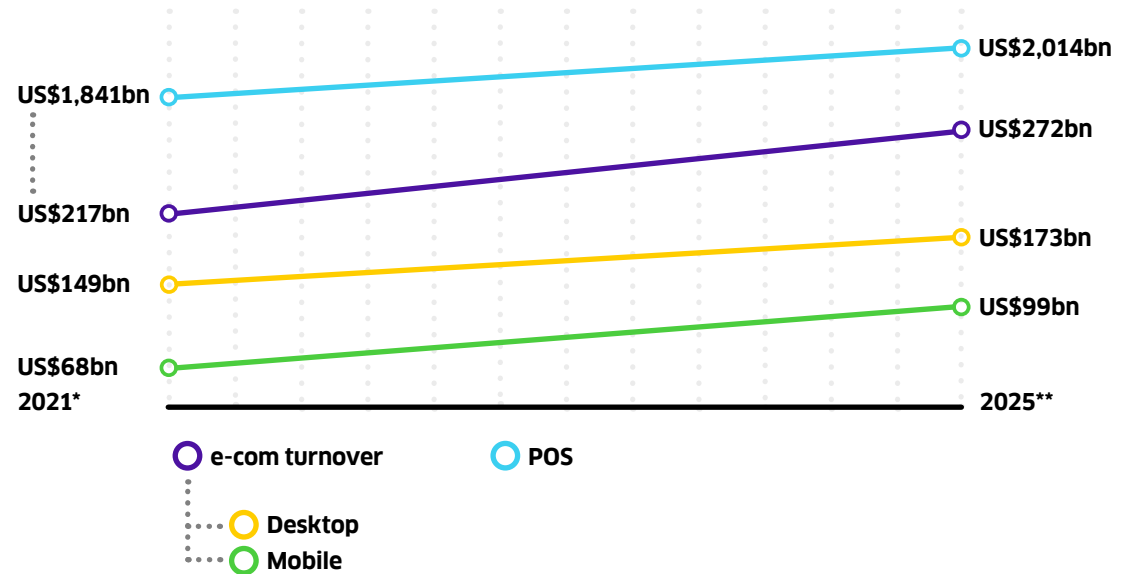
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



MALAYSIA

Malaysian e-commerce will nearly double by 2025 on the strength of 18% CAGR. Bank transfer is the leading e-com payment method with 29.8% share, though the diverse e-com payment market will see credit, debit, digital wallets and COD earn meaningful share. Digital wallets continue to grow, while BNPL solutions will exceed 10% share by 2025. Cash remains most popular at the POS with 39.4% share in 2021 but will drop dramatically to 15.1% share by 2025, trailing credit cards, mobile wallets and debit cards.

Since going live in 2019, the PayNet real-time payment service volumes have grown more than 800%. By 2025, Malaysia real-time payments are expected to account for 16% of all electronic payments by 2025 across all sectors. DuitNow is the leading service on PayNet and capabilities include request to pay, standardized QR payments, proxy payments and cross-border QR payments to Thailand. Links to Indonesia and Singapore were expected to go live in late 2021. Upcoming features include e-mandated real-time debit (DuitNow Auto-Debit) and cross-border instant credits with Singapore and Thailand (live 2022-23).

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
5%	63%	18%	7%	7%	68%

Real-time payments

Name

RPP (Real-time Retail Payments Platform)

Year live

2019

Average daily volume

N/A

Average daily value

N/A

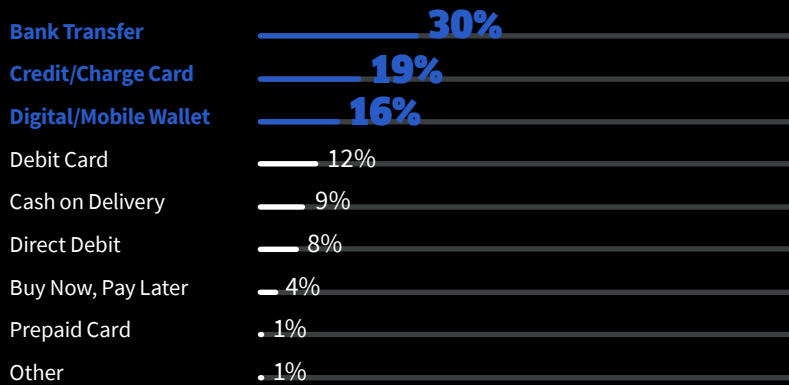
Overlay Services:

Proxy payments via mobile numbers; QR payments using national QR standard. Request to pay from consumer, business and government R2P planned to go live in 2022

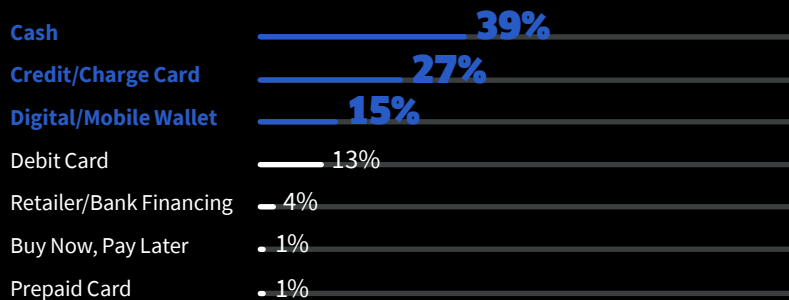
Did you know?

BNPL services are expected to nearly triple by 2025 to account for over 10% of Malaysian e-commerce spend. Consider offering Malaysian consumers popular BNPL services – [Atome](#), [Hoolah](#), [myIOU](#), [PayLater by Grab](#) or [Pine Labs](#) – to increase conversions and drive customer loyalty.

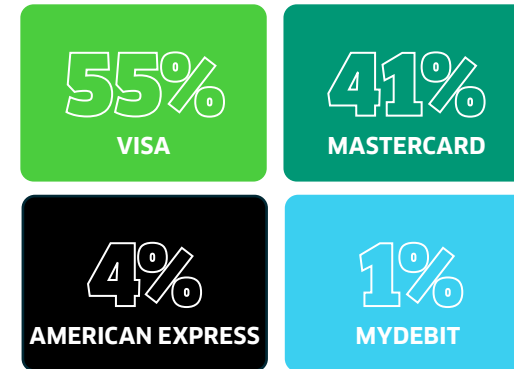
2021 e-com mix by payment method



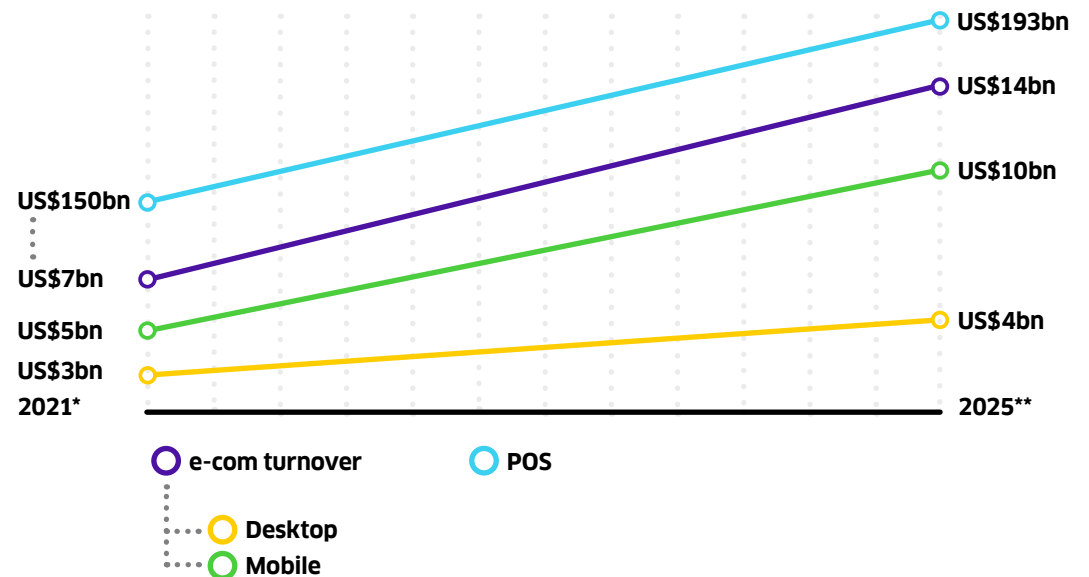
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



MEXICO

Mexican consumers prefer cards for e-com payments, with credit (34.6%) and debit (19.3%) leading the way. Card shares will decline slightly through 2025, primarily due to the growing popularity of digital wallets. Led by [PayPal](#), [BBVA Wallet](#) and [Mercado Pago](#), digital wallets accounted for 26.9% in 2021 and are projected to lead e-com payments by 2024. Cash is the leading POS payment method, though its share is projected to decrease from 41.3% in 2021 to 29% by 2025, closing the gap between cash and card payments. Mobile wallets at the POS will nearly double from 7.4% in 2021 to 15.2% in 2025.

The Banco de México recently launched mobile payments through CoDi, which drastically modernizes and improves the long-established SPEI service that it developed with commercial banks back in 2004. CoDi offers P2P, P2B, B2B and B2P payments through internet or mobile banking, including recurring payments for expenses like rent, loan repayments and mortgage payments. As a result, real-time payment volumes grew by 60% year over year. The Bank of Mexico extended the SPEI central payment rails to develop the CoDi mobile payments ecosystem, which effectively eliminates the need for banks to develop their own mobile offerings for money transfers.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
6%	56%	17%	6%	9%	65%

Real-time payments

Name

SPEI (Sistema de Pagos Electronicos Interbancarios)
CoDi (Cobra Digital)

Year live

2004
2019

Average daily volume

4.2M (SPEA & CoDi combined)

Average daily value

MXN 758.4B (US\$35.6B)
(SPEA & CoDi combined)

Overlay Services:

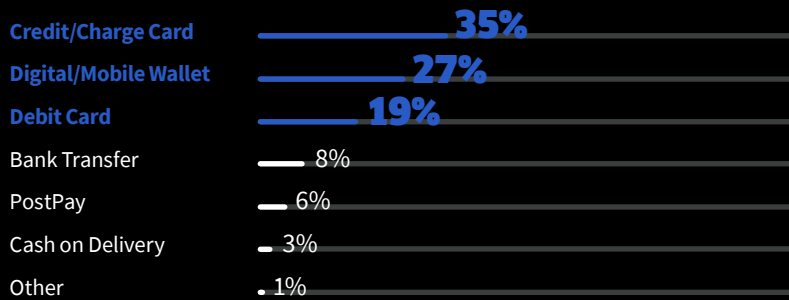
SPEI offers: Electronic Payment Receipt issued by Banco de México to back up the payment, consult payment status (SPEI), request to pay

CoDi offers: Account alias services using mobile or debit card number, request to pay, QR code payments, NFC payments, instant payment confirmation

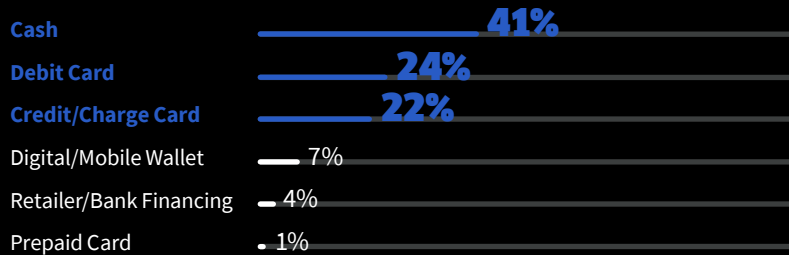
Did you know?

A fast-growing lineup of BNPL players are vying for the loyalty of Mexican consumers. Local options including [Atrato](#), [Graviti](#) and [Kueski Pay](#) and global brands [Jifiti](#) and [Sezzle](#) are competing for a BNPL market that is projected to account for over 4% of e-com spend by 2025.

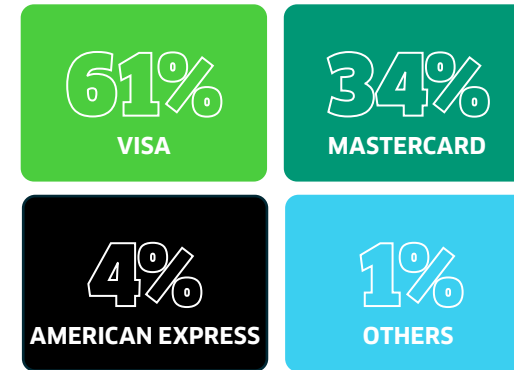
2021 e-com mix by payment method



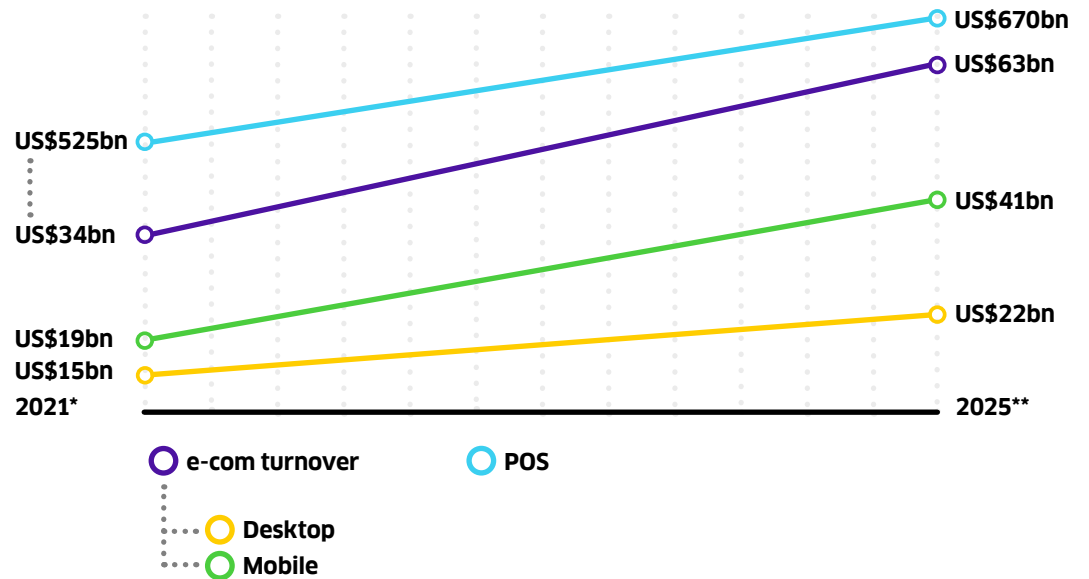
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



NETHERLANDS

Bank transfers lead the way among consumers in the Netherlands, accounting for more than 60% of e-com transaction value in 2021; [iDEAL](#) is the overwhelming favorite. BNPL and digital wallets are expected to gain share to become the second (16.9%) and third (9.2%) most popular e-commerce payment methods by 2025. Cards represent nearly three-quarters of transaction value at the POS, with debit cards (60.8%) outpacing credit (12.5%) by nearly 5-to-1, though card shares are expected to decline through 2025. Mobile wallets led by Apple Pay and PayPal are projected to account for more than 20% of POS payments by 2025.

The total volume of real-time payments in the Netherlands increased by 85%, from 201 million in 2019 to 372 million in 2020, while total transaction value increased from €149 billion in 2019 to €276 billion. Unlike most of the eurozone, real-time payments already form 90%+ of all single credit transfers between Dutch banks. Instant payments are utilized for all customers and not limited to segments such as businesses or mobile payment. Dutch banks agreed to not apply the prescribed SCT Inst maximum transaction amount, allowing every bank to determine its own limits.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
14%	34%	9%	6%	16%	42%

Real-time payments

Name
SCT Inst

Year live
2019

Average daily volume
1M

Average daily value
€756.2M (US\$863.5M) (FY20)

Overlay Services:

Cash flow management for corporates with Instant Payments for large amounts

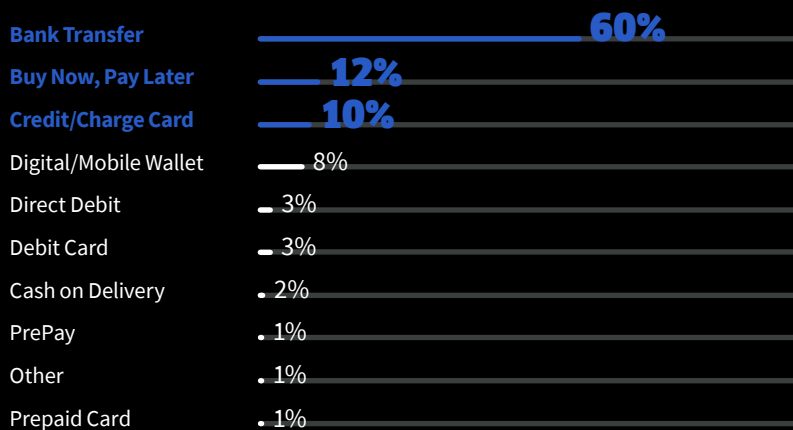
2020 card brand breakdowns (e-com and POS)



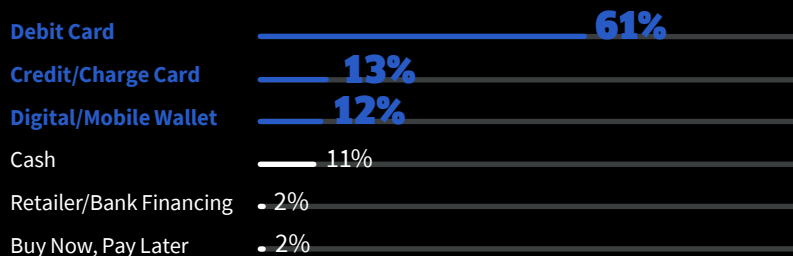
Did you know?

BNPL is gaining steam in the Netherlands. In addition to global leaders such as AfterPay, Klarna and Sezzle, Dutch consumers can choose from options including [Billink](#), [in3](#) and [Paynova](#). BNPL accounted for 12% of e-commerce and 1.5% of POS spend in 2021, with double-digit CAGR projected through 2025.

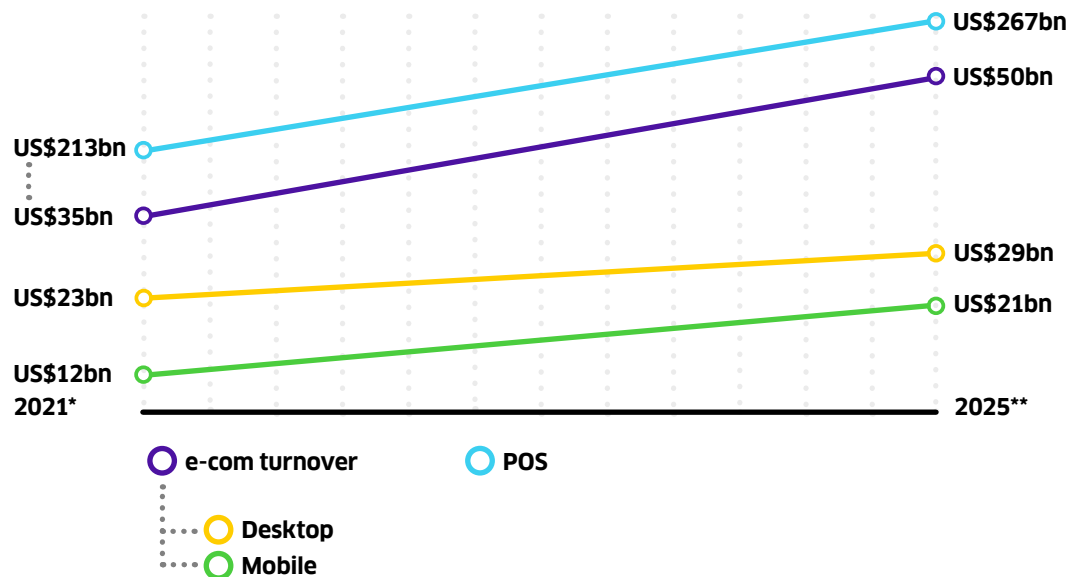
2021 e-com mix by payment method



2021 point of sale mix by payment method



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



NEW ZEALAND

New Zealand's economy demonstrated resilience in 2021 with e-commerce growing 12% YoY from 2020. That growing e-commerce market is highly competitive: credit cards led with slightly more than one-third of share, while bank transfers, debit cards, BNPL and digital wallets all achieved double-digit share. Already strong with 10.2% share in 2021, BNPL is projected to earn 17% of e-com transaction value by 2025. Credit cards (42%) and debit cards (30.6%) dominate POS payments, while cash (11.4%) is projected to retain double-digit share through 2025. Expect mobile wallets to nearly double share of POS payments by 2025.

