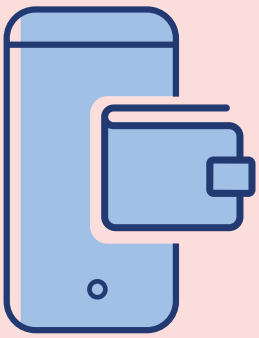
terrapay

In collaboration with LAFFERTY
Pioneering insights in banking and fintech

Making wallets work everywhere



The vast potential for interoperability in payments

Making wallets work everywhere

How the global wallet will broaden payment options

As merchants start accepting digital wallets globally, the payments world is going through a remarkable expansion. For nonbank issuers of mobile wallets, the financial services they can offer to their customers are going to grow immensely, allowing them to drive more consumption from the mobile wallet. For banks, the outcomes could be even more remarkable: the digital wallet becomes an extension of the bank account and enables the bank and its customers to go global in a totally new way. As a result, the world is just the same as the home market.

The paradox in payments

One of the greatest things about bank accounts is that they are interoperable. It's possible to send money from almost any bank account to another bank account. It might take a week or more, and the exchange rates are higher and the final balance unknowable, but it does work.

However, one of the paradoxes of payments is that banks generally are unfavourable at helping their retail customers do small-value transactions. And when we speak of banks in emerging markets, which don't generally cater to people on low incomes, payments through banks are out of the question altogether. However, the fastest-growing payment instrument in the world right now is the digital or mobile wallet. In a highly developed market such as the US, many people do not even understand the concept of a mobile wallet payment system because cards are so prevalent. Yet in Africa, the first and foremost payment instrument is the mobile money wallet, and it looks as though mobile wallets will be the next evolution of the modern digital payments network. This is true of many underdeveloped or developing economies where wallets end up becoming the first financial instrument to get the marginalised or excluded into the main stream of financial services.

The genius of the card schemes is that a Visa or Mastercard can generally be used at any merchant around the world that is a member of the network. This is where mobile wallets are headed, and the key to this development is making mobile wallets interoperable. In this paper, we describe the phenomenal momentum behind mobile wallets and explain how to make mobile wallets work everywhere.

Request-to-Pay

Take Request-to-Pay. In developed markets, Request-to-Pay is emerging mostly as a bill-pay option, where the payee sends a payment request that the buyer or payer authorizes inside the secure channel of the app or wallet. In emerging markets, Request-to-Pay has potential not just for bill payments but for merchant payments and Person-to-Person payments. However, what has been observed at the ground level is that

most of these are victims of proprietary ecosystems crafted by their service provider which means the usage is restricited to the juridisction defined.

Payments have historically been dominated by banks, and in the last fifteen years, in particular, regulators have mandated more competition in payments markets, which helped establish a new set of players called fintechs. If nothing else, fintechs have shown how to build business models for digital payments, leveraging the realms of data generated by digital payments to offer value- added services to businesses and end-users.

For years, this has been a strength of the cards business, especially at the high-end where American Express operates. Can this level of security and value-added services such as loyalty programmes be added to mobile wallets? Certainly – and more. This requires broadening the digital payments systems.

In the world of digital payments, interoperability is key. The more people who make and accept digital payments, the bigger the market, and the more income will be available for all participants. This is about baking a bigger pie.

Regulation-driven payments

Regulators have pushed Open Banking in a small number of developed markets such as the EU, UK, Hong Kong, and Australia, along with emerging markets such as Brazil and Mexico. Even in developed and highly banked markets, most people don't commonly make account-to-account payments as the process is not user-friendly. Instead, most people make online payments using debit or credit cards. While merchants prefer account-to-account payments as they can be fee-free, it's rarely offered as an option on most e-commerce websites as it is cumbersome. Instead, merchants accept card payments and grumble about the fees.

This situation changes with Request-to-Pay, which allows merchants to send a message to the customer on request that the customer then opens in their preferred secure payment channel and authorizes the payment. This can be done, for instance, directly from the customer's bank app. Request-to-Pay can be executed as a text message, WhatsApp, by email, or even by QR code but directs the user to a secure channel within the app or wallet where they authorize the payment. In short, every transaction is supported by a second factor authentication which adds non-repudiation to the transaction. But what about markets where cards are not prevalent, and bank account penetration is low?

