PAYMENTS INDUSTRY INTELLIGENCE

Payments CARDS & MOBILE

National payment systems in the open era

WHITEPAPER

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Introduction

Introduction

Whether it is access, APIs, banking or standards, 'open' is the new normal for financial services. Similarly, real-time or instant has now become the de facto standard for payments. Hence discussions around national payments infrastructures have changed. They have moved from questioning whether to adopt a central infrastructure or national payment system, to how to make this fit-for-purpose in the new open and instant era.

How money moves within an economy is central to national development and prosperity. It is critical to promoting innovation and financial inclusion, stimulating competition and increasing the safety and security of financial transactions. Hence governments and financial services stakeholders are currently grappling with how to implement or upgrade their national payment systems to support open, real-time transactions.

In this white paper, we highlight the key design principles and challenges when implementing a national payments infrastructure. We examine selected propositions, such as person-to-person, person-to-business and payments to and from government.

We offer recommendations on what to do, who to involve and how to move forward with implementing a national payment system. These include the key learnings which can either make or break a project, such as interoperability between bank and non-bank operators in-country and strong branding to drive end-user adoption.

The key drivers for change

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The key drivers for change

The payments industry is at the confluence of many trends, some technological, some social and others regulatory. This is changing the context in which national payment systems operate.

The open era

The drive towards greater openness in banking and payments — whether this is accessibility, availability or inclusivity — is impacting how financial infrastructure is built and how money moves. It is impacting what type of players are able to offer financial products. And how these products themselves are defined.

Open access and innovation is clearly one of the aims of the PSD2 regulation in Europe. Yet the trend towards more open ecosystems is global and not merely restricted to financial services. The automobile, telecoms and entertainment industries worldwide are also undergoing their own digital transformations, resulting in more open ecosystems.

The drivers toward greater openness differ according to geography and industry. The reasons for this are partly technological, for example increasing access and connectivity through the internet, digital devices and the Internet of Things. The banking and payment services of the future will be defined more by customer needs than by the limitations of current payment initiation or product silos.

Others drivers for change are social, such as improving financial and social inclusion. There is also the social impact of technology, for example habits and consumption of digital technology and how that alters customers' use and expectations of service. Regulation is naturally also a driver.

Implications of the open era include increasing competition from new market entrants, offering new services and improving the customer experience. Retailers, telcos, social media firms, FinTech start-ups are coming to market and operating on a layer on top of previously-siloed, bank-controlled infrastructures. It is now no longer enough to design and deliver a product. Organisations must participate in ecosystems with open solutions that interact with other businesses and verticals.

This mirrors developments in the telecoms industry, where the telcos previously controlled everything from devices to the network. When mobile virtual network operators (MNVOs) got

What is a national payment system?

A national payment system encompasses all payment-related activities (processes, methods etc.), infrastructure, institutions and end-users within a country. An efficient national payment system reduces the cost of exchanging goods, services and assets and is indispensable to the functioning of the interbank, money and capital markets. The central bank, together with the payment systems management body if one has been set up, provides regulatory oversight of the national payment system.

access to operator platforms, they branded their services directly to customers. This was the beginning of MNO disintermediation from direct customer relationships.

Similarly, banks previously controlled the entire value chain from issuing plastic cards to the back-end clearing and settlement of payments. New entrants used existing payment rails and branded their online payment services to customers. PayPal, Sofort, iDEAL et al became the brands that customers looked to over bank, card issuer and scheme brands.

Access became a commodity in telecommunications. Access to bank accounts and payments infrastructure is moving in a similar direction, which is changing business models from pipelines to platforms and ecosystems.

Instant payments

The basic movement of payments from A to B is becoming faster, which affects how the payments systems of the future are designed and built. Previously payments were batched, now they are sent individually. Where payments were cleared and settled in days, now the funds are available on the beneficiary's account within seconds.

More than 20 countries worldwide either have real-time payment systems today or are developing or upgrading their

payment systems. This allows banks and payment service providers to compete strongly against cash, which is the most popular immediate payment method worldwide.