While New Zealand's planned real-time payments service is beyond pilot stage, it is not yet fully live. Payments NZ has issued version 2.0 of the API standard that many banks planned to implement in 2021. Version 2.1 has also been published with no dates yet for adoption. Payment NZ introduced API Centre to deliver innovative API-based services to support domestic payments ecosystem in 2019/2020. Scope work for API version 3.0 is underway and includes future-dated payments, two-way notification and request to pay.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
8%	51%	8%	4%	10%	63%

Real-time payments

Name

N/A

Year live

Planned 2022

Average daily volume

N/A

Average daily value

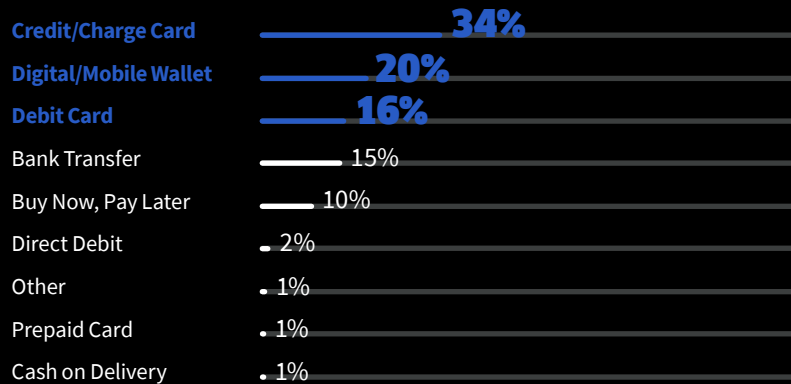
N/A

Overlay Services: N/A

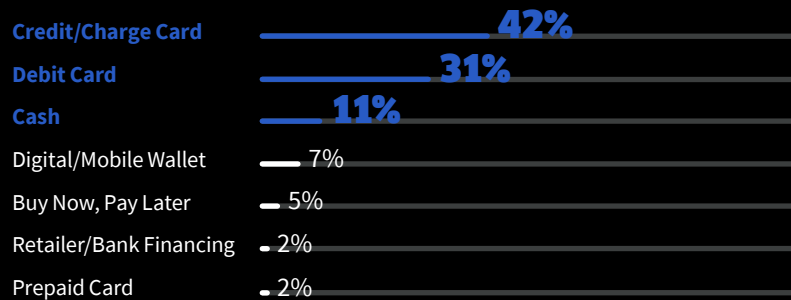
Did you know?

New Zealand is a great place to do business, with a small but high-impact base of consumers. New Zealand enjoyed 12% year-over-year e-commerce growth from 2020 to 2021, exceeding early estimates for economic recovery. In December 2021, the [OECD](#) projected that New Zealand's economy is poised for [3.9% GDP growth in 2022](#).

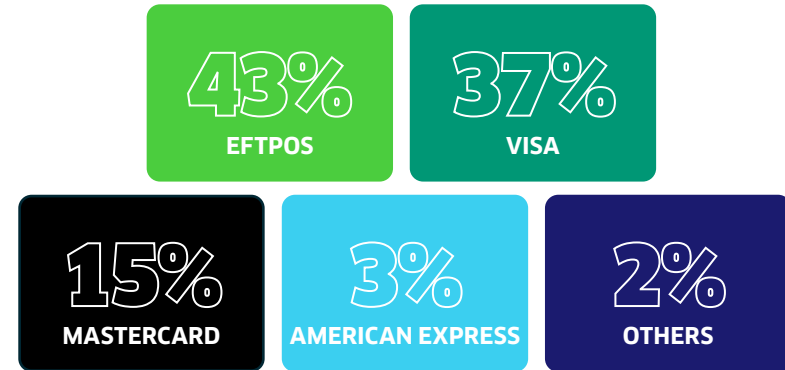
2021 e-com mix by payment method



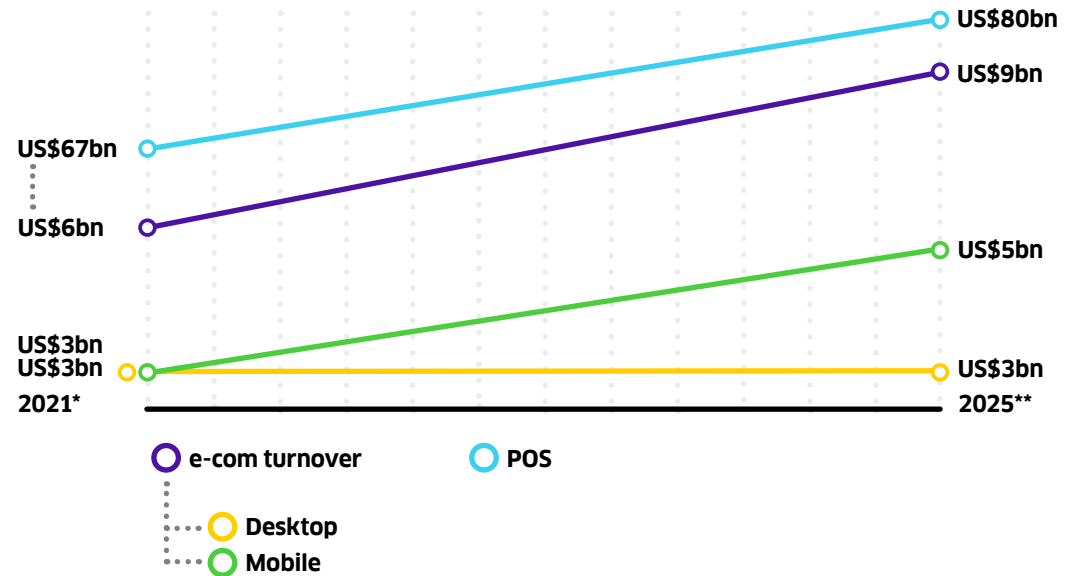
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.

NIGERIA

Nigeria's e-com market continued its dramatic expansion with 23% CAGR projected through 2025. Bank transfer led among payment method shares of e-com in 2021, with 26% of transaction value. COD remains popular given Nigeria's large unbanked population, accounting for nearly 20% of e-com spend. Digital wallets are projected to double e-com share from 7.6% in 2021 to 15.5% by 2025. Nigeria remains cash-centric at the point of sale, accounting for 63% of POS spend in 2021, and cash is projected to remain the majority payment method through 2025. Credit, debit and mobile wallets are all expected to gain POS share through 2025.

After a decade of service, the real-time payments scheme NIP showed 60% growth in volume and 40% growth in value transacted. Offering P2P, P2B and B2B payments through internet banking, mobile, ATM, retail POS and branches, NIP uses both proprietary messaging and API-based services. The Central Bank of Nigeria (CBN) approved the Framework for Regulatory Sandbox Operations, which will give eligible fintech innovators an opportunity to test solutions without a CBN license. NIP will soon include a picture inquiry service to enhance know your customer (KYC) for non-bank payment service providers and a central listing of beneficiaries with account number.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
8%	70%	23%	6%	14%	75%

Real-time payments

Name

NIP (Nigeria Inter-Bank Settlement System Instant Payments)

Year live

2011

Average daily volume

5.5M

Average daily value

NGN 433B (US\$1.13B)

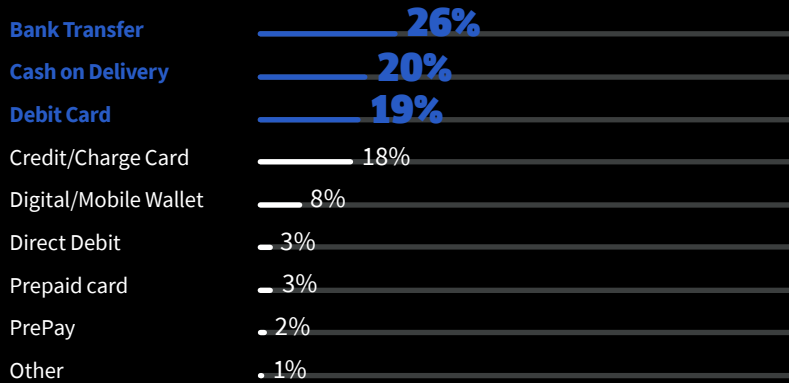
Overlay Services:

QR code standardized (NQR - Nigerian Quick Response) mandated to support account, wallet, card and token-based operations, chat banking, cardless payments, IOT proof of concept initiatives, merchant payments through mobile (mCash), bill payments (e-Bills Pay), name and transaction status inquiries, platform for mobile money operators to build new services

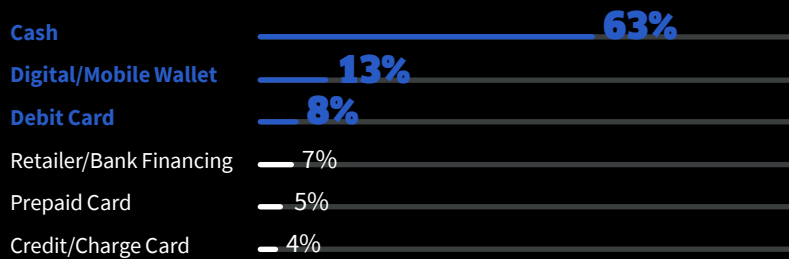
Did you know?

Nigeria is among the first markets globally – and the first in Africa – to issue a central bank digital currency (CBDC). Launched by the [Central Bank of Nigeria](#) in October 2021, the [eNaira](#) is available to consumers as a mobile/digital wallet and is meant to supplement rather than replace physical currency.

2021 e-com mix by payment method



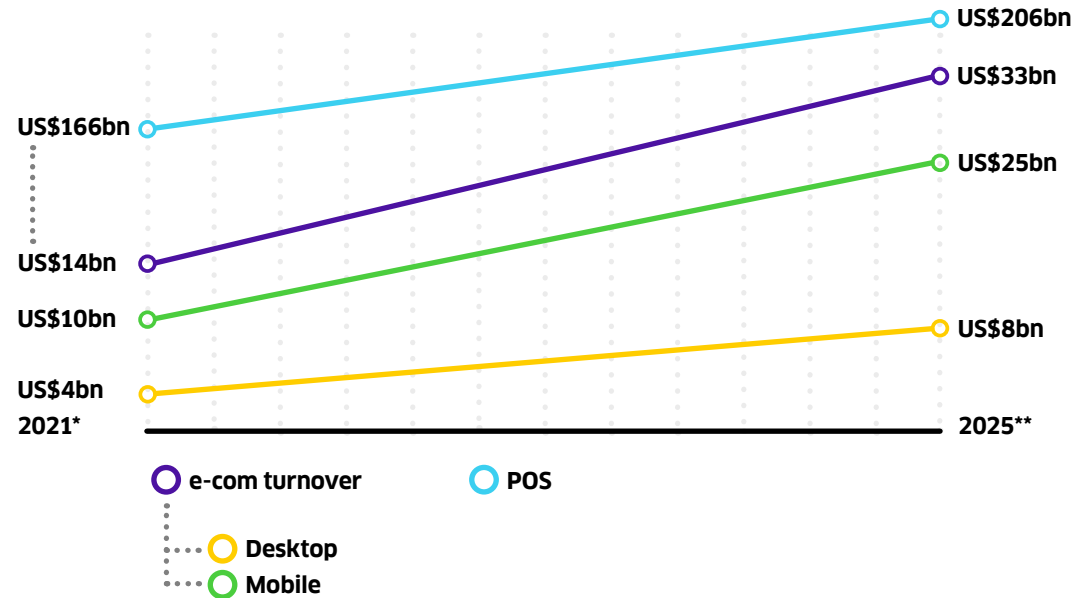
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted
Numbers adjusted for rounding may impact totals.



NORWAY

E-commerce in Norway features an evenly distributed payment market. Credit cards accounted for 29.3% of e-commerce transaction value in 2021, while debit cards accounted for 12.9%. Digital wallets such as Apple Pay and PayPal earned 17.4% share in 2021, while BNPL options rose 4% to represent 18.1% of 2021 transaction value. At the POS, cards are the overwhelming choice with debit (64.4%) and credit (13.8%) driving four-fifths of payment volume. Mobile wallets will see the largest POS growth, rising from 10% in 2021 to 18.9% in 2025.

As of 2020, the long-established Straksbetalinger real-time service has been updated by the implementation of Straks 2.0 and is already used by all banks. With almost half a million transactions per day, most real-time payments are initiated from the Vipps mobile payment app as P2P payments. Before 2.0, real-time transfers were typically made using online or mobile banking platforms, but the payee's bank ran the risk that the funds from the payer's bank might not arrive. This risk was eradicated with 2.0. Norway is now looking toward Straks 2.1 to implement ISO 20022 messaging format for real-time payments.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
13%	49%	14%	4%	18%	56%

Real-time payments

Name

Straks 2.0

Year live

2012

Average daily volume

421.92K

Average daily value

NOK 312.33M (US\$33.3M)

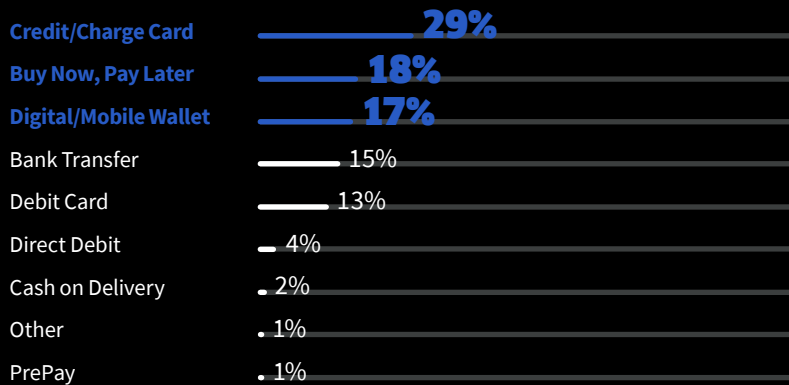
Overlay Services:

The retail payment solution Vipps (Straks 2.0 infrastructure): Account balance inquiry by just shaking phone, QR code payments, bill payments via Vipps eInvoice, request to pay, fixed payments for subscriptions/donations, charge self-service

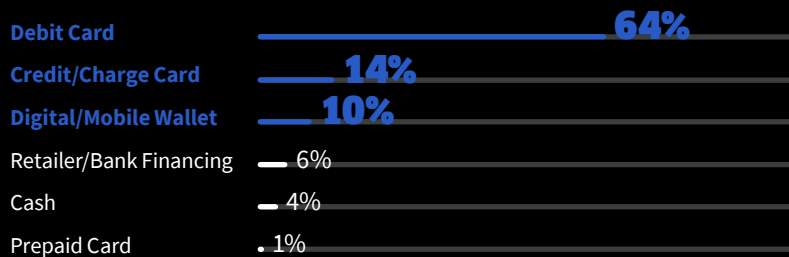
Did you know?

Norway is as close to a cashless society as you'll find. Cash represented 4% of POS transactions in 2021 and is projected to fall below 3% by 2025. Norway's Financial Supervisory Authority (FSA) is leading efforts to ensure banks continue offering cash services.

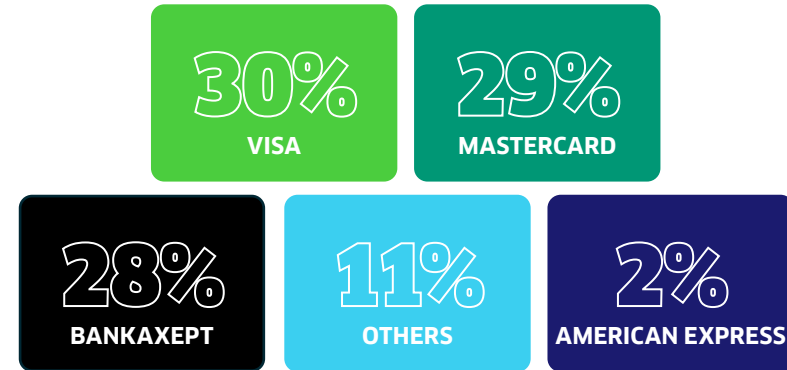
2021 e-com mix by payment method



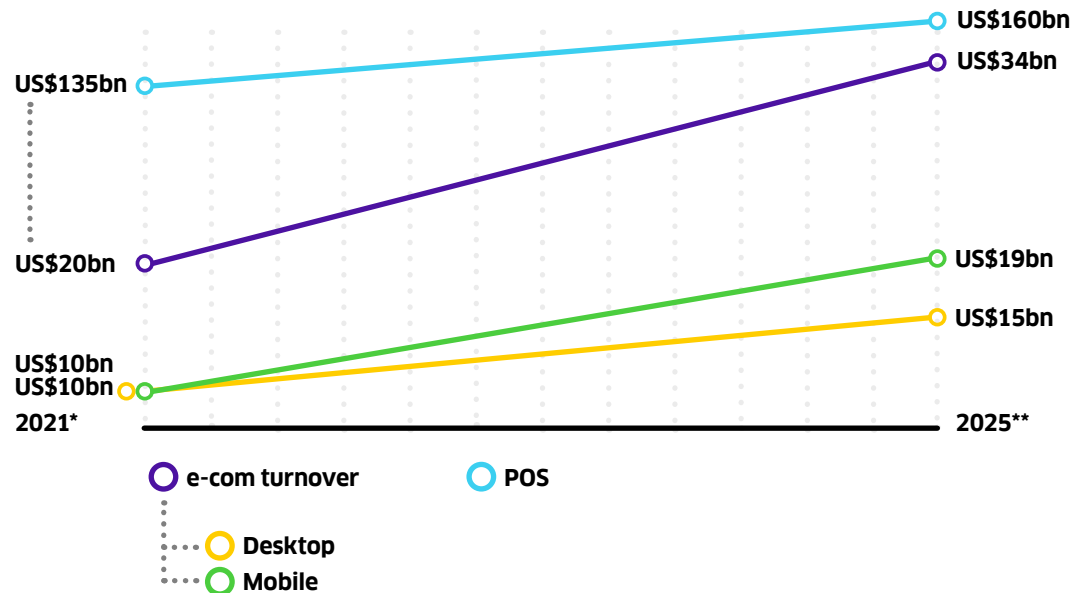
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



PERU

E-commerce in Peru grew a remarkable 47% YoY in 2021, trailing only Argentina in LATAM. Cards combined account for 60% of e-com transaction value in 2021, while digital wallets will more than double from 8.8% in 2021 to 17.8% in 2025. Accounting for 41.1% of POS transaction value in 2021, cash will retain the POS payment lead until 2025, when credit card growth is projected to account for 31.7% share and will surpass cash. Credit and debit cards will maintain POS strength while mobile wallets – reaching 10% share in 2021 – are projected to rise to 17.7% by 2025.