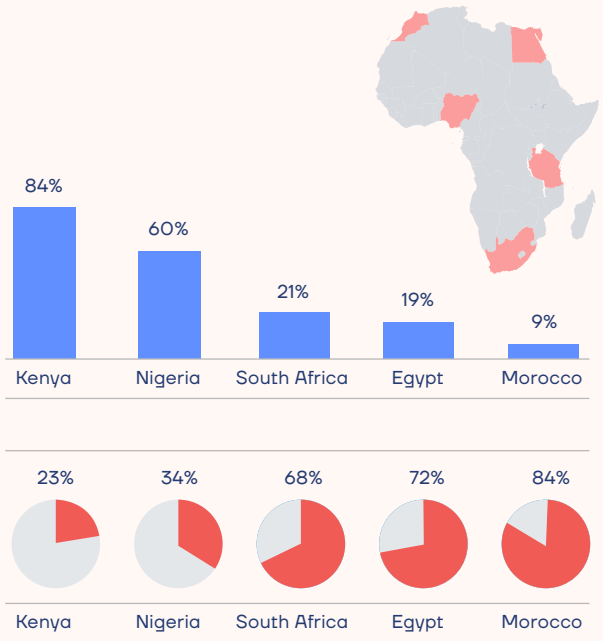
Market-driven payments

Unlike developed markets, bank account ownership and card ownership are not high in many emerging markets. In Sub-Saharan Africa, less than fifty percent of the

population is banked. A bank account to bank account proposition is not going to work just yet. However, mobile wallets are now driving the adoption of financial services more than bank accounts, so many of the opportunities in open banking lie with nonbank companies. Leading among those are mobile wallet issuers, including telcos, fintechs, and banks themselves, or their payment verticals, which many are thinking of spinning off into separate businesses.

Diagram 1: The potential of mobile payment in Africa (source: Statista).

Share of internet users using mobile payment in selected countries and internet penetration rate



Mobile payment users: 1,000 to 2,000 internet users surveyed per country in 2021.

Internet use data from 2020 (or 2019 if not available).
Sources: Statista Global Consumer Survey, World Bank

Internet users using mobile payment

Internet users as share of population

As diagram 1 illustrates, Kenya's early adoption of mobile payments sets the benchmark for other countries. And what is already happening globally is that the boundaries between online and offline payments are disappearing. The relatively new field of e-commerce payments is producing payment options that can easily be used in-store as well, for example, through Request-to-Pay.

Broadening access: Trends in the digital payments market

The shift from cash to digital payments is evident in the declining percentage of cash payments, which has only accelerated during the pandemic. Among the changes that have been driven by the pandemic:

- Many merchants shifted from accepting only cash to installing Point-of-Sale devices or installing e-commerce software for the first time.
- Many payment operators upgraded their systems to accept contactless payments.
- Regulators encouraged banks and issuers to increase the limits on contactless payments.

One of the broad outcomes of the pandemic was the increase in mobile wallet use. A 'pass-through mobile wallet' such as Apple Pay or Google Pay stores card details digitally and uses those details to make

payments. ‘Staged’ mobile wallets are those in which the user funds from another source, such as paying cash to an agent who tops up the wallet, and the payment is made by the mobile wallet operator or issuer, preferably using real-time payment systems.
Real-time payment systems offer new business models to financial services players. Request-to-Pay is an evolution of digital payments, part of the move from batch payments to real-time payments. Available already – although dependent on individual banks – in Europe, the UK, India, and the US, Request-to-Pay is currently driven principally by banks in developed markets. Let us see how this works.

How Request-to-Pay (RTP, R2P) works

Request-to-Pay is a new service that leverages real-time payment systems. Essentially, it is a messaging service or two-way communication channel between the payer and payee which is delivered through the payer’s digital wallet or bank app. As digital wallets and bank apps usually require two-factor authentication to access, this makes Request-to-Pay a more secure channel than SMS or email. The use of digital wallets for Request-to-Pay will be more common in emerging markets where digital wallets outnumber bank accounts.