The future of financial services will run on real-time payment rails. This presents central and retail banks and non-bank institutions with both huge opportunities and huge challenges. There is scope to build out new front-end applications that utilise real-time functionality, such as mobile and P2P applications. However back-end support functions and processes, such as core banking, fraud prevention and sanctions screening, must operate 24/7/365.

Implications of open and instant

Central banks have a new role as financial enablers in the open and instant era. They are responsible for operating and safeguarding the infrastructure which routes financial data, linking end-customers to banks, businesses and governments. This in turn enables a range of financial, education, social, telecom and utility services.

An open, digital, shared and interoperable platform serves as an enabler for these services. But more than this, it helps deliver on

Instant payments

Instant payments are electronic retail payment solutions that are available 24/7/365. They result in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer within seconds.

The first domestic real-time payments system (Zengin) was launched in Japan in 1973. Since then, nearly 20 countries have real-time payments. Those planning launches include Australia, the Eurozone and the US. Thanks to the ISO 20022 standard, real-time payments come with speed but also richer data. There is huge potential for banks and non-banks in the innovative, chargeable services they can overlay on a real-time payments infrastructure based on ISO 20022

national strategic objectives, such as creating a better-functioning financial system through enhanced innovation, competition and risk management; increasing financial inclusion and boosting economic prosperity.

We focus on two common objectives in particular: financial inclusion and moving to a cash-lite economy.

Financial inclusion

Financial inclusion, particularly in the developing world, has emerged as a significant policy objective over the last decade. There is considerable will among policymakers, the development community and private sector to bring the world's two billion unbanked people into the formal financial system. So much so, seven out of the 17 UN sustainable development goals mention financial inclusion as an enabler.

Participation in the financial system makes people more personally and financially resilient. They are better able to invest in education and the future, manage risk and absorb financial shocks. They can also pay more quickly and conveniently using digital payments. Instead of travelling long distances to pay bills or taxes, customers can pay from home using their mobile phone. To support financial inclusion and ultimately increase GDP, the financial infrastructure must be fit-for-purpose.

Cash-lite society

Numerous studies show that moving to a cashless or cash-lite society cuts costs, boosts efficiency and helps prevent crime, corruption and tax evasion.

It often costs more to produce cash than it is worth. The US Mint reported in 2014 that it cost about 1.7 cents to make a penny and eight cents to make a nickel ($0.05). Meanwhile a trial started in South Korea in mid-April 2017 to pay small change on to prepaid cards. The country spent 53.7 billion won ($46 million) on producing pocket change in 2016, more than the face value of the coins, according to the Bank of Korea.

The costs of cash are often hidden or diffused, which skews perception and behaviour. There is an understanding that while businesses must pay a transaction-based fee to accept cards, cash is free or almost free. Research from the Centre for Economic Studies at Leuven University, Belgium found that cost-based pricing would shift debit cards from four percent of retail transactions to 25 percent. This change would add 19 basis points to the European economy. Shrinking the shadow economy through the use of digital payment would add a further nine basis points.

Boosting GDP

Improving financial inclusion can increase the GDP of all developing economies by six percent, or $3.7 trillion by 2025, according to a recent McKinsey report. This is equivalent to an economy the size of Germany, or larger than all the economies in Africa combined. Beyond the GDP benefits, increasing financial inclusion also delivers social and efficiency benefits.