Peru’s real-time payment system was scheduled to go live by the end of 2021 with P2P, P2B, B2B and B2P payments using internet or mobile devices to facilitate payments for government, consumers, businesses and financial institutions. As an open service, financial institutions will be able to connect to the new scheme via modern APIs. It will use the ISO 20022 messaging standard.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
26%	63%	20%	6%	36%	70%

Real-time payments

Name

CCE (Camara de Compensacion Electronica)

Year live

Planned end 2021

Average daily volume

N/A

Average daily value

N/A

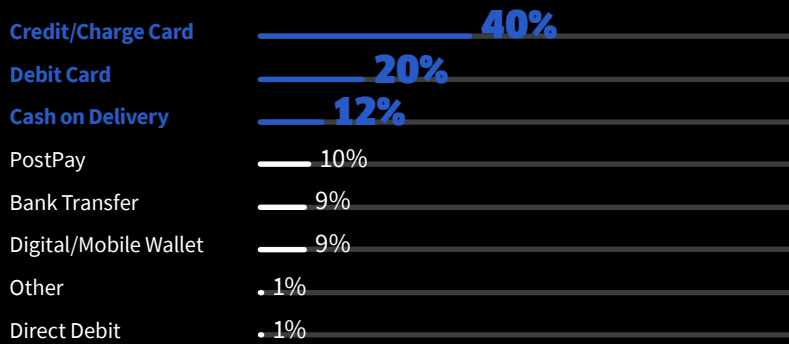
Overlay Services:

Planned Participant verification with sent instructions, transaction status on completion

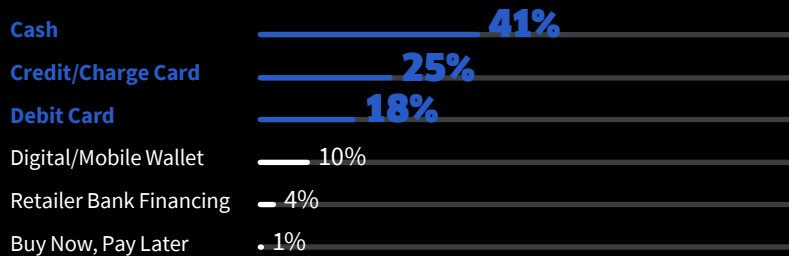
Did you know?

Cash remains a vital part of consumer life, even in e-commerce. COD accounted for 12% of e-com spend in 2021, while PostPay voucher methods represented an additional 9.6%. Cash-based e-com payment methods like [Caja Arequipa](#) and [PagoEfectivo](#) will remain an essential part of the payment mix through 2025.

2021 e-com mix by payment method



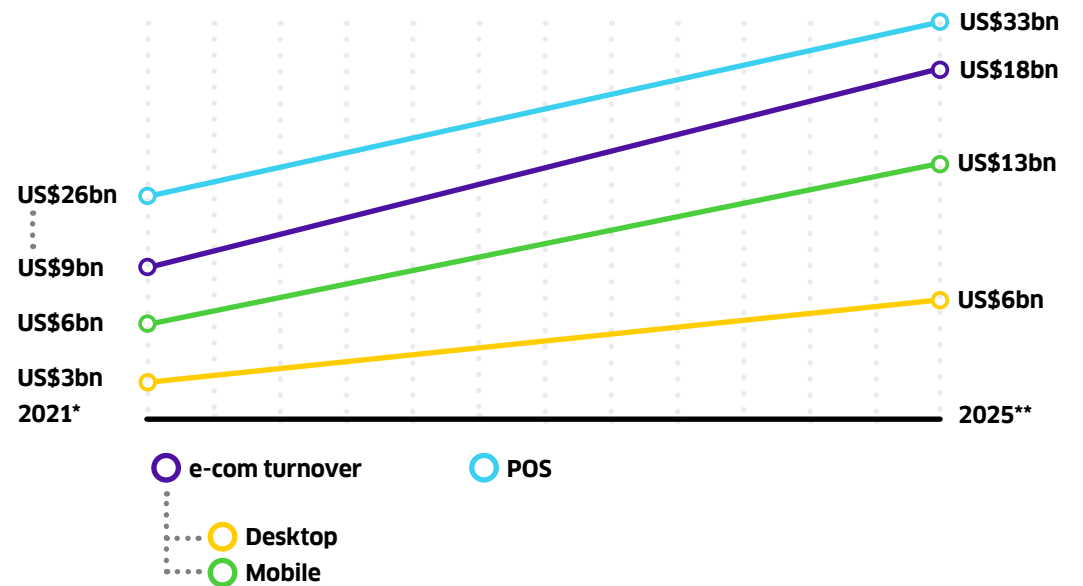
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



PHILIPPINES

Though still comparatively small, the Philippines e-com market will see robust growth of 17% per year between 2021 and 2025. Digital wallets emerged as the new e-com payment leader in 2021 to earn 30.5% of 2021 e-com transaction value. Led by [GCash](#), digital wallets are set to represent over 45% of e-com payments by 2025. Cash fell below 50% of POS share in 2021 and will decline to less than one-third share of transaction value by 2025. Mobile wallets will absorb the bulk of that spend, rising from 15.7% in 2021 to 28.4% in 2025.

The real-time InstaPay service has seen more than a 500% increase in volume and more than 300% in value transacted since it went live. With many consumer, retail and corporate-focused overlay services (bill pay, request to pay, standardized QR payments), government payments are also enabled for paying taxes, passports and customs duty through mobile apps and internet banking.

However, market penetration remains relatively low, so the central bank has designed a Digital Payments Transformation Roadmap targeting 50% digital transactions and 70% of the population onboarded by 2024.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
2%	63%	17%	6%	4%	67%

Real-time payments

Name

InstaPay

Year live

2018

Average daily volume

830,000

Average daily value

PHP 4.46B (US\$90.1M) (FY20-21)

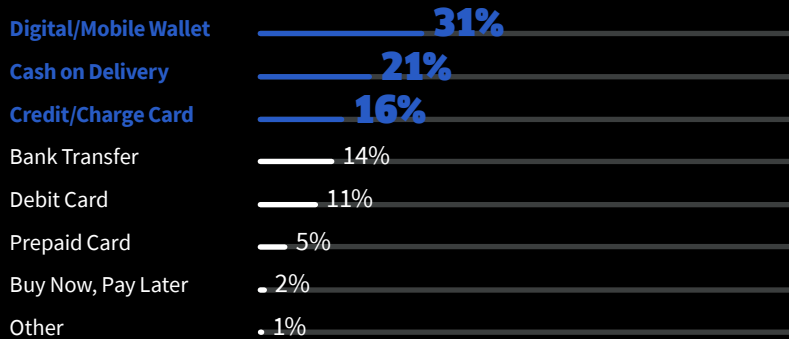
Overlay Services:

Bill payment for utilities; request to pay; QR Code payments using national standard (QR Ph)

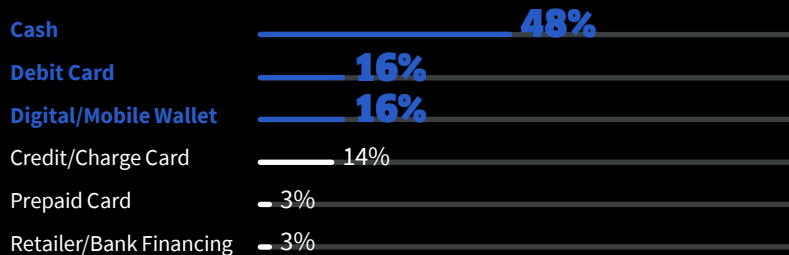
Did you know?

Digital and mobile wallets are fast becoming the payment method of choice among consumers in the Philippines. A broad mix of local (GCash, PayMaya), regional (CLiQQ, Grab, Lazada Wallet) and global wallets (Alipay, PayPal) are competing for this growing market.

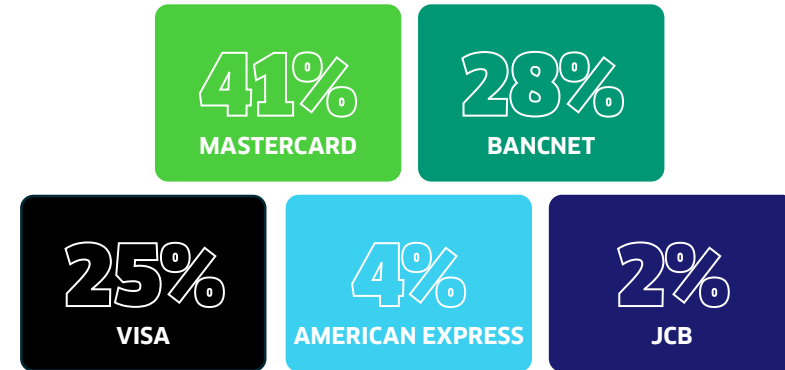
2021 e-com mix by payment method



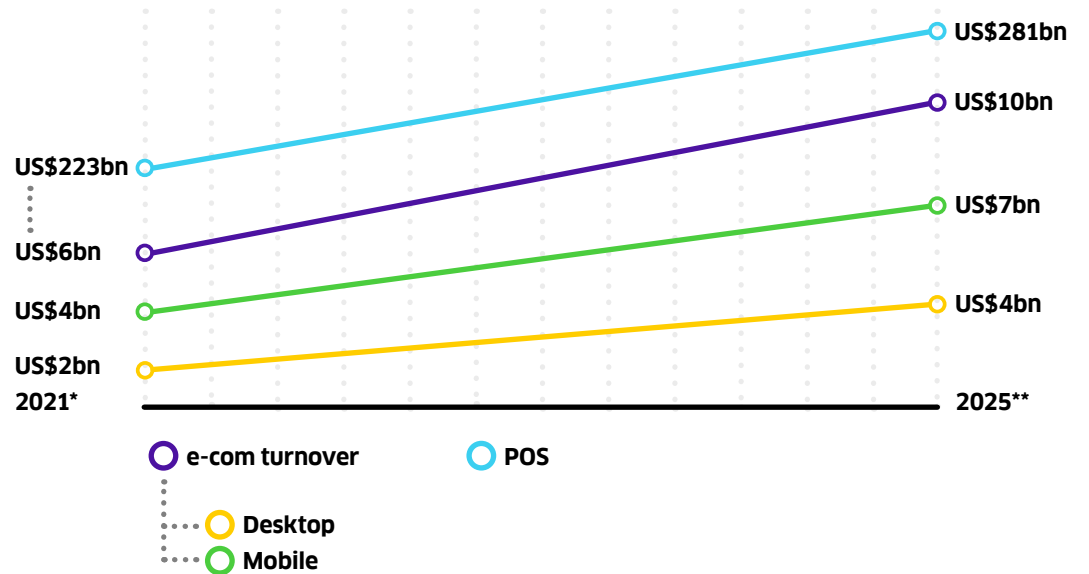
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted
Numbers adjusted for rounding may impact totals.



POLAND

Led overwhelmingly by [BLIK](#), bank transfers accounted for more than half (54.5%) of Poland's e-commerce transaction value in 2021. Digital wallets surpassed cards as the second leading e-com payment method in 2021 with 18.4% share and are projected to approach 20% by 2025. BNPL entrants, including [Klarna](#), [Mokka](#) and [PayPo](#), continue to rise with 2.4% e-com share in 2021, which is projected to more than double by 2025. Polish consumers still favor cash at the POS, but debit cards are expected to surpass cash in 2023. Mobile wallets are rising fast, exceeding 9% share in 2021 and projected to reach 17% by 2025.

Real-time payment volumes on Express Elixir in 2020 increased by over 150%; the total value transacted increased by 50%. P2P payments on the local mobile payment service, BLIK, are the most popular use case. The maximum value of a single transfer is determined by the bank but cannot exceed the set limit of PLN 100,000 for standard real-time transfers, and PLN 250,000 for transfers to customs and tax authorities. The real-time operator, Kajowa Izba Rozliczeniowa, is planning to offer Polish banks access to SCT Inst payments in euros through TIPS as direct participants.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
10%	34%	12%	9%	12%	41%

Real-time payments

Name	Year live
Express ELIXIR	2012

Average daily volume	Average daily value
235,000	PLN 215.6M (US\$55.4M)

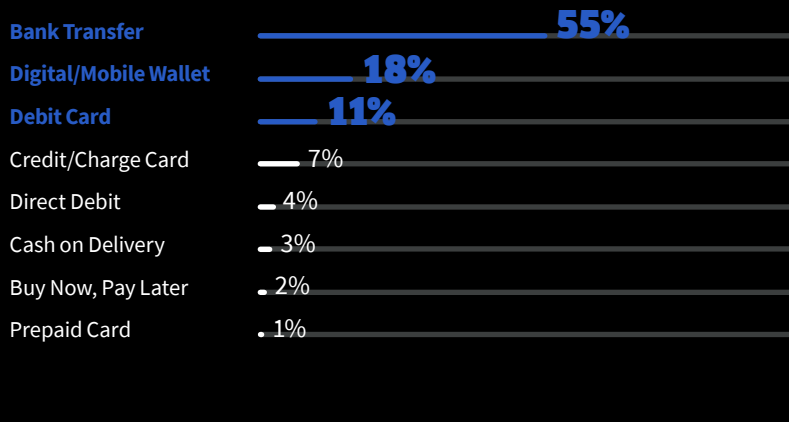
Overlay Services:

Payment confirmation, proxy/alias to mobile number, credit transfers, bill pay, repayment of loan or credit card installments, split payments mechanism with payments separated into net amount and tax amount automatically on the recipient's bank side, connect to BLIK mobile payments

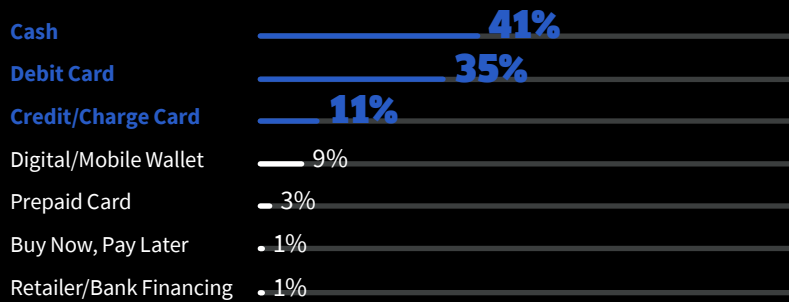
Did you know?

Founded in 2015, [BLIK](#) has grown to become by far the most popular payment method in e-commerce and is a rising star among Polish consumers at the point of sale. Linked to over a dozen of Poland's leading banks, BLIK also provides ATM and P2P payment capabilities.

2021 e-com mix by payment method



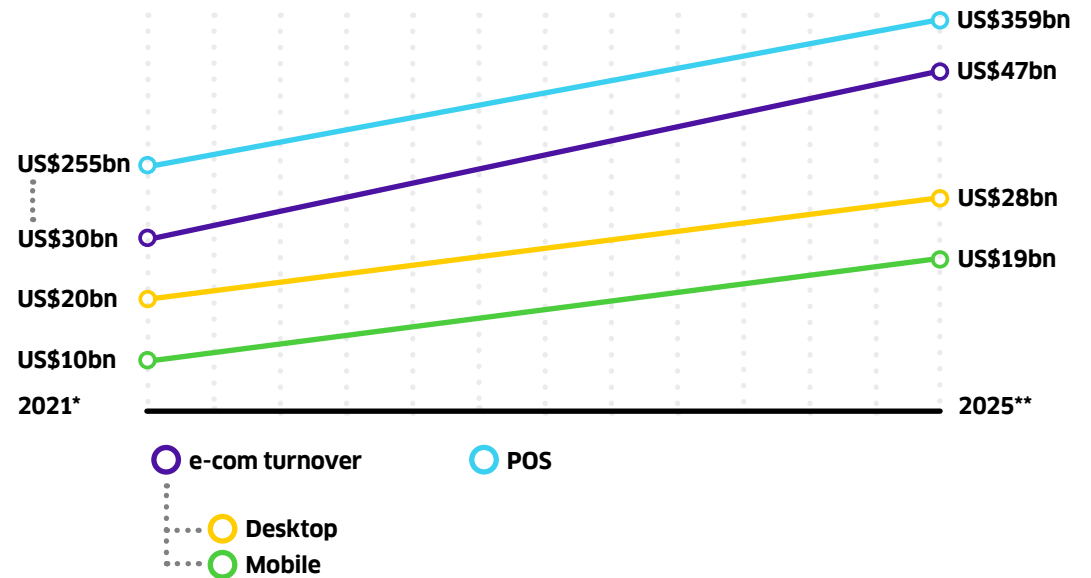
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



RUSSIA

Russian consumers continue to prefer cards, which maintain majority shares in both e-commerce and POS. Debit cards increased their share of e-commerce to 30% in 2021 while credit cards grew to over 24% share, gaining due to a temporary decline in digital wallets. Digital wallets (24.9%) and bank transfers (13%) are projected to gain share of e-com payments through 2025. Cash's declining share of POS spend continued in 2021 and is expected to accelerate through 2025, when it will fall to below 20% of spend. As a result, mobile wallets, credit and debit cards are projected to increase POS share.

The relatively new Russia real-time payment service, Faster Payments System, offers P2P, P2B and B2P payments, while government payments for individuals and corporations are in the planning stage.

Almost 400 million transactions worth about ₺2.5 trillion were processed by the system by June 2021. As of July 2021, 209 banks were participating, allowing customers to transfer up to 100 thousand rubles per month. An open API interface to NPS is planned which will be carried out in stages, in close cooperation with market participants. There are also plans to launch the SBPay mobile application for funds transfer and payments with e-invoicing.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
3%	39%	20%	8%	5%	46%

Real-time payments

Name	Year live
Faster Payments System	2019
Average daily volume	Average daily value
300,000	₺2.2B (US\$30.3M)

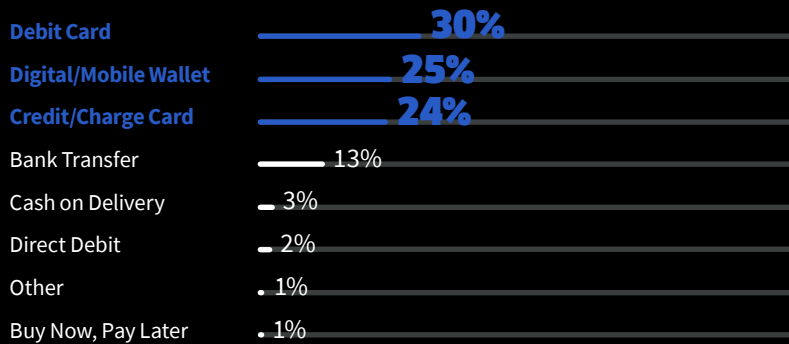
Overlay Services:

Alias/proxy look up using mobile number, QR code payments, E-bill payment, e-commerce, Broker and asset management payments through connection to Russia's National Settlement Depository

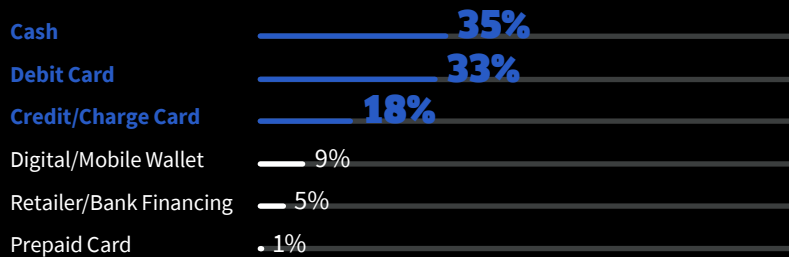
Did you know?