How Request-to-Pay (RTP, R2P) works in developed markets

Let's observe how Request-to-Pay works in developed markets where people are highly banked. Request-to-Pay was originally conceived as an extra service on top of Open Banking and has been led by both banks and fintechs in the UK and Europe. However, it has served so far mainly to make life easier for people who already have bank accounts.

Table 1: **Global e-commerce payment methods (WorldPay, 2021)**

Payment method	% in 2021	% in 2025
Digital/ Mobile wallet	49	53
Credit card/ Charge card	21	19
Debit card	13	13
Bank transfer	07	06
Buy now pay later	03	05
Cash on delivery	03	01
Direct debit	01	01
Prepay	01	01
Other	01	01
Prepaid card	01	00
Postpay	01	00

Table 2: Global POS payment methods (WorldPay, 2021)

Payment method	% in 2021	% in 2025
Digital/ Mobile Wallet	29	39
Credit Card/ Charge Card	24	22
Debit Card	23	22
Bank Transfer	18	10
Cash	04	03
Retailer/ Bank Financing	04	02
Prepaid Card	02	02
Buy Now Pay Later	01	02

The UK established its Pay.UK standard in June 2020. Pay.UK operates the UK's national retail payments (Bacs, including Direct Debit, Faster Payment, and the Image Clearing System). According to Pay.UK, "this broad stakeholder community created a real balance in providing both biller and payer benefits for a vastly improved customer experience to today's bill payment options." It is principally designed to make bills easier to pay. Pay.UK says its framework has been designed so that "banks, PSPs and other large multinationals looking for a simple roll-out can work with a technology partner that can supply a single point of integration across these standards and handle the complexity of translating the messages.

In Europe, Request-to-Pay is different as it operates principally through the SEPA (Single European Payment Area) and payments must be in Euros. It is likely that its principal use will be for Customer-to-Merchant and Business-to-Customer payments. As an example:

- A customer selects goods or services to buy online and then selects the Request-to-Pay option.
- The merchant then sends the payment details to the payer's bank app or digital wallet.
- The customer authenticates his or herself to log into to the digital wallet or bank app.
- The customer opens the message confirming or pushing the payment to the merchant.
- The merchant receives confirmation from the customer's wallet or bank that the payment is on the way, and sends the goods or service.
- The bank or wallet issuer sends the payment in real-time to the merchant.

Australia has for two decades offered a version of RTP, called BPAY, which has captured 60% of the bill payment business. It will offer an upgraded RTP service through the New Payments Platform real time clearing system.

The US RTP scheme is operated by The Clearing House which provides instant payment services to banks. It's a bank account to bank account payment method and is principally used for bill payment.

How Request-to-Pay (RTP, R2P) works in emerging markets

Request to Pay is emerging as a distinct innovation in developing markets, such as for mobile wallets in Africa, it does not require the user to change their behaviour, as it allows users to make cross-border payments using USSD and authentication mechanisms.

Table 3: Middle East and Africa e-commerce payment methods (WorldPay, 2021)

Payment method	% in 2021	% in 2025
Credit Card/ Charge Card	31	33
Digital/ Mobile Wallet	17	26
Bank Transfer	16	13
Cash On Delivery	14	06
Debit Card	13	05
Prepaid Card	03	01
PrePay	02	01
Direct Debit	02	01
Other	02	01
Buy Now Pay Later	01	00

The figures in Table 3 detail the share of different e-commerce payment methods in the Middle East and Africa. Digital and mobile wallet payments already account for almost one in five payments and are projected to rise another 65 percent, principally replacing cash on delivery and debit cards. This is by far the biggest projected rise of any payment method, with only credit cards also rising as a percentage of payments.