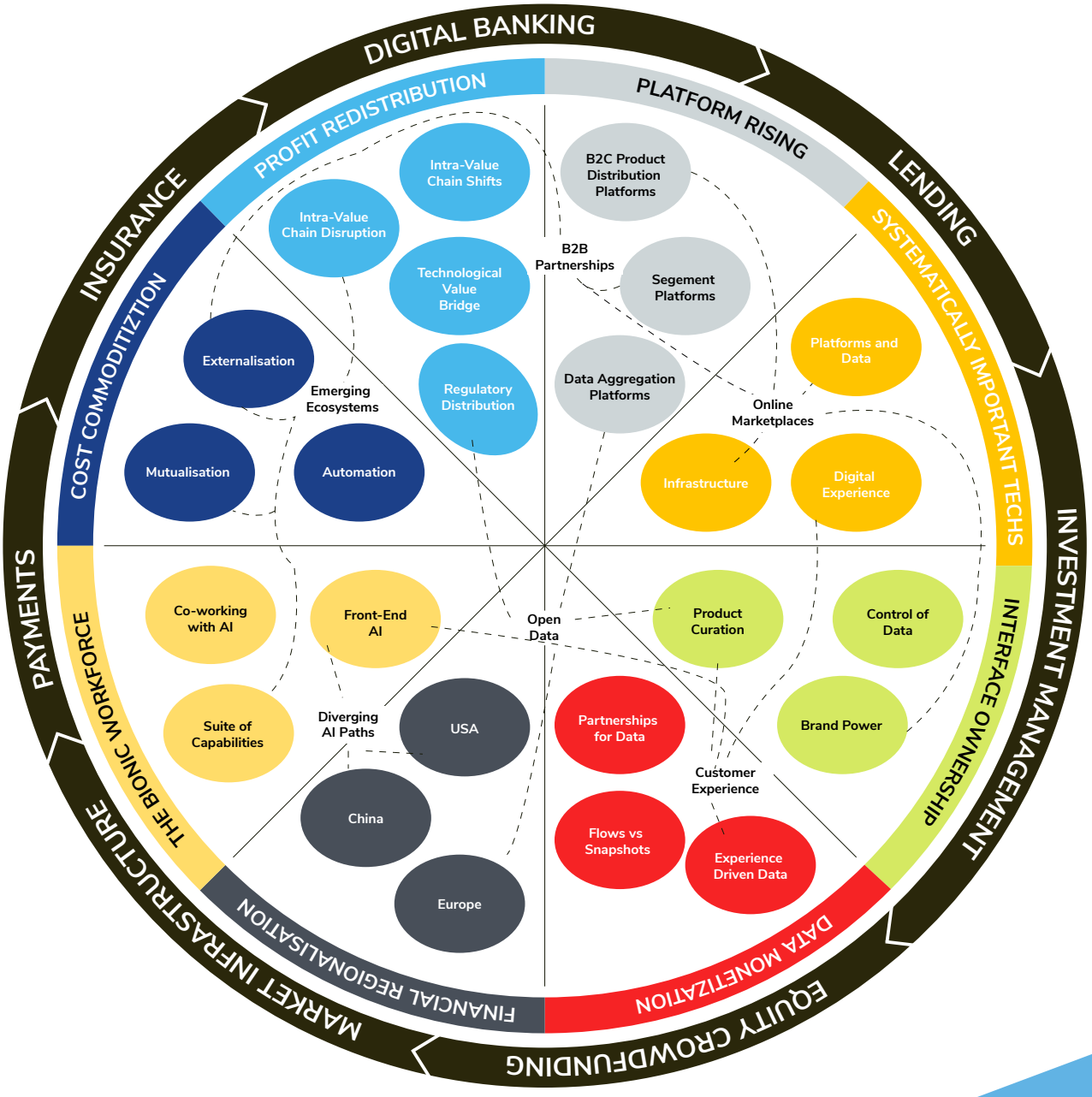
Benefits of breaking cash dependency

Digitisation of payment to government from citizens and businesses could increase Tanzania's annual tax revenue by at least $477 million per year. This would help push up the country's tax/GDP ratio, currently at 12 percent, according to the Better Than Cash Alliance.

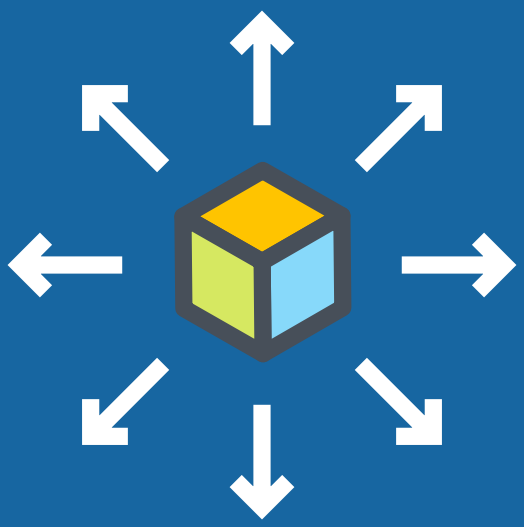
In his book The Curse of Cash, the former chief economist at the International Monetary Fund, Kenneth Rogoff, calls for the phasing out of all paper currency. As well as "a major impediment to the smooth functioning of the global financial system", he claims paper currency is feeding tax evasion, corruption and criminality. "The effect of curtailing paper currency on tax evasion alone would likely cover the lost profits from printing paper currency, even if tax evasion fell by only 10-15 percent," argues Rogoff. The effect on illegal and shadow economy activities is probably even more important.