In August 2020 the Russian government banned anonymous deposits to mobile and digital wallets, mandating bank transfers and other personally identifiable funding methods. Digital wallets such as [QIWI Wallet](#), [VK Pay](#), [WebMoney](#) and [YooMoney](#) dropped payment share in 2021 but are expected to regain the lead in e-commerce payments by 2023.

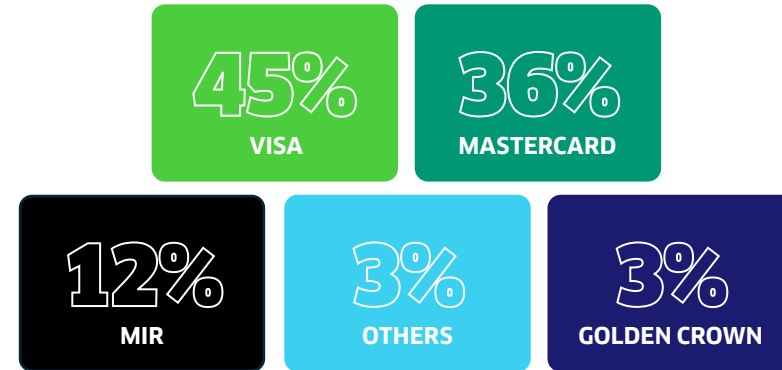
2021 e-com mix by payment method



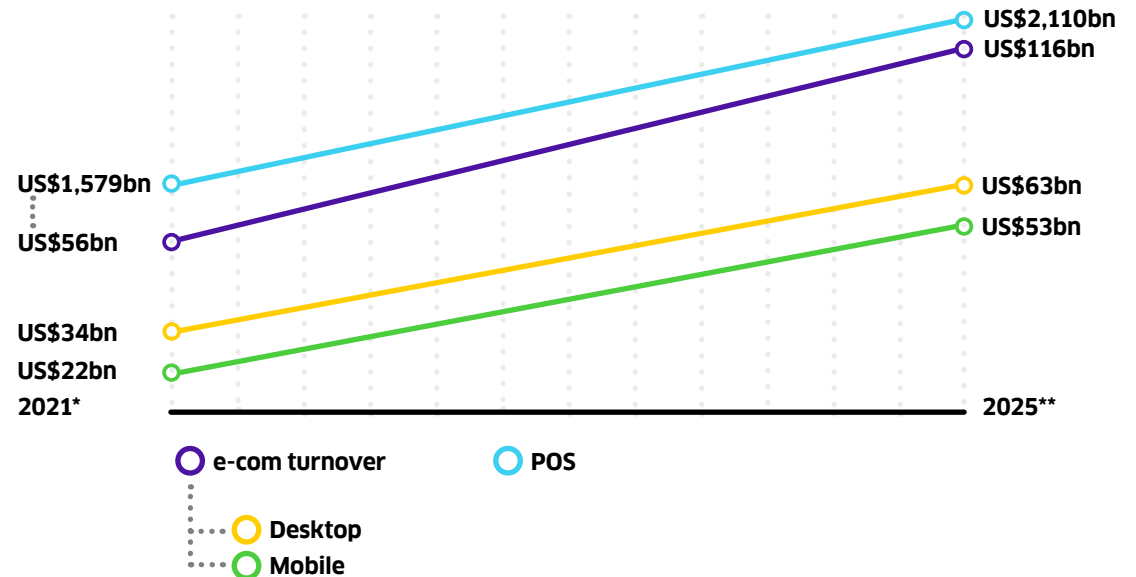
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



SAUDI ARABIA

Saudi Arabian e-commerce grew by 11% YoY in 2021, despite a slow overall economy that is recovering from the 2020 recession. Credit cards are the most popular e-commerce payment method, accounting for 36.8% of 2021 e-com spend. Digital wallets are ascending rapidly, surpassing COD to become the second leading e-com payment method in 2021 and set to lead e-com payments by 2025. Bank transfer, direct debit and BNPL are projected to rise through 2025. Cash continues to fall and will cease to be the majority POS payment method by 2022, primarily due to increased use of credit cards and mobile wallets.

The real-time payments scheme SARIE, developed and operated by Saudi Payments (owned by Saudi Central Bank), was launched in February 2021 and is already seeing daily volume approach half a million. SARIE allows bank customers to send and receive money in real time, up to SAR 20,000 (US\$5,300) through the system. The new Quick Transfer Service is limited to SAR 2,500 (US\$660). SARIE is an integral part of Saudi Arabia's Financial Sector Development Program called Saudi Vision 2030, which targets achieving 70% non-cash transactions by 2030.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
3%	63%	12%	5%	3%	68%

Real-time payments

Name

SARIE (Saudi Arabian Riyal Interbank Express)

Year live

2021

Average daily volume

450,000

Average daily value

SAR 740M (US\$197M)

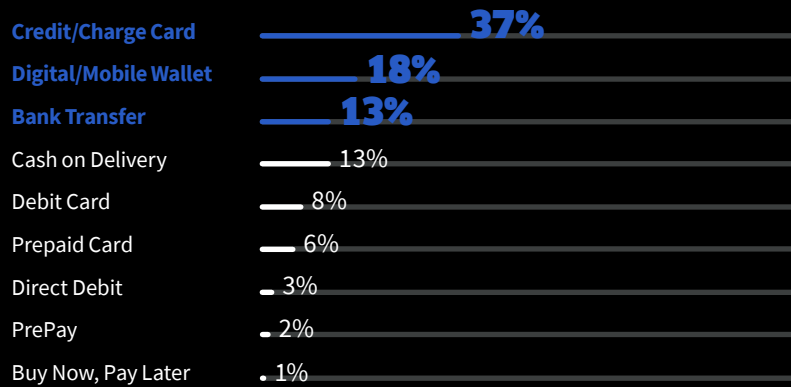
Overlay Services:

Alias service through proxy for Quick Transfer Services using mobile, email, National ID, Residency ID or IBAN number, also features transaction status request, with request to pay coming in 2022

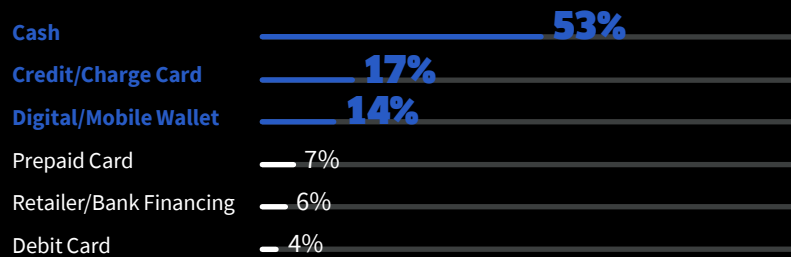
Did you know?

Saudi Arabian consumers are rapidly adopting electronic and digital payments. Following a surge in credit card adoption, digital and mobile wallets such as Bayan Pay, [mada Pay](#) and [STC Pay](#) are increasingly popular and projected to account for one-third of e-com and nearly one-quarter of POS spend by 2025.

2021 e-com mix by payment method



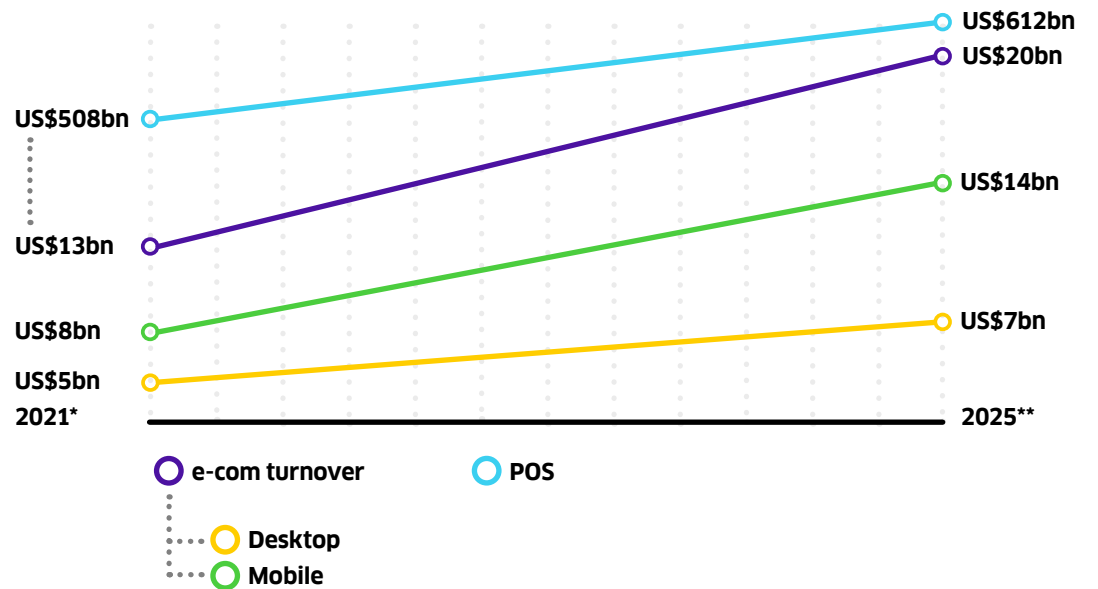
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



SINGAPORE

Credit cards retain their e-com market share lead in Singapore with 42.2% share, but digital wallet growth earned the spotlight in 2021. Propelled by the growth of super app [Grab](#), digital wallets grew 47% YoY, rising to 29.2% share. Debit card, bank transfers and BNPL are projected to have a strong presence through 2025. Cards continue to represent a majority of POS spend, with credit cards (33.9%) and debit cards (20.4%) combined expected to retain majority status at the POS through 2025. Cash is expected to decline from 22.3% in 2021 to 13.2% in 2025, with most of that share shifting to mobile wallets.

The Singapore FAST (Fast and Secure Transfers) real-time service continues to see strong annual growth in both volume (82%) and value (53%). The numbers are expected to increase as P2P service PayNow is open to non-bank entities offering credit transfers, direct debits and bill payment. PayNow Corporate offers B2B transactions for corporations, businesses and government. The open API architecture inspired services that include payee confirmation, setting transaction limits, payment scheduling, second factor authentication for transactions exceeding \$1,000 in PayNow, payouts and cross-border remittances to Malaysia and Thailand.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
4%	60%	16%	5%	6%	67%

Real-time payments

Name

FAST (Fast and Secure Transfers)

Year live

2014

Average daily volume

403,000

Average daily value

SGD 577.5M (US\$419M)

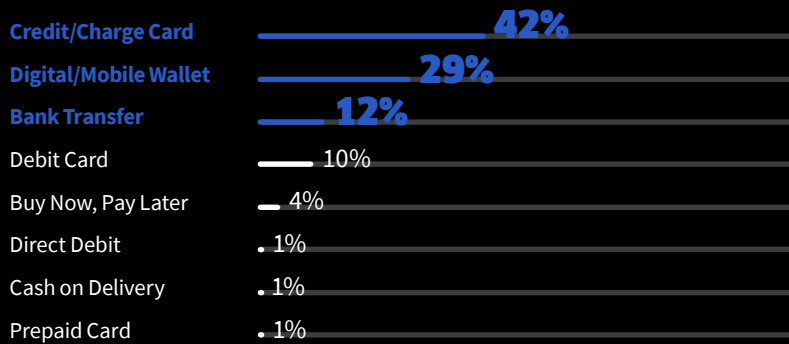
Overlay Services:

Payee confirmation using nickname; joint account holder registration requests; QR code payments at merchants; account aliases via mobile numbers, National Registration Identity Card / Foreign Identification Numbers (NRIC/FIN) numbers

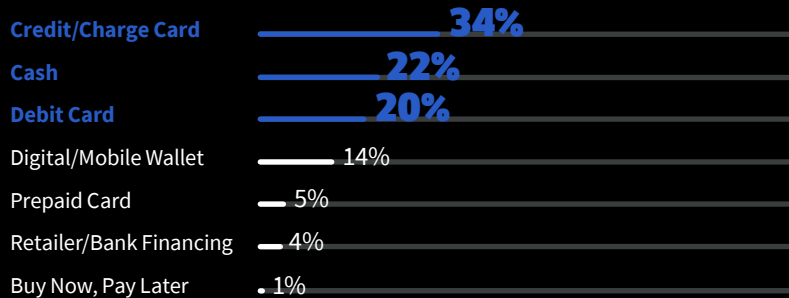
Did you know?

Want to do business in Singapore? You need to understand Grab, the super app that's capturing the attention – and spend – of Singapore consumers. Far more than just ride-hailing and food delivery, the success of [GrabPay](#) and [Grab Financial Group](#) is demonstrating the powerful leverage of simplicity and convergence.

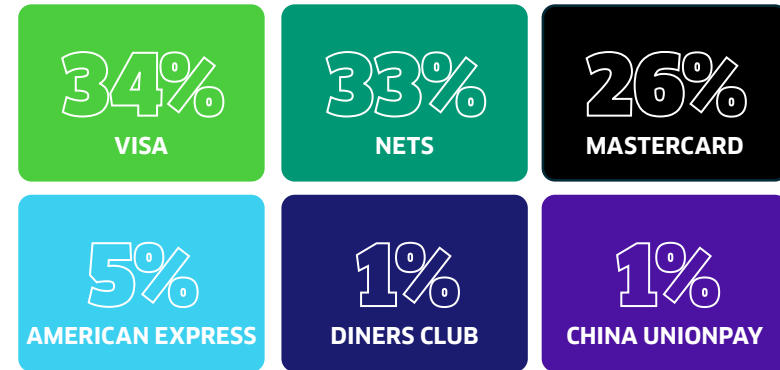
2021 e-com mix by payment method



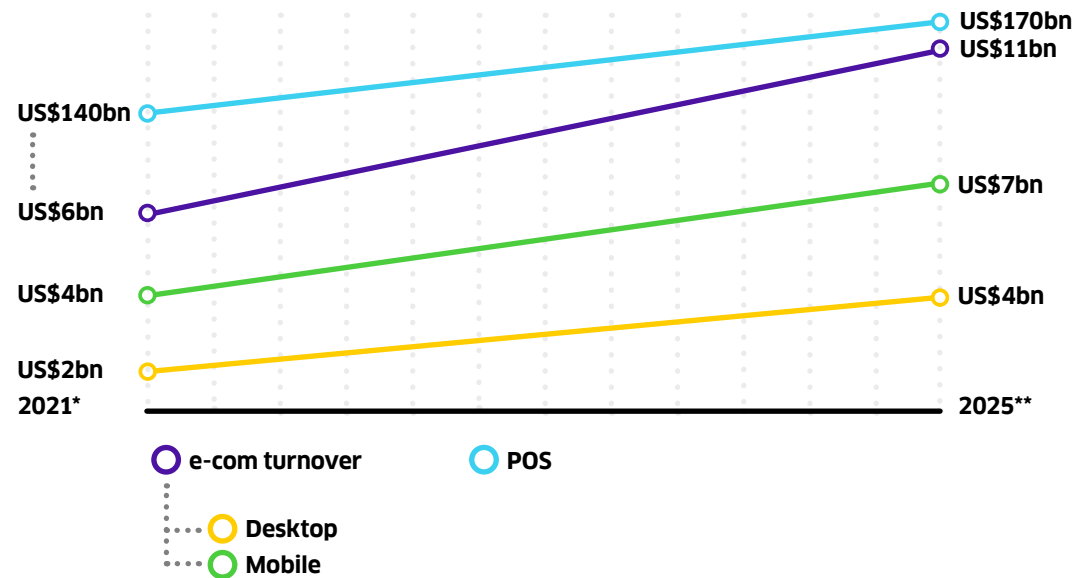
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.

SOUTH AFRICA

Though it has the smallest e-commerce market of all countries in this report at an estimated US\$4.2 billion in 2021, the South African e-com market is projected to grow at 16% CAGR through 2025. Debit cards are the most popular e-com payment method, with 23.2% share in 2021 and an increase to 28.8% projected by 2025. Digital wallets will grow from 18.6% in 2021 to more than 25% by 2025, while bank transfer, credit card and COD shares are all projected to decline through the forecast period. Cards combine for half of POS spend, while cash (38%), retailer financing (7%) and mobile wallets (5%) account for the remainder.

The longstanding RTC real-time payments system continues strong growth with volumes up by more than 50% and value transacted increasing by one-third. [BankservAfrica](#) is working on implementing the Rapid Payments Platform (RPP), a centrally managed real-time clearing service for instant payments that will overlay on RTC. Its goal is to help eliminate cash and drive mobile payments acceptance at micro-merchants using proxies and QR codes. Launching before the end of 2021, RPP will use the RTC but has a completely different rule set and transaction limits, and is accessible through open APIs.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
2%	69%	16%	3%	3%	75%

Real-time payments

Name

RTC (Real Time Clearing)

Year live

2006

Average daily volume

134,000 (2019)

Average daily value

ZAR 1.64B (US\$100.4M) (2019)

Overlay Services:

Services planned for new Rapid Payments Program (end 2021): Request to pay from other customers or registered proxies, aliases through proxy payments with mobile number or email

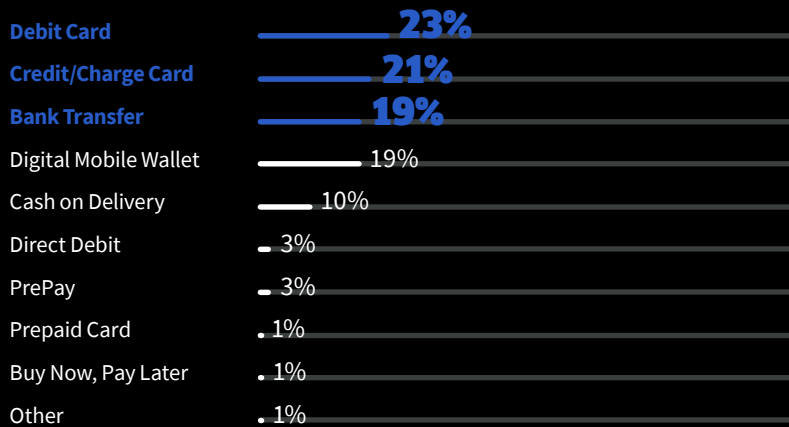
2020 card brand breakdowns (e-com and POS)



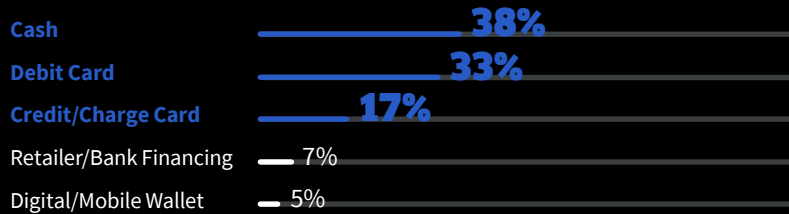
Did you know?

The [Payments Association of South Africa \(PASA\)](#) is the lead regulatory body in South Africa, responsible for governance of all financial transactions. PASA regulates the [National Payment System \(NPS\)](#), while all domestic transactions are settled by the [South African Reserve Bank \(SARB\)](#).