Table 4: Middle East and Africa POS payment methods (WorldPay, 2021)

Payment method	% in 2021	% in 2025
Cash	44	31
Credit Card/ Charge Card	20	22
Digital Wallet/ Mobile Wallet	12	21
Debit Card	12	14
Retailer/ Bank Financing	06	06
PrePaid Card	05	04
Buy Now Pay Later	01	01
Direct Debit	02	01
Other	02	01
Buy Now Pay Later	01	00

As the figures in Table 4 detailing different payment methods at the Point-of-Sale in the Middle East and Africa from WorldPay suggests, cash use is projected to decrease by 29.5% with most of that being replaced by mobile wallets which are projected to increase by 75%, along with a slight increase in debit and credit card use.

Request-to-Pay: Who benefits?

Who will benefit from Request-to-Pay? The biggest advantages will go to businesses moving from cash to digital payments because of the added security and ease of reconciliation that flows from using digital methods.

Merchants offering Request-to-Pay can deliver that request through many different channels, from QR codes to USSD for feature phones to contactless payment. What is now happening is that issuers of wallets can offer their customers not only domestic but cross-border services.

Take the example of a customer purchasing office supplies at a merchant in Nairobi with a feature phone-based wallet. The customer requests to pay by USSD, provides their number, and the merchant sends the Request-to-Pay by USSD. The next week, that customer plans to travel to a trade fair in Dubai. What if the customer can use this familiar domestic payment method cross-border? This opens up the potential to replace cross-border cash with digital payments, but the wallet issuer can also offer the possibility for the Kenyan customer to do cross-border e-commerce payments from their mobile wallet also, offering all the services previously offered only by card issuers.

Mobile wallets for cross-border travel and e-commerce payments

While the greatest change will be for new users moving from cash, people who habitually use a mobile wallet for payments will also benefit. A traveller with a card can use it abroad, so why not allow mobile wallet users to bring their wallets abroad and use them there? Most of us now consider our mobile phones as important as our physical wallets and bring them everywhere with us. Enabling the use of mobile wallets across borders means adapting the services that have made card schemes so enormously successful.

Let's take the example of a Kenyan trader who travels to Dubai for business and shops at Dubai Duty Free. As few people in Kenya have credit cards, she may choose instead to change her Kenyan shillings to US dollars and then into AED (United Arab Emirates Dirham) at an exchange house, which is the most cost-prohibitive route.

If she has a card, she could use that at the Point-of-Sale, but the cost of that payment might be expensive.

The option with Request-to-Pay is that she can use her smartphone and existing mobile wallet with Kenyan shillings and

Request-to-Pay with AED at the Point-of-Sale. So the merchant could for instance offer her a QR code, which she scans and then approves from her mobile wallet.

If she is using a feature phone, she can type in the number at the merchant's terminal and Request-to-Pay via USSD.

This is interoperability and was demonstrated in March 2022 when a Kenyan visitor using their Kenyan mobile wallet made a payment to pay for food at the Alkebulan Food Hall at the Dubai Expo 2020.

Growing interoperability is growing the pie: The commercial rationale for the evolution of interoperability

Interoperability is the key to financial inclusion and as the growth of digital wallets outpaces the growth of bank accounts, making mobile wallets interoperable is a giant leap in the right direction.

Interoperability can happen in one of two ways: voluntarily and by consensus, or by regulation. It's happening in different ways depending on the region, but one pattern in financial regulation and particularly payments is that regulators in developed and emerging markets often adopt EU rules, which helps to set a common global standard. The UK's departure from the EU has only changed this overall approach marginally.

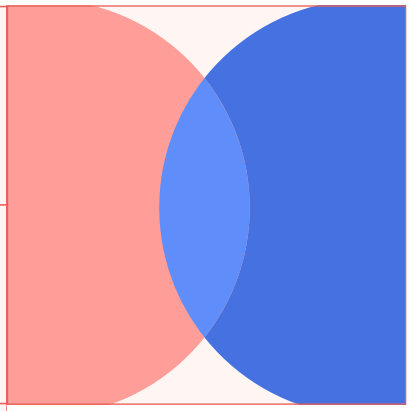
While payments businesses can resist interoperability as they think it will limit their profitability, this is not necessarily the case. Payment interoperability can easily broaden financial inclusion. In fact, interoperability can expand the payment options available to transact, making them more attractive to the user. This can also benefit the service provider, as the money remains in digital format and the user does not have to cash out to avail of services that are unavailable online due to a lack of interoperability.