Over the last five years, there has been increasing focus from governments and central banks to move to a more cashless or cash-lite economy. This is primarily to cut costs, increase efficiency and prevent crime, ranging from corruption, tax evasion, money laundering and terrorist financing.

The Open (or Digital) Banking Ecosystem



How a national payment system is part of the solution



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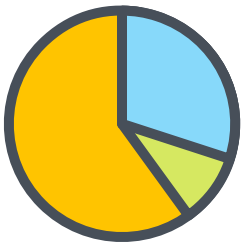
How a national payment system is part of the solution

The main drivers of a national payment system include:

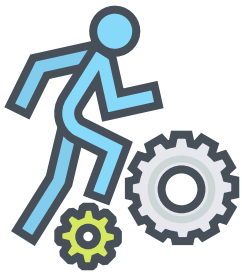
1. Cost reduction and optimisation



Physical money costs money. Coins are frequently more expensive to produce than their face value. Notes have to be periodically withdrawn and replaced either due to age, damage or to make them more difficult to counterfeit. There are also the hidden costs of counting, transporting and insuring cash, which are invariably borne by end-users. Cash is quite a national expense.

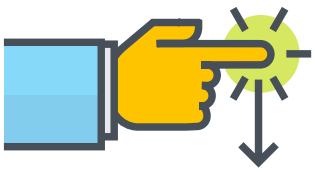
To meet the requirements of the digital payments era, countries must upgrade to ISO 20022 messaging standards. This supports a multitude of financial payments, in contrast to ISO 8583 which supports only card-based payments. The costs of continuing to support card-based payments in a real-time world are likely to be exponential.

2. Independence and control



With a national payment system, countries have full control over services, data and availability. There is no dependence on third parties. Citizens' data remains within the country and is not exposed to external parties. The payment habits of citizens are transparent for fiscal planning and revenue purposes.