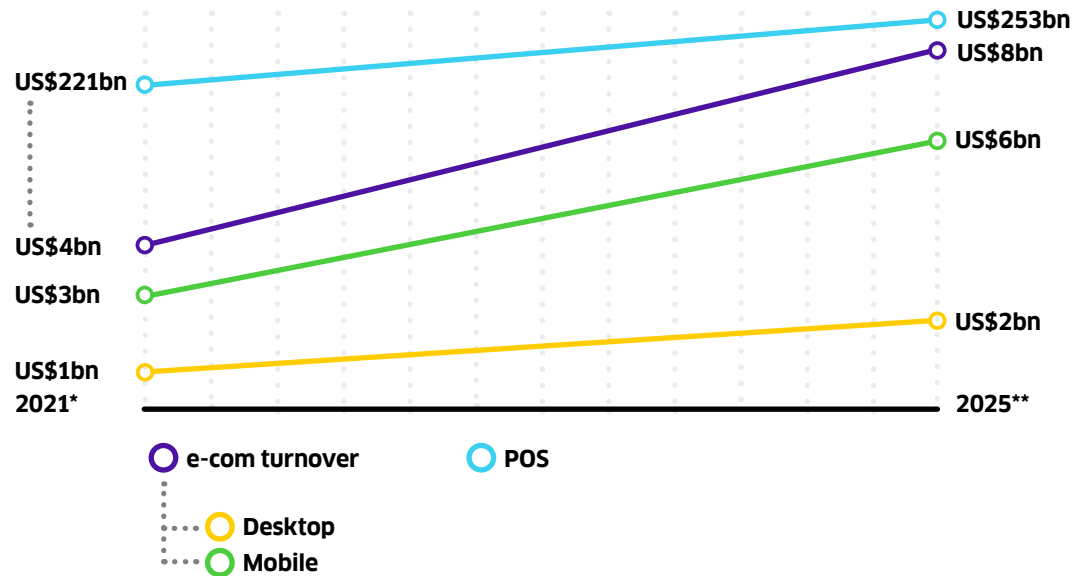
2021 e-com mix by payment method



2021 point of sale mix by payment method



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted
Numbers adjusted for rounding may impact totals.



SOUTH KOREA

South Korea's mature economy is rooted strongly in card-based payments that continue to earn overwhelming majority share. Cards earned nearly two-thirds of e-com spend in 2021 and will retain majority share in 2025, though it's expected to decrease slightly. Propelled by the rise of super apps such as [KakaoTalk](#) and [Toss](#), digital wallets earned 22.1% of e-com spend in 2021, projecting to rise to 32.5% by 2025. Cards are even more dominant at the POS, accounting for more than 70% share in 2021. Expect mobile wallets to nearly double at the POS from 10.1% in 2021 to 19.8% in 2025.

South Korea has the second highest per-capita usage of real-time payments globally as the service currently processes internet and mobile banking, company banking, bill payments for mobile phones and insurance premiums. In December 2019, the Korea Financial Telecommunication and Clearings Institute established an open API integrated portal that offers APIs for remitter identification, account holder identification, account balance inquiry, receipt information, credit transfer, debit transfer and transaction information inquiry.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
9%	71%	19%	4%	15%	76%

Real-time payments

Name

EBS (Electronic Banking System)

Year live

2001

Average daily volume

14.2M transactions

Average daily value

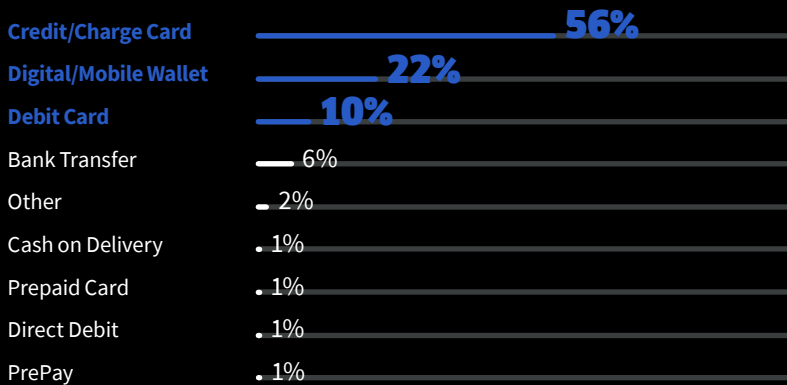
KRW 54.8T (2019) (US\$48.4B)

Overlay Services: N/A

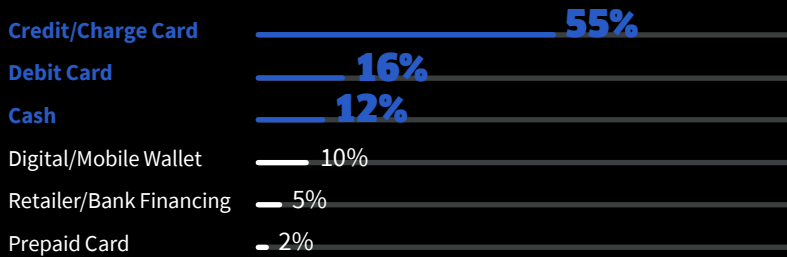
Did you know?

Digital wallets and super apps are on the rise, but a more significant disruptor may be looming. In 2021 [The Bank of Korea](#), [Samsung](#) and the Kakao consortium began [simulating cross-border payments via a Central Bank Digital Currency \(CBDC\)](#).

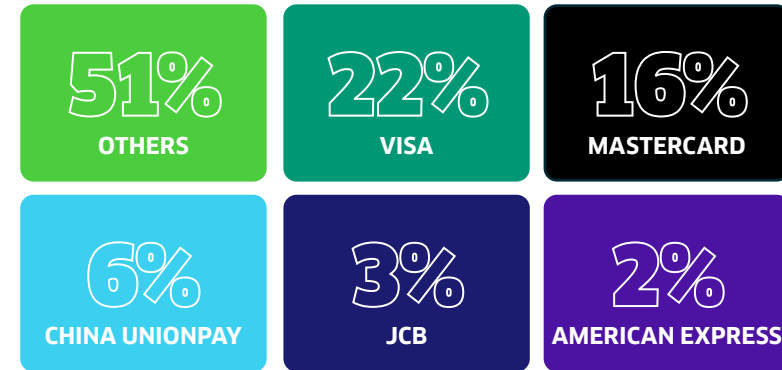
2021 e-com mix by payment method



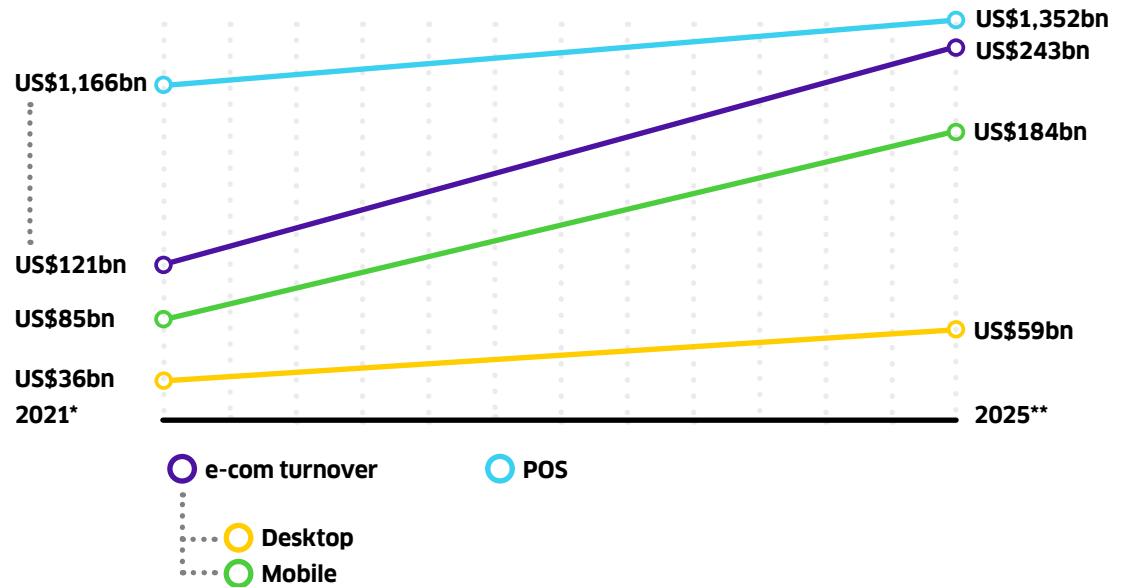
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



SPAIN

Digital wallets continue to be the leading e-commerce payment method among Spanish consumers. Led by [PayPal](#), [BBVA Wallet](#) and [Apple Pay](#), digital wallets accounted for 30.3% of e-com transaction value in 2021 and are projected to rise to 36% by 2025. Cards remain strong, with credit (28.3% in 2021) forecast to see a slight increase and debit (18.5% in 2021) projecting a slight decrease through 2025. Bank transfers are expected to decrease from 15.3% to 12% between 2021 and 2025. Mobile wallets will see the biggest growth at the POS, projecting to nearly double from 7.6% to 15% through 2025.

As part of the SEPA region, SCT Inst real-time payments are offered by Iberpay to 97% of Spanish banks, connecting participants to EBA Clearing's RT1 and to Eurosystem's TIPS for eurozone coverage. In parallel, the Bizum service offers real-time payments from mobile devices. Primarily for credit transfers and retail e-commerce payments, users can make direct charitable donations (4,500 NGOs), B2P payments, request to pay and QR code payments. Bizum doubled its user base to 13.6 million in 2020 and expects 20 million users and 18,000 businesses in 2021.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
10%	51%	12%	3%	13%	58%

Real-time payments

Name	Year live
Iberpay (SCT Inst)	2017
Bizum (mobile payments)	

Average daily volume
Iberpay: 526,000
Bizum: 573,000

Average daily value
Iberpay: €150.2M (US\$171.3M)
Bizum: €27.9M (US\$31.9M)

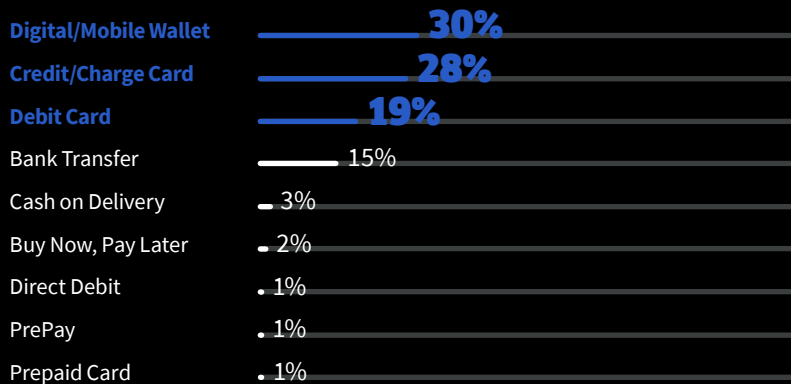
Overlay Services:

Account Alias through proxy identifiers, request to pay, payments through virtual assistants, add photos and texts to provide recipients with more information, dynamic QR code, P2P payments, retail point-of-sale (NFC)

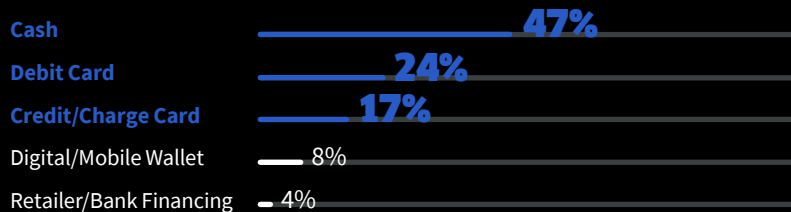
Did you know?

Spain has the highest rates of cash use among all European countries in this report, accounting for 47.1% of POS transaction value in 2021. Though in long-term decline, cash is projected to still be used for one-third (34%) of POS transaction value in 2025.

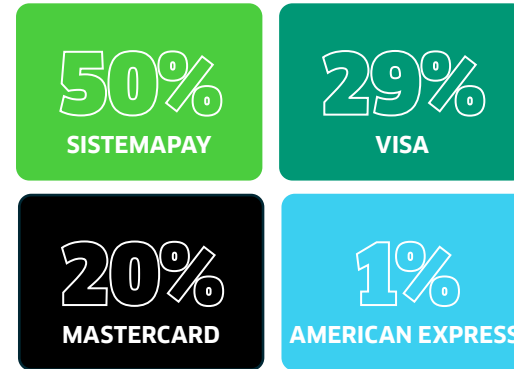
2021 e-com mix by payment method



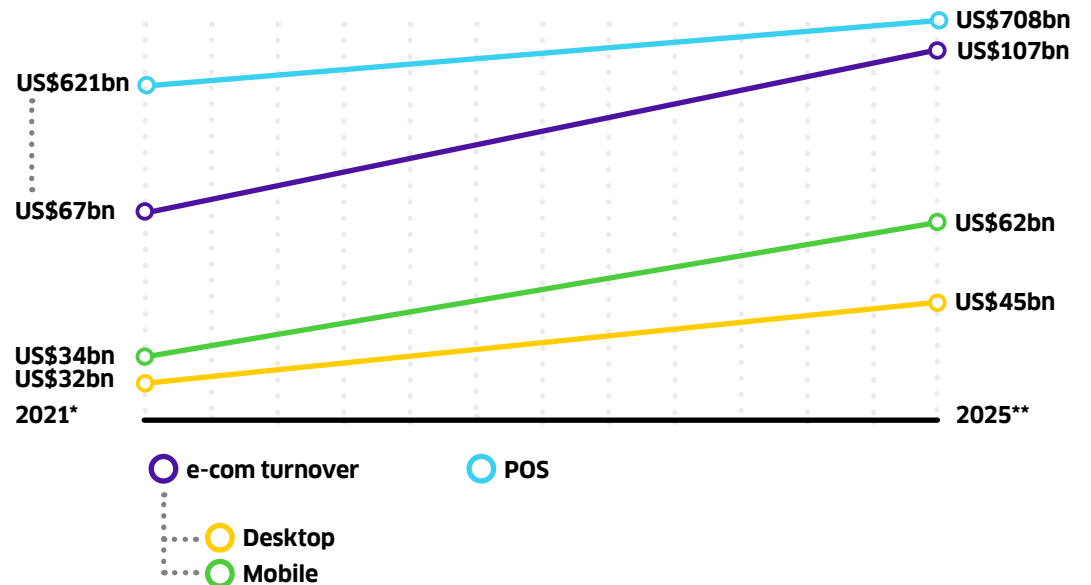
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



SWEDEN

BNPL services are the leading e-commerce payment method among Swedish consumers. Earning slightly more than a quarter of e-com payments in 2021, BNPL is projected to exceed 29% of transaction value by 2025. Cards are mixed, with credit cards holding steady at 16.7% 2021 share; debit cards accounted for 14.6% in 2021 with a projected decrease to 11.6% by 2025. Digital wallets grew to 19.6% in 2021 and are projected to surpass 22% by 2025. Cards account for 73% of POS transaction value in 2021, with slight declines projected for both credit and debit shares through 2025.

Real-time payments in Sweden center around the Swish mobile app that settles through the BiR system. Sweden is part of the P27 Nordic payment initiative, enabling instant cross-border payments in the region. Expected to be live in 2022, banks will start offering existing payment products through P27 and cease use of the current domestic infrastructure.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
18%	46%	15%	5%	24%	51%

Real-time payments

Name

BiR (Betalingar i realtid) through Swish app

Year live

2012

Average daily volume

2M

Average daily value

SEK 1.1B (US\$126M)

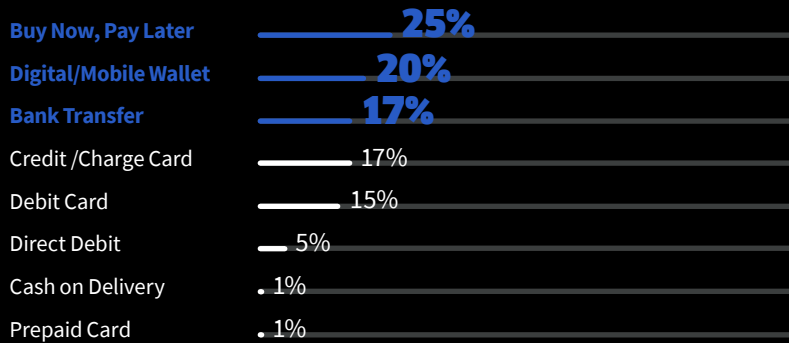
Overlay Services:

Swish Payouts for companies and businesses to pay private Swish users Swish Business dashboard, QR code payments, request to pay, account aliases using mobile number, ecommerce payments, in-store via a Bluetooth and NFC for tap-and-pay

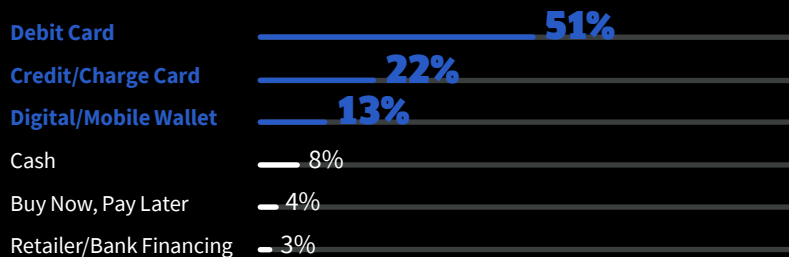
Did you know?

Swish – a cooperative effort between Sweden’s largest banks and the Central Bank of Sweden – is the overwhelming choice of Swedish consumers among digital and mobile wallets. By 2025, digital and mobile wallets will account for 22.7% of e-com and 21.4% of POS transaction value.

2021 e-com mix by payment method



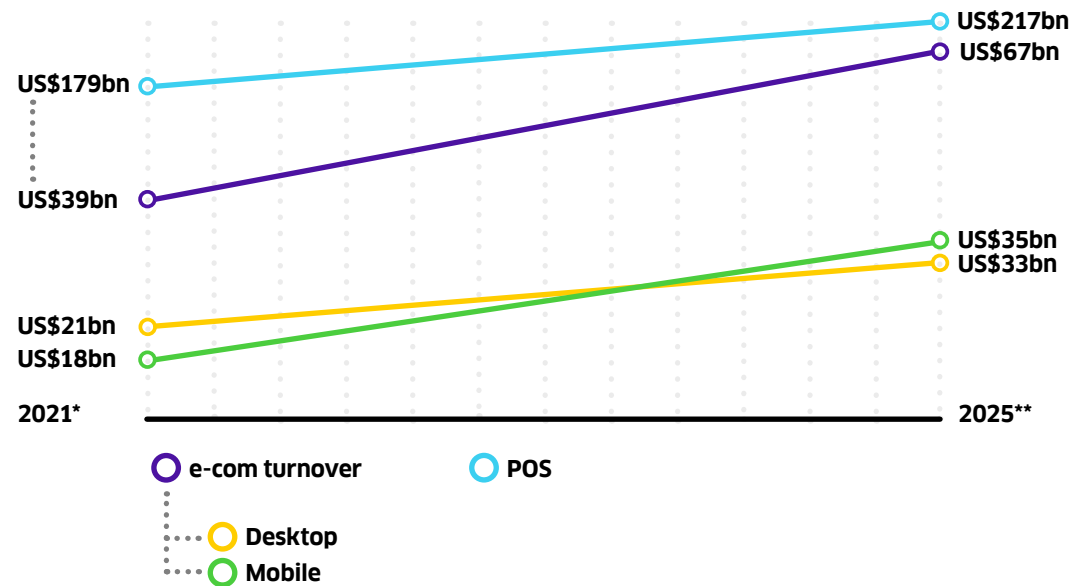
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



Klarna.