What enables interoperability?

Why are we talking about interoperability? With broad agreement on the benefits of digital money over cash, the implementation requires planning and coordination. As CGAP (Consultative Group to Assist the Poor) observes, customers will make the effort to learn how to use digital wallets only if enough retailers accept digital payments. For digital payments to flourish, there is a need for an increase in acceptance points. There are lessons for digital financial services providers in both past and recent developments in payments. Change can happen largely in two ways: regulators mandate that new payment instruments are interoperable, or private businesses and industries build the infrastructure to enable interoperability.

Let us look at four related instances of interoperability: the card networks, mobile money, the EU's new Digital Markets Act, and Central Bank Digital Currencies:

Interoperability's success stories



1. The success of the networks

The most successful example of privately-developed interoperability is the Visa and Mastercard networks that operate the 'four-party' schemes. Both Visa and Mastercard grew out of bankcard associations, when banks began to group together to process card payments across the associated banks. The measure of the success of Visa and Mastercard is such that both were early entrants into the world of digital payments and both are among the world's top five digital payments businesses by revenue.

This is how it happened. In 1958, Bank of America launched the BankAmericard®, which eventually grew into the Visa card network. It mailed credit cards for free to residents of Fresno, California (where most people were Bank of America customers), and then signed up 300 merchants to accept the cards. Famously having many customers who were farmers and travelled around the country to sell their goods, it began to license the card processing technology to other banks and bank associations across the US and built up a national network of merchants.

This example still has great relevance for today's Digital Financial Services providers. "The key takeaway for DFS providers today is that although BofA devised the scheme, it was successful because other member banks saw the commercial upside of interoperability. BofA realized that licensing its technology to other banks to develop a major card payment market was smarter than dominating a small and static piece of it," notes the GCAP paper, Digitizing Merchant Payments. The lesson here is that by giving up its proprietary advantage, Bank of America grew tremendously as a result of its incredibly successful innovation in issuing the first mass-market credit card and helped the bank to grow from a Californian operator to its current status as one of the big four US banks.

"Interoperability means that your own customers will transact at merchants 'owned' by other providers and that the customers of those other providers will transact at your merchants. Both types of payments are likely to increase revenue for your business, depending on the acquiring model. Interoperable models that use transaction fees, such as the four-party model used by credit and debit cards, typically generate revenue for both providers involved in the payment."

This is a key point. The interchange fees for cards can be used for mobile wallet transactions, providing income to issuers and acquirers.

2. The safaricom success story

When mobile network operator Safaricom first trialled mobile money M-Pesa in Kenya in 2007, it was a huge success, even though users were only able to receive and send money on the Safaricom/M-Pesa network. M-Pesa then introduced Lipa na M-Pesa which allowed users to spend money from

the wallet at merchants', though users could only spend at shops that accepted M-Pesa. That wasn't good for competition and as a result, Safaricom is now consistently one of the largest companies in Africa by market capitalisation.

When neighbouring country, Tanzania introduced mobile money in the following years, it took a different road, partly because Safaricom's mobile money business in Kenya was regulated by the Communications Regulator rather than the Central Bank of Kenya. The Bank of Tanzania encouraged mobile money account-to-account interoperability from the beginning, a strategy now finding favour with other central banks because fifteen years after the launch of M-Pesa, interoperability is still limited across the services where it is needed most: financial services.

3. The success of the EU digital payments market

As one of the world's largest digital payment markets, the EU has introduced several new financial directives to improve competition in the payments market, including PSD2 which has been adopted as a payments framework in other countries and regions.

As data plays a far more significant role in digital payments than in cash payments, data regulations feature heavily as part of the new payments directives. The latest associated directive is the Digital Markets Act, which will require interoperability among Big Tech players that are 'gatekeepers' of social and digital networks. Think of it this way: if a system only has one gatekeeper, they can control the entire system. Having one gatekeeper is inimical to interoperability.