3. Innovation and financial inclusion

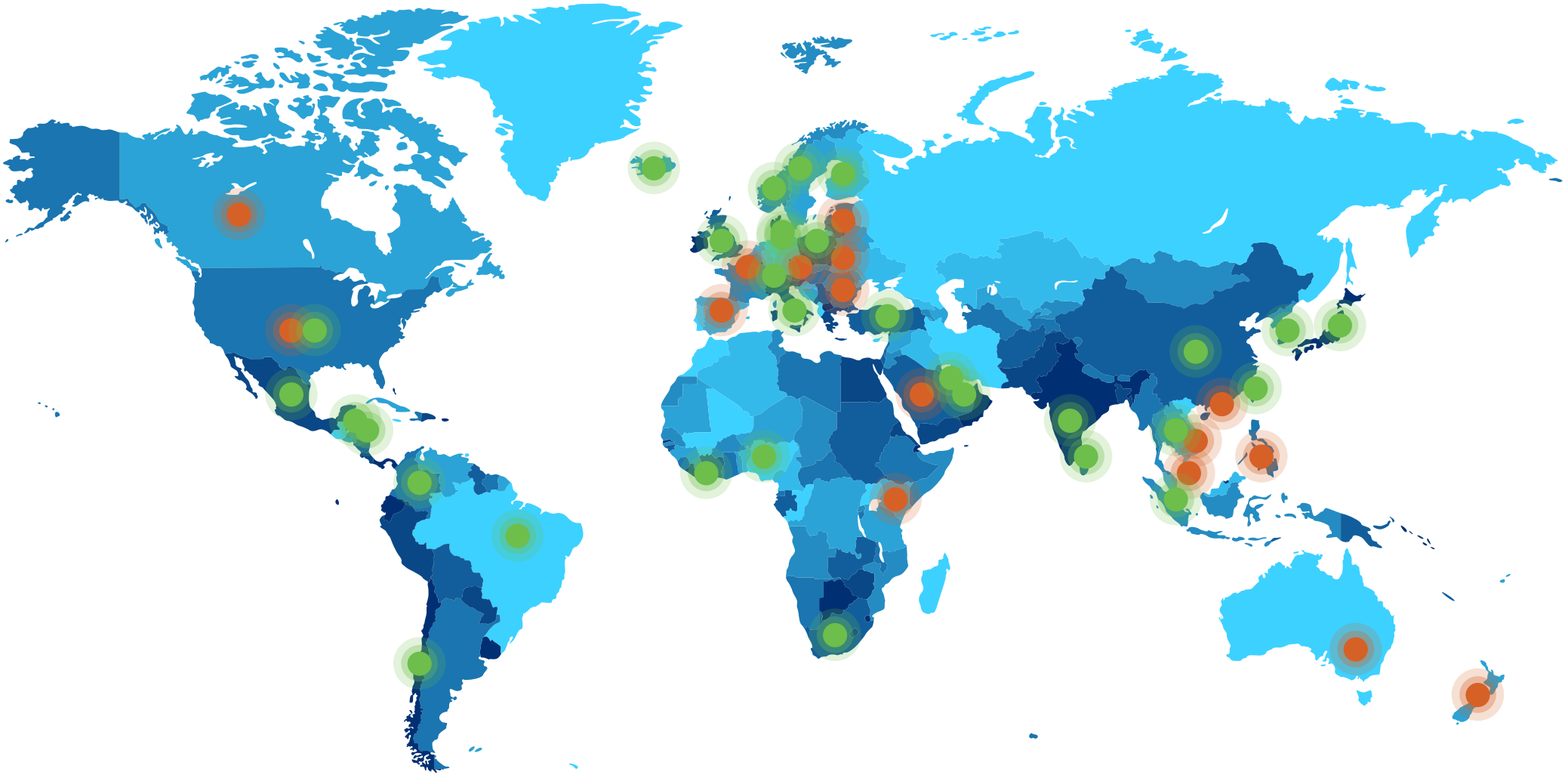


A national payment system allows an open, digital, shared and interoperable platform, on which to build products and services. This allows service providers to connect with customers in an easy, cost-effective way. It also lowers the barriers to entry for smaller market players and stimulates competition among existing players. Fit-for-purpose payment rails can help increase financial inclusion among the un-banked in developing countries and the under-banked in developed markets.

4. Interoperability

A unified national payment system integrates with banks, non-bank providers such as mobile network operators (MNOs), retailers and FinTechs. It can handle multiple use cases and provide full interoperability within the country as well as between countries and regions. A single set of mandatory standards and rules for all participants ensure full end-to-end interoperability. A single brand to the end-user improves awareness and market penetration.

Instant Payments Around the Globe



LIVE: Bahrain, Belize, Brazil, Chile, China, Colombia, Denmark, Finland, Ghana, Iceland, India, Japan, Kenya, Italy, Latvia, Mexico, Nicaragua, Nigeria, Norway, Poland, Singapore, South Africa, South Korea, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE, United Kingdom, United States

Planning: Australia, Belgium, Cambodia, Canada, Europe, Hong Kong, Hungary, Malaysia, Netherlands, New Zealand, Philippines, Romania, Saudi Arabia, Slovenia, Spain, United States

Source: Instapay.today

Key learnings

Key learnings

Collaboration has definitely become more important in the open era. So has knowing when to co-operate and when to compete. It is helpful to consider this co-petition model in the context of the design principles, technical features and use cases for a national payment system.

The Level One Project, a financial inclusion initiative from the Bill & Melinda Gates Foundation, summarises the co-petition approach well. It is one of rules and rails, accounts and apps. Participants collaborate on the rules and rails — the governance, rules and features of the system. They compete on the accounts and apps — the individually-branded products and services sitting on top of the platform.