* Estimated **Forecasted
Numbers adjusted for rounding may impact totals.



TAIWAN

Credit cards lead Taiwan's e-com payments with 44.8% share in 2021, with only slight declines projected through 2025. Mobile and digital wallets continue to exhibit strong growth – wherever Taiwan's consumers shop. Digital wallets grew nearly 10% YoY to achieve 17.7% of e-com share in 2021. At the point of sale, wallets such as [LINE Pay](#) and [JKOPAY](#) are driving 16% CAGR that is projected to reach 24.4% of POS share in 2025. Credit cards dominate the POS with more than 47% share, a lead projected to continue through 2025. Cash continues to decline, falling to less than a third of POS spend in 2021.

Real-time payments are led by mobile phones, and Taiwan's government has set an ambitious target of 90% mobile payment penetration by 2025. (As of early 2020, penetration was 62%). To accelerate innovation, the Taiwan Financial Supervisory Commission tasked the Association of Banks and the Financial Information Service Company to create an open API management platform for a mobile transfer service. The first phase (non-transactional) went live in September 2019. Phase 2 (in development) includes services for personal financial transactions and applications. Phase 3 will develop technical and capital security standards in line with banking practices and industrial needs.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
11%	56%	10%	3%	13%	64%

Real-time payments

Name

CIFS (CBC Interbank Funds Transfer System)
Mobile transfer service (ATM network by FISC)

Year live

1995 CIFS
2019 Mobile transfer service

Average daily volume

2,000 (CIFS);
Unknown on mobile transfer service

Average daily value

TWD 1,441B (US\$49B) on CIFS
Unknown on mobile transfer service

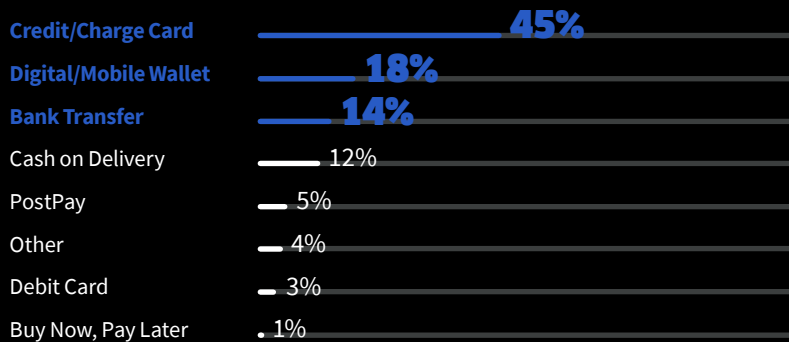
Overlay Services:

Mobile phone number transfer service (via ATM system); access foreign currency deposit, exchange and interest rates; Foreign Currency Clearing Platform settles US\$ swap transactions; connects with retail payment systems to settle interbank remittances, ATM and credit card transactions, bill and tax payments, check clearing, ACH payables and receivables

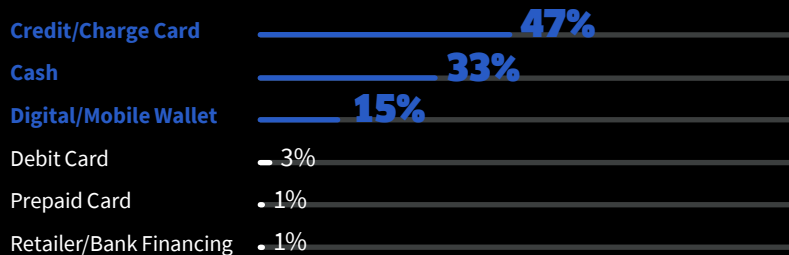
Did you know?

International companies seeking to do business in Taiwan can look to a vibrant array of e-commerce platforms. Singapore-based [Shopee](#) is the most visited e-commerce site, while [Ruten](#), [MoMo](#), [Rakuten](#), [Yahoo Auctions](#) and [Books.com.tw](#) are viable options for global brands to reach Taiwan's 23+ million consumers.

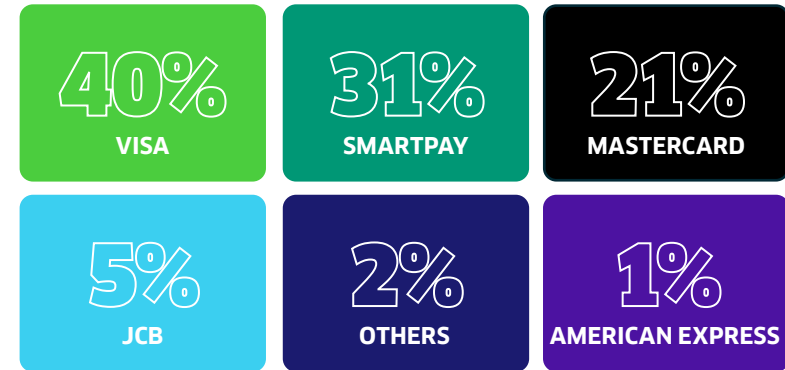
2021 e-com mix by payment method



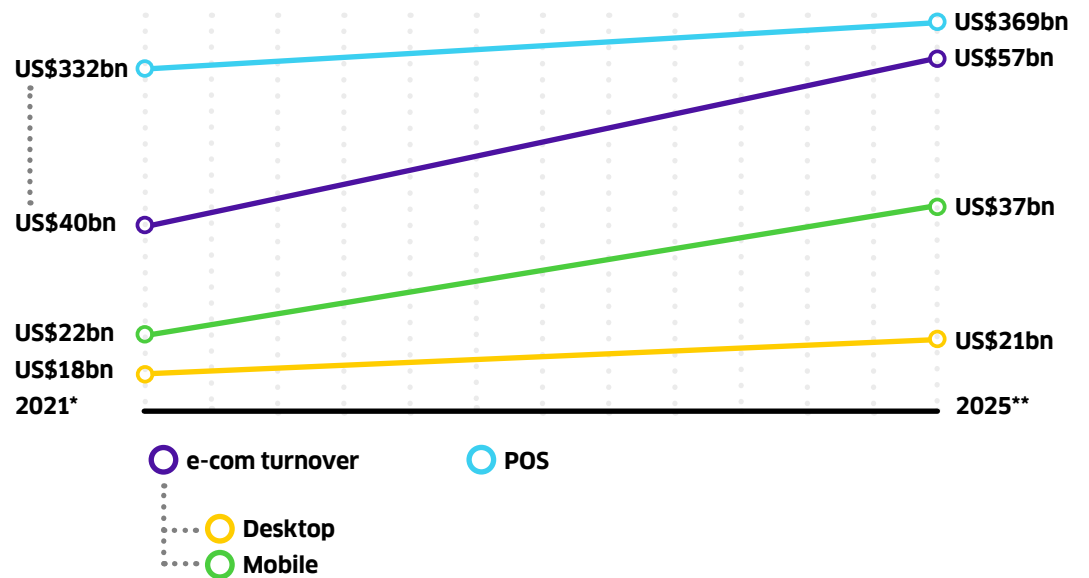
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted
Numbers adjusted for rounding may impact totals.



THAILAND

Thailand's e-com market is among the global leaders as a percentage of consumer purchasing and is expected to grow. One of a handful of markets where consumers prefer bank transfer for e-com payments, it leads with 36.6% share in 2021, and it's projected to retain that lead through 2025. The [TrueMoney](#) wallet continues to drive growth in digital and mobile wallets, which achieved 22.9% of e-com and 19.7% of POS spend, respectively, in 2021. Cash continues to show resilience, rebounding slightly in 2021 to account for 63.4% of 2021 POS share and only falling below 50% in 2025.

The drive toward real-time payments in Thailand continues with PromptPay volumes up 150% and value transacted almost doubling. Overlay services offered on PromptPay include corporate payments and cross-border payments with Thailand and Singapore via Singapore's PayNow. Government payments happen in real time for transferring funds for tax returns and filings, VAT refunds, pension funds, welfare benefits and the payment of fines and fees.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
23%	62%	16%	5%	31%	68%

Real-time payments

Name

PromptPay

Year live

2017

Average daily volume

17.4M

Average daily value

Baht 64.4B (US\$2B)

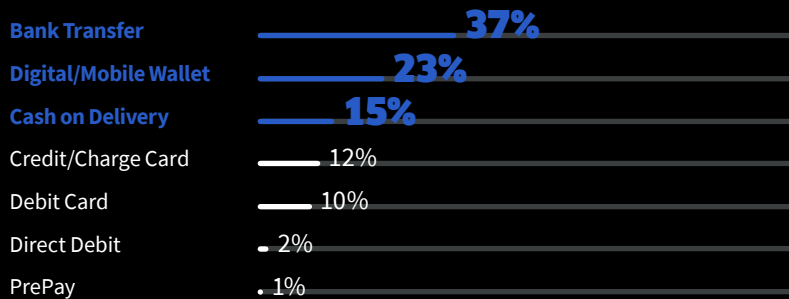
Overlay Services:

Instant e-commerce payments; request to pay; QR code payments; account aliases using mobile number, Thai ID, bank account number, e-wallet, email or company registration number; payee confirmation after input of mobile number

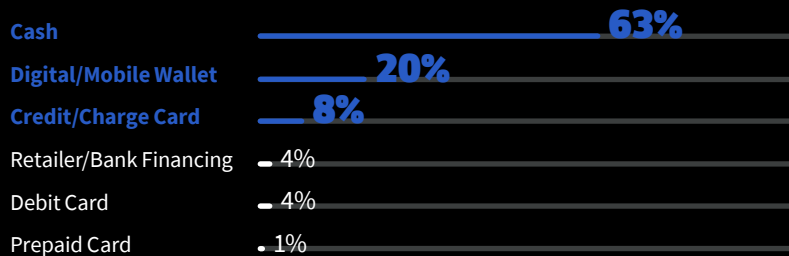
Did you know?

Consumers in Thailand use bank transfers to pay for e-commerce purchases more than any country in this report except the Netherlands. Successful e-commerce starts with offering the local payment methods Thai consumers trust: TrueMoney, ShopeePay, mPay and Prompt Pay.

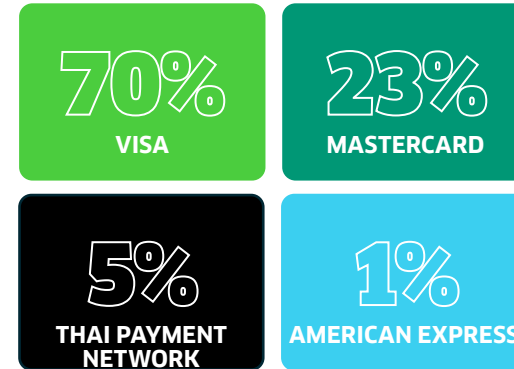
2021 e-com mix by payment method



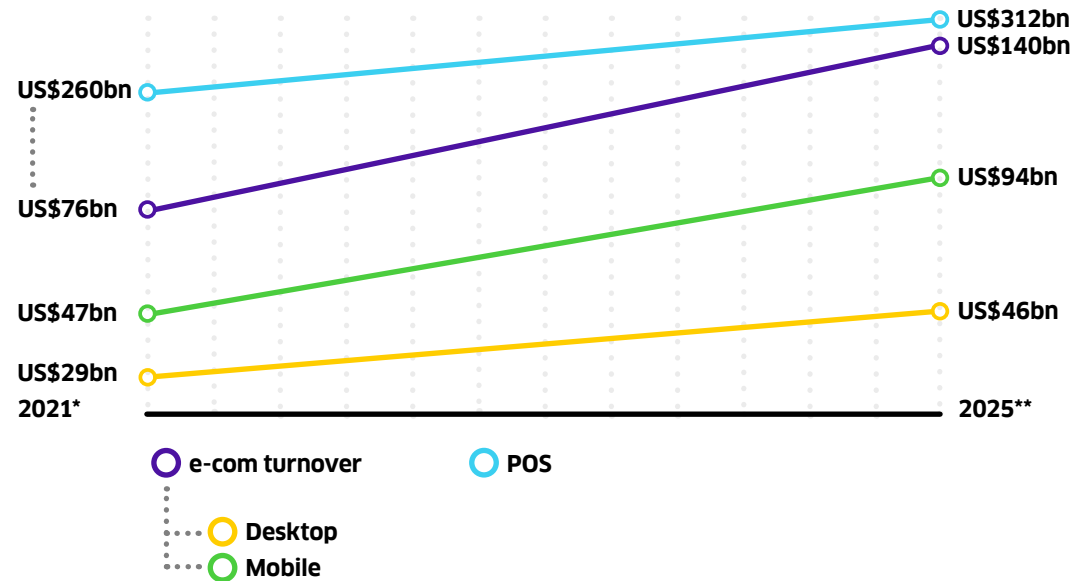
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



true money



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



TURKEY

Credit cards lead the way in Turkish e-commerce, accounting for more spend than all other methods combined. Bank transfers earned 12.3% of e-com spend in 2021 and are projected to approach 16% share by 2025. Digital wallets accounted for 6.4% of e-com transaction value in 2021. Representing 70% of POS payments as recently as 2018, cash continued to fall below 40% in 2021. Credit cards are poised to surpass cash as the leading POS payment method in 2022, with debit cards, retailer/bank financing and mobile wallets all expected to gain share through 2025.

The Central Bank of the Republic of Turkey (CBRT) has recently added an additional real-time payment service, FAST, to the established RPS system. The number of users registered has reached 11.3 million and in August 2021, transaction limits doubled to TRY 2,000. Since launching FAST, the CBRT has been receiving numerous requests for participation in the service from banks as well as payment and electronic money institutions. It is open to non-bank participation, assuming they meet the technical and operational requirements and pass tests for participation.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
12%	45%	25%	13%	17%	52%

Real-time payments

Name

RPS (Retail Payment System)

FAST (Fonların Anlık ve Sürekli Transferi)

Year live

2013 RPS

2021 FAST

Average daily volume

4M RPS
2M FAST

Average daily value

RPS: TRY 102B (US\$14.7B)

Overlay Services:

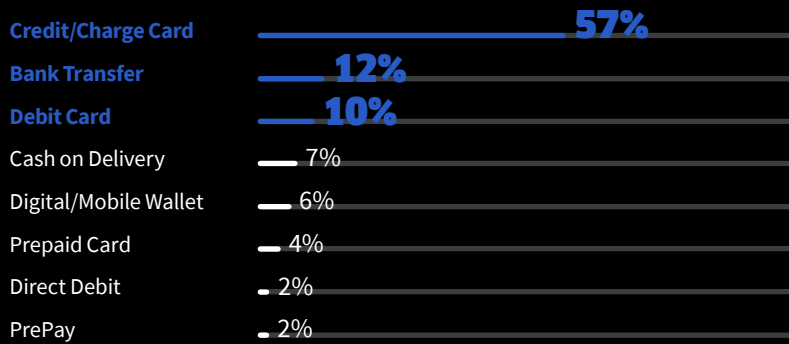
RPS: Balance Inquiry, waiting messages, transfer funds between accounts

FAST: Alias /Proxy payments with m number, email and ID, QR Code payments (in development), instant notification

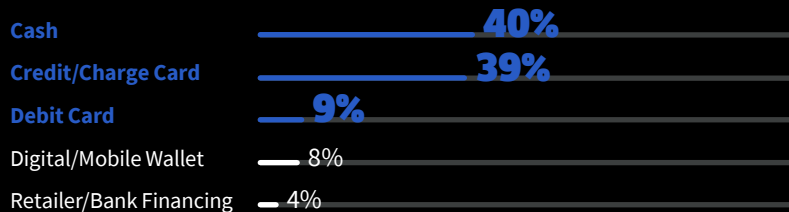
Did you know?

Turkey has the highest e-commerce growth rate among European markets in our survey, with over 25% CAGR projected through 2025. Turkish consumers overwhelmingly prefer credit cards. Led by issuers such [Akbank](#), [Garanti BBVA](#), [İşbank](#), [QNB Finansbank](#) and [Yapı Kredi](#), credit cards represented 56.8% of e-commerce and 39.1% of POS spend in 2021.

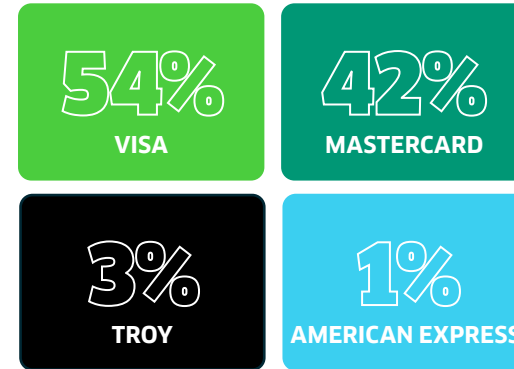
2021 e-com mix by payment method



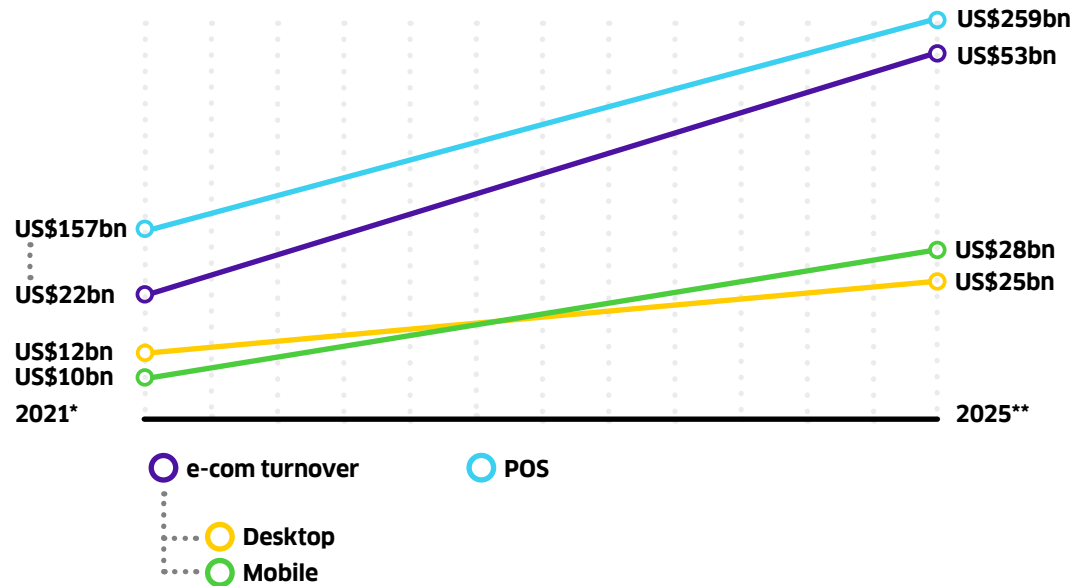
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



UAE

UAE consumers prefer credit cards when shopping online, accounting for nearly 39% share in 2021 and projected to exceed 45% by 2025. Digital wallets like [Klip](#), [eWallet \(Etisalat Wallet\)](#) and [Samsung Pay](#) represented another 23% in 2021. Digital wallets are expected to grow through 2025, with bank transfers, COD and debit card shares all in decline. Cash use has declined much faster in the UAE than in other MEA markets, falling below 20% of transaction value in 2021. Cards account for over half of POS spend, while mobile wallets will see the biggest POS gains through 2025.