The Digital Market Act focuses on gatekeepers with 45 million or more users, which will include Facebook (Meta), Amazon, Apple, and Google. Consider, for instance, how many of these services one uses personally for emails and messages. The European Parliament agreed on new rules in March 2022 that big messaging services such as WhatsApp, Facebook Messenger, and Apple's iMessage

> **"Will have to open up and interoperate with smaller messaging platforms, if they so request. Users of small or big platforms would then be able to exchange messages, send files, or make video calls across messaging apps, thus giving them more choice."**

These new regulations may see widespread adoption outside the EU in other jurisdictions that recognise the commercial rationale for payments interoperability.

However, it's important to note that the Request-to-Pay messages that we discuss elsewhere will be in the secure channel of the wallet or account.

Europe sees the light on digital wallets

The latest European initiative to offer competition to the Visa/Mastercard duopoly was the development of a new European card scheme called the European Payments Initiative, backed initially in 2020 by many major European banks. The idea collapsed and the EPI has now switched focus to developing an interoperable market for digital wallets.

4. The idea and the reality: Interoperability and Central Bank Digital Currencies

Our final example about driving interoperability derives from the acute concern felt at central banks globally over Facebook's near-miss at creating a private global digital currency based on its network of close to two billion users including WhatsApp, Facebook, Instagram and Messenger. Facebook's initial creation Libra was quickly broadened into an association with other players including several regulated financial services businesses including Visa and Mastercard, but those fell away as regulatory scrutiny increased. In response to these concerns, central banks began exploring the possibilities of issuing their own central bank digital currencies, with some early iterations already now in operation, including the eNaira in Nigeria and the digital Yuan in China.

In 2020, the members of the G20 meeting in Riyadh made enhancing cross-border payments a priority, something central banks took note of. In September 2021, speaking about CBDCs, the General Manager of the Bank for International Settlements Agustín Carstens, defined interoperability thus:

> **"In its simplest terms, interoperability refers to the ability to make something happen in one payment system based on something happening in another payment system."**

Carstens said it should be designed into Central Bank Digital Currencies from the very start (that is already unlikely to happen as different countries have already embarked on totally different CBDC designs). He stated that there are lessons to be learned from the successes and limitations of interoperability in existing financial services:

"The ambitious agenda of work laid out in the G20 Roadmap highlights measures that will improve existing payment infrastructures. But it also highlights the potential of new infrastructures, for example, in the form of Central Bank Digital Currencies (CBDCs). Some would argue that we should simply replace the old with the new, but I believe there is benefit in improving what we have while ensuring that CBDCs apply the lessons from the successes – and limitations – of existing infrastructures. Many of those lessons concern interoperability. Getting interoperability right could have important implications for the financial industry. It could ensure that the new world of fintech innovations is open and competitive. It could become the cornerstone on which a new payment ecosystem develops. Open platforms could give rise to a virtuous circle of greater access, lower costs, and better services."

The indicators of progress in interoperability

The recent drive for interoperability suggests that MNOs are beginning to outgrow the simple business model of mobile money transfers and are looking to expand their range of services. Wallet issuers don't really make any money with money coming into the wallet, so they are looking to offer additional services to customers so that they can spend digitally rather than having to cash out and use the cash for regular services or purchases.

It is now that retail banks should be looking to partner with MNOs. While MNOs excel at building agent networks and operating a high volume, low-value payment network, banks can step in to provide that extra layer of products and services and provide credit. By providing a broader range of payment options, digital wallet issuers will find their customers spending more from digital wallets and cashing out less frequently.

Conclusion

The world's financial system is quite fragmented and inefficient, more suited to serving corporations and big businesses than individuals and small businesses. But there is massive room for improvement, and this can sometimes be done by simply building better solutions on top of the existing infrastructure.

Building better financial infrastructure will improve the networks available for making and collecting payments. Imagine that a digital wallet holder could make a cross-border payment to a bank as easily as a bank customer makes a domestic payment. Imagine that a local bank can begin to compete internationally with global players like Citibank and JPMorgan. That is interoperability on an international scale. No one needs to lose out: this is a bigger pie for all to share.