This section examines some of the key design principles, technical features and use cases of a national payments infrastructure.

Design principles

All-encompassing

National payment systems should be open-loop to encourage all qualified participants – both banks and non-banks – to join. This helps build coverage and critical mass, plus strengthens the network effect for both service providers and end users. Some central banks go as far as mandating participation in the system to ensure maximum coverage.

Open-loop systems are an efficient, cost-effective option. They avoid duplication of effort by individual participants, which keeps costs down and optimises the services delivered to end users. Moreover open-loop ensure interoperability between participants, particularly if they integrate different stakeholder requirements.

Conversely closed-loop systems hinder ubiquity as they exist as so-called 'walled gardens', which do not integrate with other systems. Mobile money in Africa is an example of a closed-loop system. Individual mobile network operators have launched branded mobile money solutions, which are seldom integrated with each other or with the banking network, so there is no interoperability between solutions.

End-users must either be members of the same solution to send money. Or they must take out multiple subscriptions and transfer money between them as a work-around.

Siirto ('Transfer'), Finland

The Siirto platform, Finland's real-time multi-bank platform for mobile payments, is a good example of an open-loop approach. The core platform was jointly developed by all the banks and payment service providers. Individual participants can create their own innovative, end-user services, plus value-add pre- and post-transaction services on top of this shared platform.

Closed-loop systems may be easier to start, but may lead to inefficiencies, duplication of efforts and services that are not as useful to end-users over the longer term. They rely on bi-lateral agreements as well as heavy back-end integration to scale regionally or internationally.

A level playing field

Participants want to operate on a fair and level playing field. A common rule set helps drive participation and buy-in, but also interoperability and ultimately adoption. It is important that parties with a vested interest in the success of the payments infrastructure are involved in the design of the rule set, processes and governance. This will ensure that the process is fair and seen to be fair. And that it reflects the principles, which serve as the foundation for the technical features that are built on top.

The rule set and/or governance by-laws or charter can also establish the desired blend of co-operation and competition between participants. Participants are bound to collaborate on rules which ensure a level playing field, for example shared system components. They may compete on the differentiation of the services they provide, for example application and account components on the front-end of a branded service.

Technical features

There are a number of technical features or characteristics which are pre-requisites for a modern, fast, scalable and reliable next-generation national payments infrastructure.

Real-time – funds should be made available to the beneficiary in real-time or as close to real-time as possible. More than 20 countries worldwide either have real-time payment systems today or are developing or upgrading their payment infrastructures. The future is digital and will run on real-time payment rails. Real-time payments also allow banks and payment service providers to compete strongly against cash.

Push – the system should effect push rather than pull payments for greater safety, security and merchant up-take. With push payments, the payer effectively 'pushes' the payment to the recipient (or payee) by instructing their account service provider to move the money. With pull payments, the payee requests money by 'pulling' it from the payer. Card schemes are an example of pull payments.

Irrevocability – the system should not specifically manage transaction reversal by the originating party nor specific situations in which the liability for a transaction is passed from one participant to another. This arguably makes the system simpler and cheaper to develop as it is avoids complexity related to reversals. Irrevocability is often related to push and pull payment methods. With pull payment methods, such as direct debit and card payments, the customer often has the right to pull the money back through a reversal or chargeback.

Shared fraud service – managing a fraud service at the hub or network level, rather than at an individual participant level, is likely to reduce the costs of the overall service and improve detection and prevention capabilities. Participants should consider how they would contribute data to such as shared service during the design phase.

Tiered identification and KYC – the system should enable tiered KYC, whereby an end-user lacking documentation can still access the system through a basic account. Or receive government subsidies, benefits or grants through a mobile money programme . A basic account would incorporate limits around maximum balance and transfer amount, so that participation is proportionate to the possible risks generated.

Use cases

Due to technical limitations, particular payment use cases have been historically tied to particular payment systems. Salary or government social benefit payments are traditionally made via bulk disbursement direct to bank accounts; bill payment made via direct debit or giro; and merchant point-of-sale payments via card.