Instant real-time payments continue to grow for both retail and corporate customers, with many banks activating new services on IPI. These include B2P payouts such as dividends, government related income tax, tariffs and capital transfers, as well as government department payments for goods and services servicing embassy finance and pension payouts. The IPI system was built on the existing UAEFTS (UAE Funds Transfer System) platform with limits of AED 10,000 per transaction for real-time payments.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
7%	60%	22%	6%	12%	66%

Real-time payments

Name	Year live
IPI (Immediate Payment Instruction)	2019
Average daily volume	Average daily value
5,200	AED 12.9M (US\$3.5M)

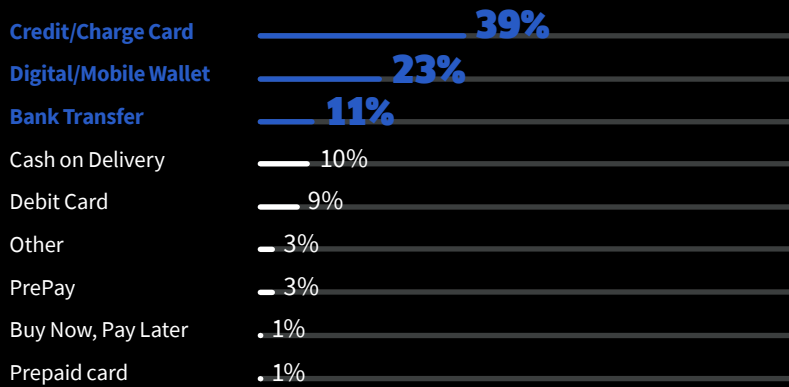
Overlay Services:

IPO subscriptions

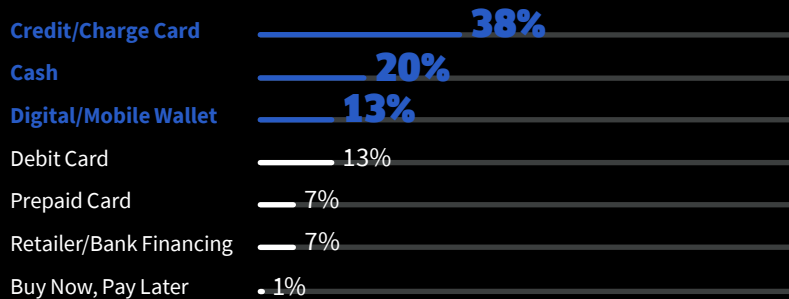
Did you know?

[Project Aber](#) is an initiative between the Saudi Central Bank (SAMA) and Central Bank of the UAE (CBUAE) to develop a joint regional central bank digital currency (CBDC) that would use distributed ledger technologies to facilitate cross-border settlement. "Aber" is an Arabic word that means "to cross boundaries."

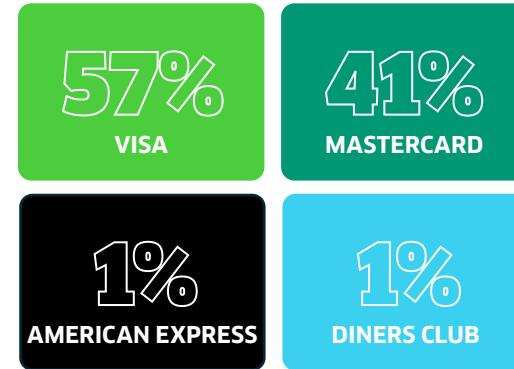
2021 e-com mix by payment method



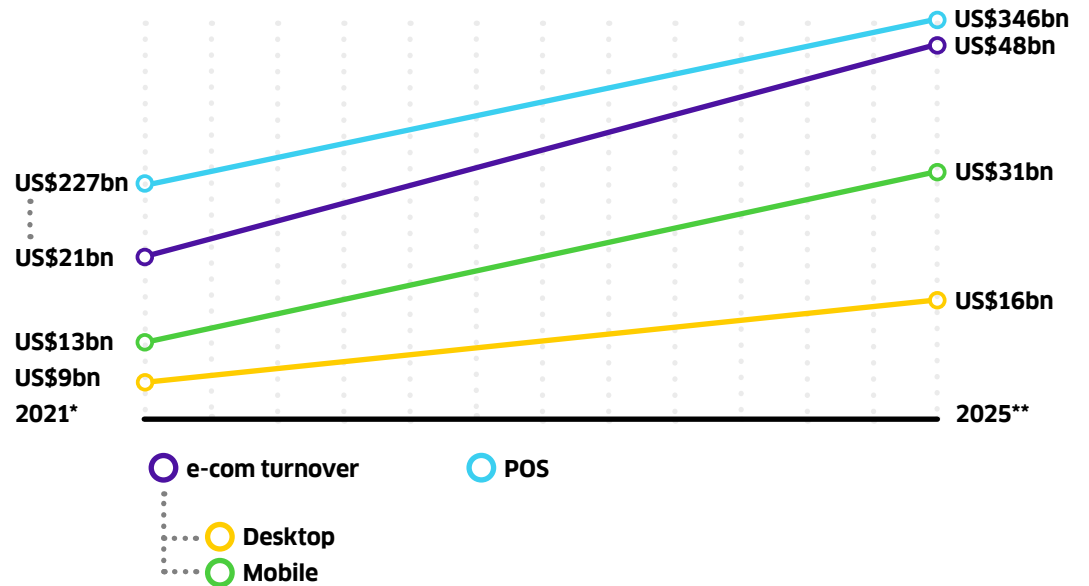
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



UNITED KINGDOM

Digital wallets ascended to the lead in e-commerce payments among U.K. consumers in 2020. Led by global brands Apple Pay, Google Pay and PayPal, digital wallets are projected to surpass one-third (34.5%) of e-com spend by 2025. Though still representing more than half of e-com transaction value in 2021, card use in e-commerce is expected to decline slightly through our forecast period. BNPL is expected to nearly double its share of e-com payments, from 6.2% in 2021 to 12.1% by 2025. Cards will extend their dominance at the POS, with credit and debit combined expected to account for more than two-thirds of transaction value through 2025.

The long-established U.K. Faster Payment system shows continued growth of 10% in daily volumes and value transacted, with a widening array of innovative overlay services. Pay UK is planning a New Payments Architecture (NPA) to replace the current Faster Payments and BACS clearing, with clearing and settlement through a single purpose-built central infrastructure. NPA is currently in build-and-test phase, with full rollout planned over the next decade.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
17%	39%	6%	5%	18%	42%

Real-time payments

Name

Faster Payments System

Year live

2008

Average daily volume

8M

Average daily value

£5.8B (US\$7.45B)

Overlay Services:

Request to pay for bill payments, proxy payments to a mobile number, payee confirmation, automated payments, forward-dated payments, return payments, direct corporate access for bulk files of payment messages, emergency payouts and loan funding, including payday loans

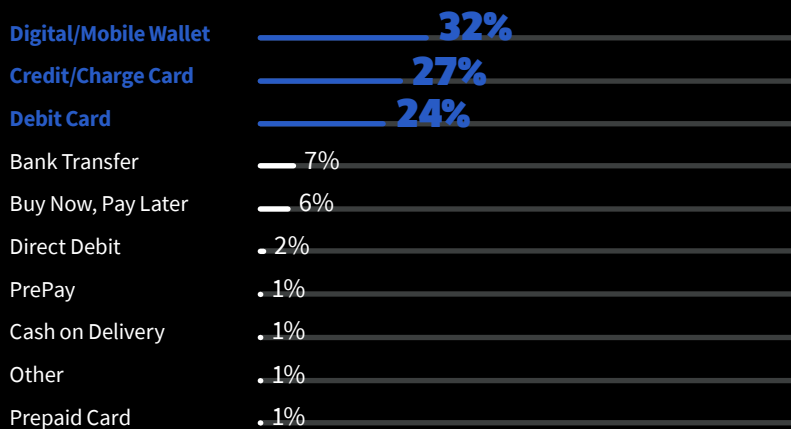
2020 card brand breakdowns (e-com and POS)



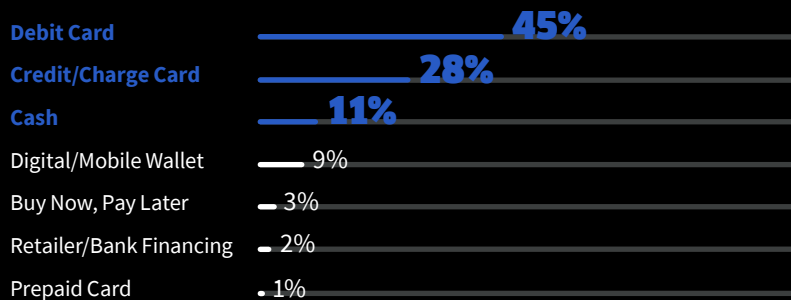
Did you know?

The U.K. features a highly competitive BNPL market with more than a dozen entrants vying for share. In addition to market leaders like [Klarna](#), [Clearpay](#) and [PayPal Credit](#), consumers looking to split payments over time can select among options ranging from [Laybuy](#) to [Zilch](#).

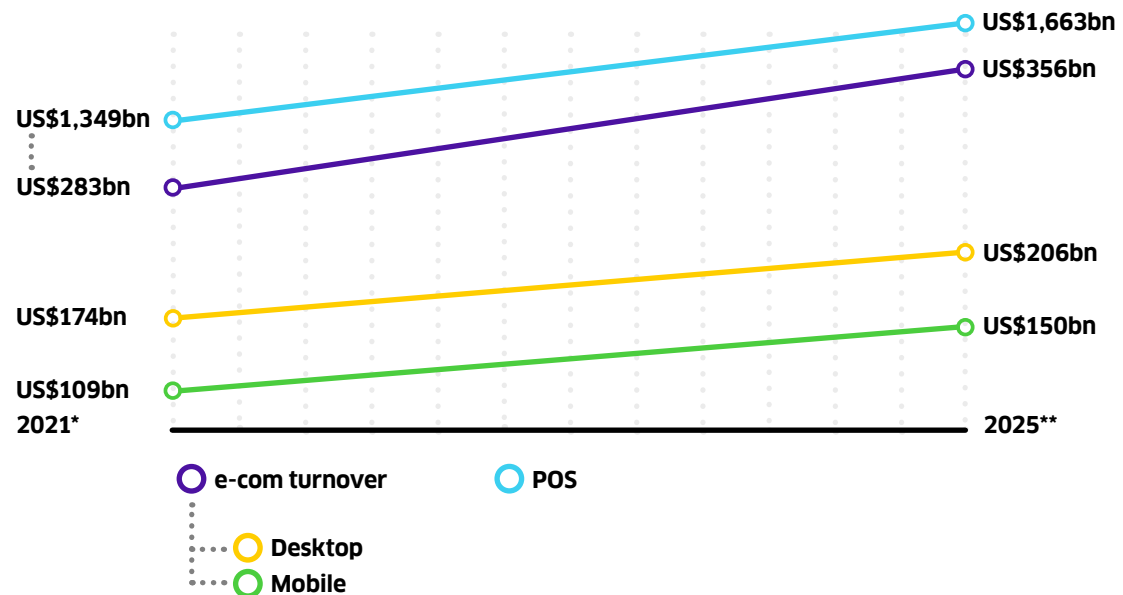
2021 e-com mix by payment method



2021 point of sale mix by payment method



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.

UNITED STATES

In 2021, U.S. consumer spending saw more than 10% YoY transaction value growth in both e-commerce and POS. Credit cards remained the leading e-com payment method with 30.2% share. While credit and debit will continue strong shares through 2025, the rise of digital wallets will culminate in 2022. With nearly 30% e-com share, they'll become the leading payment preference of U.S. consumers. Cards will retain their dominance at the POS, with credit and debit retaining more than two-thirds of POS share through 2025. Mobile wallets will continue their rapid ascent to exceed 15% by 2025, primarily at the expense of cash.

Real-time payments have been a reality since 2017 with The Clearing House's service RTP, and Zelle, a P2P instant payment service from a private financial services company owned by several U.S. banks. RTP is more than just personal P2P payments; it also offers bill payments, government tax payments and payouts, insurance claim settlement, loan payments and same-day wages for the gig economy. Nearly 7,000 financial institutions are represented on the Zelle network, reaching over 100 million mobile app users. By 2023, an additional competing service from the Federal Reserve called FedNow is expected to launch.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
13%	37%	10%	5%	16%	42%

Real-time payments

Name	Year live
RTP (Real-Time Payments)	2017

Average daily volume	Average daily value
N/A	N/A

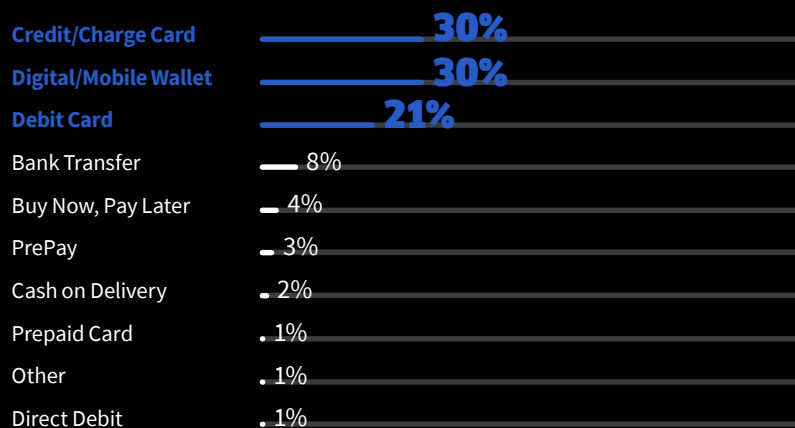
Overlay Services:

Aliases through proxy using mobile number or email, request to pay to support e-invoice or e-billing, payment acknowledgments by receiver, request for information and response on payments, pay now or future-scheduled payments

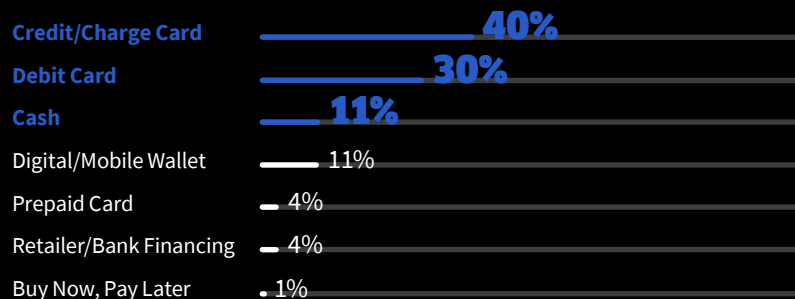
Did you know?

U.S. consumers are embracing BNPL options, propelling them to rapid growth in e-commerce and at the POS. Led by global brands such as Affirm, Afterpay, Klarna and Sezzle, dozens of BNPL entrants are competing for this lucrative market, with nearly 35% e-com and more than 50% POS CAGR projected through 2025.

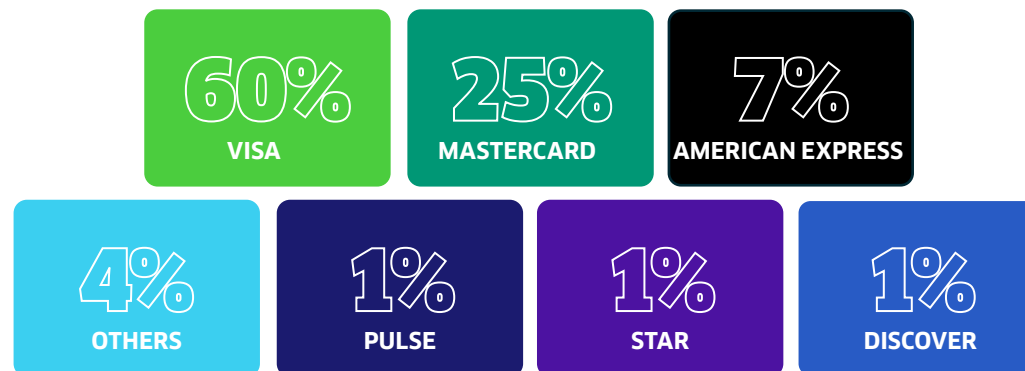
2021 e-com mix by payment method



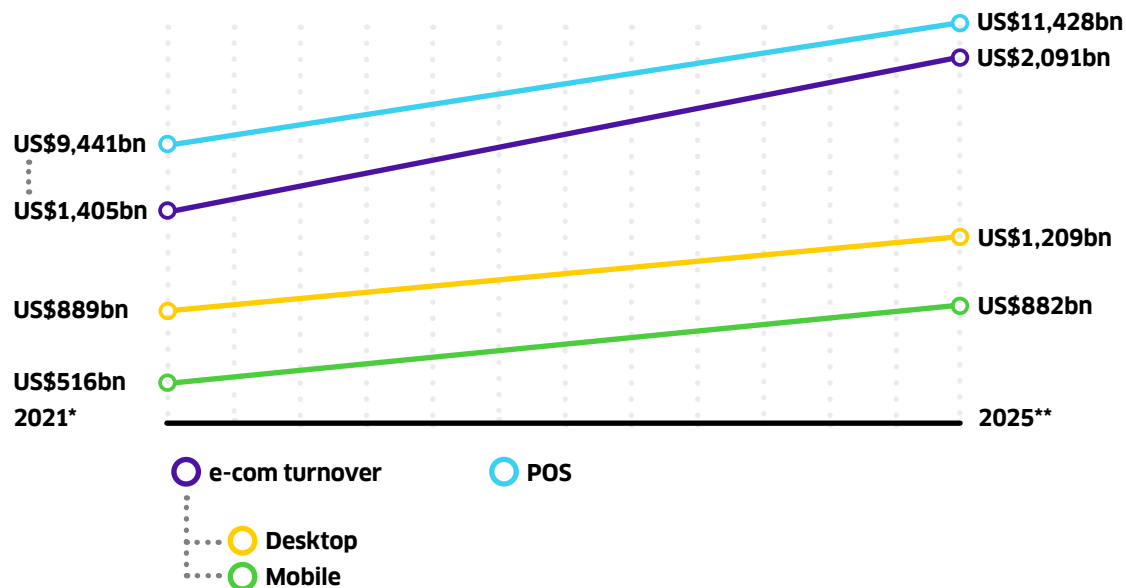
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.



VIETNAM

Vietnam’s economy continues to soar even in the face of global recessionary headwinds, with double-digit growth at the POS and more than 22% e-commerce CAGR through 2025. E-com spend is distributed fairly evenly across cards, bank transfer, COD and digital wallets. Led by [MoMo](#) and [PayPal](#), digital wallets are projected to earn a leading share of 34.1% by 2025. At the point of sale, mobile wallets will grow to 32.6% by 2025, primarily at the expense of cash.

Vietnam’s real-time National Payment Services (NAPAS) Quick Money Transfer supports consumer, retail and business payments through mobile, internet, ATM, point-of-sale and e-wallets. With no open access interface, users can get real-time account information on beneficiaries before transacting, operate through aliases with proxy look-up, pay with card and account-based services, and pay and get paid with a national QR code standard. Recent services include a contactless transport payment system in Ho Chi Minh, with tickets purchased using a smart bus UniPass card or QR code.