The consolidation of back-end rails makes it entirely possible for physical merchant point-of-sale payments to be initiated via a mobile device and processed bank account-to-account instantly. The payer and payee receive immediate or near-immediate confirmation that the transaction has taken place, the money moves and the payment is irrevocable.

When countries are implementing real-time payments and/or upgrading their national payments infrastructure, it is critical to consider how the same platform can be used for a variety of use cases. For example, P2P but also person-to-business (P2B) in both the physical and remote channels; bill payment as a P2B and person-to-government (P2G) service in the case of taxes, levies and fines; B2B and B2G; and bulk disbursements from the government, employers or businesses (G2B, G2P, B2P).

Getting the first use case right is particularly important, especially when introducing digital payments to the un- or under-banked. This will encourage customers to switch from their existing payment methods. It will also stimulate regular, habit-forming usage, which goes to changing long-term behaviour.

The use cases will influence how the system and integrations are designed. It also influences how participants map existing payment products to the infrastructure, how they bundle and sell them, and how they develop new products and value-added services.

Channel-agnostic P2P payments accessible to everyone

Introducing a real-time national payments system in Kenya has created a modern, fast, scalable and reliable payments platform.

Members of the Kenya Bankers Association (KBA) are now able to build and deploy innovative financial products and services that otherwise would require significant investment and know-how from each member.

The Kenya Interparticipant Transaction Switch (KITS) payments platform connects all KBA member banks in one domestic network under the commercial name PesaLink. This allow banks of all sizes to benefit from the unified payments infrastructure with access to banked and unbanked customers.

The KITS platform is future-proofed and will easily accommodate other payment types, such as merchant, government and business-to-business payments, at a fraction of the costs of current methods.

Recommendations and actionable insights

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Recommendations and actionable insights

Once the decision has been made to implement or upgrade the national payments system, here are ten selected recommendations on what to do, who to involve and how to move forward.

1. Communicate clearly

Communication is a running theme throughout any national payment system project. Communicate early, often and relevantly – and repeat. Central banks need to communicate with banks and bank associations, non-bank service providers and the public at large. Buy-in from participants and end-users is so important as it drives excitement and action around the project, usage and behavioural change.

2. Ensure maximum coverage

One of the most critical aspects of a national payment system project is to have maximum participation in the system. Participation from banks and non-banks alike helps to build critical mass and strengthens the network effect for both service providers and end-users. Some central banks go as far as mandating participation in the system to ensure maximum coverage from the outset.

3. Build on an open and instant platform

Build an open-loop, instant payments system to ensure interoperability between participants and across networks, e.g. bank, card and mobile money rails. Adhering to internationally-accepted, open payment standards (e.g. ISO 20022) will also deliver regional and international interoperability. Open systems are more efficient and cost-effective than closed-loop 'walled gardens'. They avoid duplication of effort by individual participants, which keeps costs down and optimises the services delivered to end-users.

4. Agree principles, rules and governance

Involve those with a vested interest in the success of the system in system principles, rule-writing and governance. This further drives participation, buy-in, interoperability and ultimately adoption. It also informs the design of the technical features and processes below.

5. Design technical features

Spend time discussing the technical features of the system as this will influence the cost, complexity and time of the build. Wherever possible, base the system on irrevocable push payments, which are settled behind-the-scenes between participants at least once a day to minimise the risk from failing participants.

6. Plan thoroughly

Plan the project thoroughly, co-opting the support of participants as well as external specialists as and when required. Among the most important factors to consider are what the technical standards and projected volumes will be. Central banks are familiar with batch processes, but the move to instant payments requires real-time, high-availability systems and processes (see below). Hardware and software requirements are dependent on this analysis, as are the investment required and business case for the project.

7. Design/re-design supporting processes

The technical features and build are important but also consider supporting processes. Back-end support functions, such as core banking, fraud prevention and sanctions screening, must operate 24/7/365. This is one of the biggest challenges for participants used to a batch system. Also, take the opportunity to build out new front-end applications that utilise real-time functionality, such as mobile and P2P applications.

8. Build out use cases

Look beyond P2P and plan a possible roadmap of products from the outset. These include P2B in both the physical and remote environments, B2B and all types of P2G and B2G use cases. This influences how the system and integrations are designed. It also influences how participants map existing payment products to the new instant infrastructure, bundle and sell them. Plus how they develop new products and value-added services.

9. Consider branding carefully

Instead of integrating functionality within individually-branded provider apps, consider launching a joint app for greater take-up and brand recognition. In Sweden, all the banks supported the Swish P2P mobile payments app. There are around six million Swish accounts out of a nine million population. Swish brand recognition domestically exceeds that of other digital brands, such as Apple or Google, which helps defend the market against international new entrants.

10. Select the right vendors

When looking for a long-term partner to develop or re-shape a national payment system, consider their record in managing complex system projects. Consider also their commitment to a particular region, as demonstrated by their existing deployments, as well as the experience of their staff on the ground. A partner familiar with government procurement processes and negotiating an influencing at the most senior level within government and multi-bank stakeholders is desirable.

Summary

Summary

The merits of a national payment system project are well-documented. Such systems have become a necessity for governments, who want independence and control over their own financial infrastructure. For banks, who want faster and more cost-effective innovation on a shared platform. And for businesses and consumers, who want security and convenience when they spend, save, borrow or invest.

With the move towards instant payments and greater openness in financial services, the question for central banks and other stakeholders is now more how to implement or upgrade a national payment system.

Increasing financial inclusion and moving towards a cash-lite economy have emerged as significant policy objectives in many markets. Central banks must embrace their role as financial enablers in the open and instant era. They are responsible for operating a fit-for-purpose national payment system and infrastructure, safeguarding its future and using it to deliver on national policy objectives.

National Instant payments systems projects are huge undertakings. They cannot be accomplished alone. Collaboration across and between stakeholders and industries is essential. Central banks must drive this collaboration, but also work with stakeholders to devise design principles, technical features and use cases, which allow competition. It is this 'co-petition' model that will create the virtuous circle or network effect to drive coverage and innovation. Plus, value to end-users in terms of competitively-priced products and value-added services that meet their needs.

Selecting the right long-term partners to develop or re-shape a national payment system is essential. There is no substitute for knowledge and experience. This makes the selection of partners that have experience in managing similar complex projects and multiple, sometimes competing, stakeholders a pre-requisite. Payments is strongly national, so partners who can draw on what worked and did not work from other markets, and have good local and technical knowledge are desirable.

About the Research

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About the research

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In business since 1994, Payments Cards & Mobile is an established hub for global payments news, research and consulting. We work with recognized industry experts to provide impartial, up-to-date and relevant information and analysis on every area of payments.

Personal relationships have been the hallmark of our business. We remain committed to working closely with our many long-standing customers and welcome new customers in producing quality business intelligence and providing a variety of ways in which you can consume this information. Our aim is to provide you with the highest quality data so you can position your business and key personalities in this increasingly competitive industry.

PCM Research

Payments Cards and Mobile Research offers comprehensive, in-depth research into topics which are relevant and tailored to our clients' needs.

Our in-house research facility is available for short term projects. We specialize in M&A activity, market entry data, country report analysis and statistics. Research reports on banking, payments and mobile payments worldwide.

Topics range across the measurement of efficiency and performance, card and payment service related information, the role of brands in banking and the impact of non-banks such as retailers and FinTechs on the financial services and mobile financial services market.

Payments Cards and Mobile offers specific research on all aspects of banking, card payments, card-less digital payments, Issuing/ Acquiring, financial services and the mobile financial services market.

Tieto

Tieto aims to capture the significant opportunities of the data-driven world and turn them into life-long value for people, businesses and society. We aim to be customers' first choice for business renewal by combining software and services capabilities with a strong drive for co-innovation and ecosystems.

Building on a strong Nordic heritage, Tieto combines global capabilities with local presence. Headquartered in Espoo, Finland, Tieto has around 14,000 experts in close to 20 countries. Turnover is approximately €1.5 billion. Tieto's shares are listed on NASDAQ in Helsinki and Stockholm

Tieto offers the Instant Payment Solution to central banks and national level processors to establish account-to-account payments infrastructure.

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