Fast Facts

Market data

2021 e-com sales as % commerce	2021 m-com sales as % e-com	2021* - 2025** e-com CAGR	2021* - 2025** POS CAGR	2025 e-com sales as %** commerce	2025 m-com sales as %** e-com
9%	62%	22%	11%	13%	67%

Real-time payments

Name	Year live
NAPAS Quick Money Transfer Service	2016
Average daily volume	Average daily value
N/A	N/A

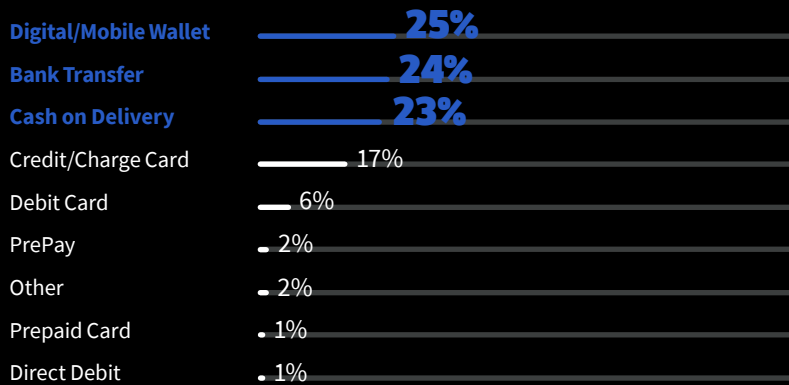
Overlay Services:

Account information query to check beneficiary; alias and proxy lookup; card and account-based services (interbank funds transfer to card numbers, and transfers to account numbers); QR code payments

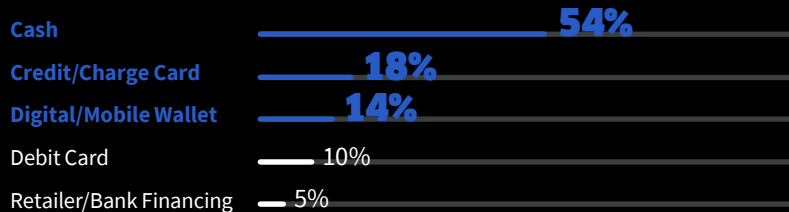
Did you know?

Vietnam is an increasingly attractive country for global brands to do business. [The World Bank suggests](#) that sound economic fundamentals are primed to see growth rates return to pre-pandemic levels of 6.5-7% in 2022 and beyond, while the consumer economy and e-commerce in particular suggest Vietnam remains an attractive market with long-term upside.

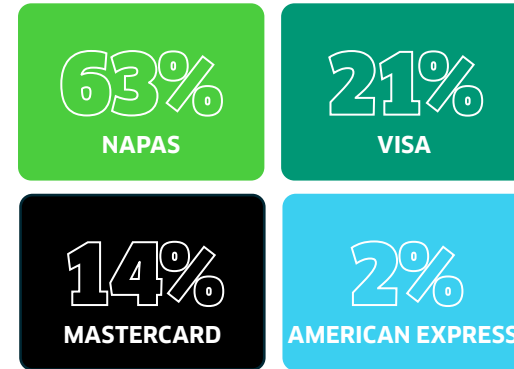
2021 e-com mix by payment method



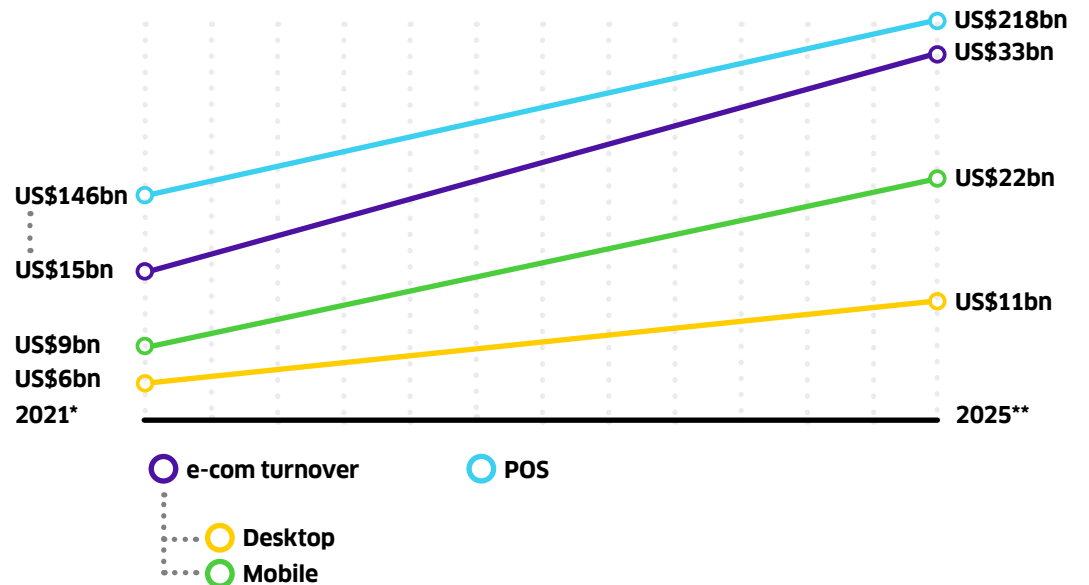
2021 point of sale mix by payment method



2020 card brand breakdowns (e-com and POS)



POS and e-com projected growth



Popular alternative payment methods



* Estimated **Forecasted

Numbers adjusted for rounding may impact totals.

METHODOLOGY

Powering the next payments frontier

The enhanced seventh edition of The Global Payments Report offers a snapshot of the current payments landscape: globally, by region and in 41 select markets. The report tracks consumer payments when shopping online and at the point of sale, identifies key payment trends and projects scenarios through 2025 for payment method shares as well as market size. A series of thought leadership articles, with perspectives on current themes in the world of payments from FIS payments experts, complement our original research.

The online and offline payment worlds continue to converge. Serving the channel-agnostic needs of merchants and consumers starts with a holistic understanding of payments. Accordingly, this report expanded beyond e-commerce in 2018 to include analysis of payment methods used at the physical point of sale (POS). In 2022 we've opened a new chapter with the integration of real-time payments (RTP) data and analysis previously published in the FIS *Flavors of Fast* report.

For the eighth year in succession, FIS has singled out the emergence and continued growth of real-time payment systems around the world. Now folded into The Global Payments Report, we continue to track all markets offering real-time payment schemes, analyze the overlay services being offered on the real-time rails and keep an eye on the new launches and those still in development. This year, we count 60 markets offering real-time payments: 34 in Europe, 13 in Asia Pacific, seven in the Middle East and Africa, five in Latin America and one in North America. The number for Europe includes a total of 20 markets on the euro-region's SCT Inst scheme.

Real-time payments data is gathered from a variety of sources, often from the payment scheme operators themselves and central banks, but the depth of data varies greatly from market to market. From this core data set we then create content, highlighting global activity on real-time rails, and the growth and innovation that real-time payments are driving.

Gathering comparative statistics on real-time payments is challenged as only half of markets with active real-time payments publish reliable volume and value-transacted data. Statistics from many markets further lack standardization and transparency. Therefore, the review of real-time payments data is necessarily constrained by the data that is available; it does not always compare like with like.

The Global Payments Report continues to evolve based on market changes and reader feedback. In 2022, we've combined two payment methods, while dividing another.

“Credit cards” and “charge/deferred debit cards” – categorized in previous editions as distinct payment methods – are now combined into a single “credit/charge card” category for both e-com and POS verticals. Differing only in the way a consumer pays the balance, for purposes of this report going forward, the credit/charge card (or simply, “credit”) category is inclusive of traditional credit cards, charge cards and deferred debit cards. Recognizing the growing importance of BNPL, we've split the

previous POS category “POS financing” into two component parts, retailer/bank financing and BNPL, in this enhanced seventh edition.

This report asserts our view of the market, based on internal expertise, our own research and third-party vendor data. The FIS Market Intelligence team compiles The Global Payments Report using data from a mixture of internal, third-party vendor and public data sources. This data is analyzed using the FIS proprietary data model and categorization scheme, developed in cooperation with a leading global management consultancy. The resulting data is rigorously tested and validated by external experts as well as FIS product and commercial teams.

E-commerce market size and forecast data is sourced from [GlobalData's E-Commerce Analytics](#) database based on data updated at the end of Q3 2021; 2021 data cited in the report are therefore estimates for the year. GlobalData collected this information using consumer surveys, B2B surveys and desk research, and have also developed a proprietary forecasting model for e-commerce market size growth.

2021-2025 POS market sizes were calculated using McKinsey & Company macroeconomic data. Total POS market size through 2025 was forecasted based on available macroeconomic projections at the time of writing. All projections are subject to changes in world events, market dynamics and other forces over the period concerned (to 2025). Any indicative predictions based on the data we have used should be treated as such.

Actual shares of individual payment methods by country and region are calculated using the aforementioned data model. Our model contains a detailed breakdown of payment methods used when shopping online and at POS, based on GlobalData's 2021 Financial Services Consumer Survey conducted online in Q1 and Q2 2021 among 52,742 consumers in 42 global markets.

Forecast breakdown by payment method for each region is calculated using historical percentage share growth trend (in CAGR) for e-commerce and the McKinsey Global Payments Map's indicative trends for POS methods. This was supplemented by rigorous validation from FIS and external experts. McKinsey & Company continuously maintains its payments database from over 200 global sources, including public data, consumer surveys and local research team inputs. All market size data relate to the industry, not from direct FIS business.

Additional secondary sources for this report include data from local card, banking and payments associations; card scheme and payment providers; e-commerce industry reports and studies; news articles; and international organizations including [The World Bank](#) and [International Monetary Fund](#). Card scheme figures were sourced from [Euromonitor](#) and GlobalData with further internal analysis, and these are representative of all payments including e-com and POS.



PAYMENT TERMS

Payment terms

Alternative payment methods (APMs)

“Alternative” refers to payment methods other than traditional payments – cash, credit cards or debit cards linked to one of the major card networks. Alternative payment methods include bank transfers, digital and mobile wallets, direct debit and BNPL. Alternative payment methods to cash and cards comprised 35% of 2021 POS spend, while “alternatives” to cash and cards are now a majority, approximately 63% of 2021 e-com transaction value.

E-commerce (e-com)

E-commerce includes online purchases of both goods and services such as purchases made on e-commerce websites and online booking of travel and accommodation. However, it does not include online purchases of motor vehicles, real estate, utility bill payments (such as water, heating, and electricity), mortgage payments, loans, credit card bills, or purchases of shares and bonds. Sales are attributed to the country in which the consumer is based and only include business-to-consumer e-commerce – not business-to-business sales. E-commerce also includes mobile commerce.

E-com CAGR/POS CAGR

Compound annual growth rate projections for e-com and POS transaction values respectively in a given market, projected 2021 through 2025. Global e-com transaction value CAGR for 2021 – 2025 is projected at 12%; global POS transaction value CAGR for 2021 – 2025 is projected to 6%.

E-com sales as % commerce

E-com transaction value as a percentage of all commerce. Global e-com sales represented ~10% of all commerce (e-com + POS) in 2021. Higher estimated growth rates for e-com relative to POS will see e-com sales as a percentage of all commerce rise to a projected 12% by 2025.

E-com turnover/transaction value

Estimates US\$ sum of all consumer-involved transactions made online including those made via desktop, mobile devices and other ways to connect to the internet. Global e-com transaction value in 2021 was approximately US\$5.4 trillion.

M-com sales as % e-com

Transaction value of purchases made via mobile devices as a percentage of all e-com transaction value. For the first time in 2021, a majority of e-com spend originated from mobile commerce that accounted for 52% of total e-com, or approximately US\$2.8 trillion. Mobile’s faster growth projects to account for 59% of e-com transaction value by 2025.

Point of sale (POS)

All transactions that occur at the physical point of sale. Includes traditional in-store transactions as well as all face-to-face transactions regardless of where they take place. Global POS transaction value approached US\$47 trillion in 2021. An estimated 6% CAGR for POS projects to US\$59 trillion in 2025.

Payment methods

Bank transfer

Bank transfers allow consumers to pay merchants for purchases directly from their online bank account. Bank transfer payments are embedded in a wide variety of apps and online services such as [Pix](#) in Brazil, [iDEAL](#) in the Netherlands and [BLIK](#) in Poland. In 2021 bank transfers accounted for an estimated 7.4% of global e-com transaction value that is projected to surpass US\$425 billion annually in 2022.

Buy now, pay later (BNPL)

BNPL services are payments allowing consumers to pay for goods and services, either through a one-time invoice or a finite set of installments. Popularized by global payment brands including [Affirm](#), [Afterpay](#) and [Klarna](#), BNPL accounted for nearly 3% of global e-com transaction value (~US\$157 billion) in 2021.

The enhanced seventh edition of The Global Payments Report tracks BNPL at POS, a distinct category for the first time. Though accounting for slightly less than 1% (.8%) of 2021 transaction value, BNPL projects to double that global POS share to 1.6% by 2025, or upwards of US\$940 billion in transaction value.

Cash

Once the undisputed leader in POS commerce, physical cash accounted for approximately 17.9% of POS transaction value in 2021. Cash is projected to continue to decline in use and is projected to fall slightly below 10% of POS

spend by 2025. Cash was used at the global POS for over US\$8.3 trillion in 2021 transaction value, with cash transaction value expected to decrease to less than US\$5.8 trillion by 2025.

Cash on delivery (COD)

Cash on delivery (COD) transactions feature goods ordered online and paid for with cash at the time of delivery. COD remains an important payment method by offering an essential link to e-commerce for unbanked consumers. COD accounted for 2.8% of global e-com transaction value in 2021.

Credit/charge cards

An anchor of consumer payments for over half a century, credit cards are issued by financial institutions affiliated with a global card brand network such as Mastercard, Visa, UnionPay, etc. Credit cards allow consumers to make purchases via an extension of credit from a financial institution. For the first time in this report, credit cards are combined with charge cards and deferred debit cards into a single category, “credit/charge cards.” As credit cards, charge cards and deferred debit differ only in the cardholder payment terms, we’ve combined them into a single category.

In 2021, credit/charge cards represented 20.8% of global e-com transaction value (over US\$1.1 trillion) and 23.9% of POS transaction value (US\$11.15 trillion).

Debit cards

Debit cards allow consumers to purchase with funds directly debited from accounts held at their financial institution. Debit cards are issued by financial institutions affiliated with a global card brand network. In 2021, debit cards accounted for 13.2% of global e-com transaction value (over US\$700 billion) and 22.7% of global POS transaction value (over US\$10.6 trillion).

Digital/mobile wallets

Digital and mobile wallets allow consumers to securely store payment credentials to pay for purchases virtually everywhere commerce takes place: online, in-app or in-store. Wallets can be funded directly via cash, cards, bank transfer or other methods like cryptocurrencies, or wallets act as pass-through mechanism and are linked to cards or bank accounts. Popular wallets globally such as [Alipay](#), [Apple Pay](#), [Google Pay](#), [PayPal](#), [Paytm](#) and [WeChat Pay](#) are joined by hundreds of local and regional wallets

to comprise this large and dynamic market segment. In 2021, digital and mobile wallets accounted for 48.6% of e-com (US\$2.6 trillion) and 28.6% (US\$13.3 trillion) of POS transaction value.

Direct debit

Direct debit is an e-commerce payment method where customers give a retailer permission to withdraw funds directly from their bank account on a specified date after the purchase. In 2021, direct debit accounted for 1.1% of global e-com transaction value.

Others

We continue to track other emerging payment methods—like mobile carrier billing and cryptocurrencies—that in 2021 combined to account for 0.8% of global e-com spend, or over US\$41 billion.

Retailer/bank financing

Retailer/bank financing represents a mix of traditional extensions of credit to consumers at the point of sale. This includes credit offered by retailers, financial institutions and marketplaces, but excludes third-party BNPL services such as Klarna, Afterpay and Affirm that are tracked separately. New to our analysis as a distinct category this year, retailer/bank financing accounted for nearly 4% of global POS transaction value in 2021, or slightly over US\$1.8 trillion. Previous editions of The Global Payments Report aggregated retailer/bank financing and BNPL at POS into a single category “POS financing.”

PostPay

PostPay allows consumers to order products and pay for them in full later at an affiliated physical store or ATM. Although PostPay services represent only 0.6% of e-commerce transactions globally, led by Boletão Bancário in Brazil, PostPay accounts for approximately 7% of LATAM e-com transaction value. PostPay thrives in Japan where payments made at Konbini stores represent 9% of e-com spend.

Prepaid card

Prepaid cards are issued by financial institutions that run scheme networks such as [Visa](#) and [Mastercard](#). Prepaid cards can be funded one time or be reloaded, and they can be used to make purchases as easily as debit or credit cards. Prepaid cards accounted for less than 1% (0.6%) of e-com and approximately 2.2% of POS transactions in 2021, or approximately US\$1.04 trillion.

PrePay

PrePay services help consumers make e-commerce purchases without a card account and without providing personal data. Services such as [Paysafecard](#) and [Neosurf](#) offer flexible payments via vouchers redeemable at participating merchants. PrePay methods accounted for slightly more than 1% of global e-com transaction value in 2021.

Real-time payments

Account alias and proxy

Many real-time schemes give users multiple options for identifying the recipient of a payment. Of course, all services allow payees to enter the bank account number (IBAN) of the recipient, but to make the services more convenient, other unique identifiers can be used including mobile phone number, email address, national identity number, etc. All participants must register for the service to use the proxy identifier that is centrally mapped to a destination bank account with a proxy addressing service.

E-invoicing

Electronic invoicing (e-invoicing) is the exchange of a bill and payment details between a supplier and a buyer in electronic format. This means that the invoice is issued, transmitted and received in a structured electronic format which allows for its automatic and electronic processing. Some solutions combine e-invoicing with payment – meaning that the e-invoice is integrated with a payment instrument. This service is often provided to the supplier by either a bank or a service provider and allows the supplier to send out the e-invoice to the buyer's internet banking environment, a suitable digital wallet or another application. The buyer checks the invoice and can initiate the payment – via credit transfer, direct debit or card payment – without having to type in the payment data as the e-invoice already contains everything that the buyer needs to make the payment.

E-mandates

E-mandates are increasingly part of real-time payment services whereby billers establish an e-mandate notification to customers for subsequent review and pre-authorization of direct debit.

QR codes

The use of QR codes to initiate real-time payments is a growing phenomenon and provides both parties with a simple and quick way to accept and make payments. Standardized QR codes allows customers to

make instant payments for goods and services from different funding sources (mobile wallets, cards, bank accounts) by scanning a quick response code on a smartphone to complete all the payment details, only requiring approval from the payee. These services are used in retail locations, but increasingly, QR codes are being used to simplify business and government payments driving more traffic on the real-time rails

Real-time payment

We define a real-time payment as an inter-bank fully electronic payment system in which irrevocable funds are transferred from one bank account to another, and where confirmation back to the originator and receiver of the payment is available in one minute or less.

Remittances

Cross-border remittance payments – money sent to another party in a different country – increasingly use the real-time payment rails for clearing and settlement. Remittances from foreign-based workers represent one of the largest sources of income for people in low-income and developing nations, often exceeding direct investment and international development assistance.

Request to pay

A request to pay overlay service will allow any business or individual wishing to receive a payment to send an electronic request for that payment to the debtor account. The request will be received by the payer – most likely via an electronic interface such as a mobile banking app – showing the requested amount and the due date. They will then be presented with a number of choices: 1. Pay in full 2. Pay part 3. Ask for an extension 4. Decline payment 5. Send a message. If the payer chooses to make a payment, the payee will be notified whether the payment is in part or in full and when it has been confirmed.

Scheme

A real-time scheme is a set of processes and systems that define the end-to-end payment process, from initiation to clearing and settlement. Each country will typically have a domestic scheme except for the eurozone countries which all centrally utilize the SCT Inst scheme.



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