Financial inclusion accelerated

WHITE PAPER
2018
<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Foreword</td>
</tr>
<tr>
<td>4</td>
<td>Methodology and definitions</td>
</tr>
<tr>
<td>6</td>
<td>Introduction</td>
</tr>
<tr>
<td>8</td>
<td>Trust</td>
</tr>
<tr>
<td>10</td>
<td>Faster, better, cheaper</td>
</tr>
<tr>
<td>12</td>
<td>The cost of cash</td>
</tr>
<tr>
<td>14</td>
<td>Bringing individuals into the economic fold</td>
</tr>
<tr>
<td>19</td>
<td>Leveraging real-time payments in India</td>
</tr>
<tr>
<td>20</td>
<td>The role of digital</td>
</tr>
<tr>
<td>23</td>
<td>Thailand’s PromptPay</td>
</tr>
<tr>
<td>24</td>
<td>Key success factors</td>
</tr>
<tr>
<td>25</td>
<td>Conclusion</td>
</tr>
<tr>
<td>26</td>
<td>References</td>
</tr>
</tbody>
</table>
The last 12 months have been an exciting period for real-time payments with the launch of new platforms in Thailand and the US, and significant enhancements to the UK version, the Faster Payments Scheme, that we have operated since 2008. As a pioneer in the development and implementation of real-time payments, Vocalink have a vested interest in accelerating take up of such systems around the world and our acquisition by Mastercard in 2017 was predicated on our success in this field.

Real-time payments make economies more efficient, they support innovation and accelerate growth. The immediate gains from real-time payments in terms of speed, reliability and transparency are immense – literally game-changing. But, in many ways, the introduction of real-time payments is just the beginning. Their effect in catalysing innovation in products and services that utilise their speed, data and messaging capabilities is equally significant.

This report focuses on the power of real-time payments to support financial inclusion. It draws on examples from Thailand, India and China to show how real-time payments can support an architecture that directly responds to the needs and concerns of those who, for too long, have been overlooked and under-supported in the payments world.

In particular, the success of PromptPay in Thailand shows how a joined-up approach to payments, allied to a bold driving vision, can transform a landscape in a matter of months. There are now more than 36 million Thai citizens and 23 banks signed up to PromptPay. It carries tax rebates and benefit payments from central government, and is increasingly displacing cash in business and consumer transactions. In fact, PromptPay’s e-wallet capability means that citizens don’t even need to have a bank account to benefit, just a smartphone.

The use of mobile phone and national ID numbers as proxies for bank accounts is also serving to overcome the cultural and logistical issues that obstruct low income and rural consumers and businesses from accessing the benefits of financial services, while low transaction costs act as a powerful incentive to engage.

Indeed, this report shows how forward-thinking institutions and entrepreneurs are developing products and services that enable the underbanked, the isolated and the culturally excluded – particularly women – to increase their economic activity and reap the rewards of that participation. At the same time, it illustrates how it is those with the least money who are subject to the most problems, risks and costs associated with a continuing reliance on cash, or payments systems that lack transparency.

At Vocalink we have long emphasised the empowering effect of simpler access to and movement of money. Now, as part of Mastercard, we are even better placed to champion these benefits to businesses and people living and working in economies where the financial infrastructure has hitherto obstructed their participation and restricted their success.

Real-time payments and the services they support can, and I believe will, play an important role in helping them to participate in the economy and move to a world beyond cash.

Paul Stoddart
President, New Payment Platforms

“At Vocalink we have long emphasised the empowering effect of ready access to and easy movement of money”
Methodology

The Financial inclusion accelerated report from Kapronasia and sponsored by Vocalink is based on both primary and secondary research.

Primary research included interviews with several organisations involved in banking and financial inclusion. These included:

- The World Bank
- The United Nations
- The Asian Development Bank
- HSBC

Secondary research sources included both internal and external public and private databases.

Definitions

Real-time payments, faster payments, instant payments
An interbank account-to-account payment that is posted and confirmed to the originating bank within one minute or less.

Digital payments
Payments that are made electronically and may include, among others, ATM transactions, bank-to-bank, internet and mobile payments. Not all digital payments are real-time, but besides cash, all other real-time payments are digital.

Payment rails
Payment infrastructure or network that enables the transmission of payment information.

Fintechs
A business that aims to provide financial services through the use of software and modern technology.

Financial inclusion
The process of ensuring access to appropriate financial products and services needed by groups of individuals or companies who may otherwise be financially excluded or underbanked insofar that they have limited access to or are not serviced by the traditional financial industry.
Introduction

“"The most exciting applications are the ones that can be layered on top of the real-time payments infrastructure”

Originally launched in 1973, Japan’s Zengin system was one of the world’s first real-time payments networks. The platform, now in its sixth generation, has served as an example for the many other countries worldwide that have plans to or have already implemented real-time payments. In many ways, real-time has become the norm for any new payment platform implementation. Growing customer expectations, shrinking decision windows and increasing data velocity are all demanding a shift to real-time.

At a basic level, real-time payments allow retail and commercial customers to initiate and clear payments and collections more quickly. This enables invoices to be paid faster and individuals to have more immediate access to money; increasingly important as the world starts to move away from cash.

The initial focus for any real-payments implementation usually revolves around how real-time payments will be used in the short-term. However, real-time payments are not the end-game, but the start of a longer journey. As we will discuss, the most exciting applications are the ones that can be layered on top of the real-time payments infrastructure to deliver new services and enhanced functionality.

For example, Thailand’s new ‘PromptPay’ real-time payment infrastructure allows millions of Thais faster access to money and provides the basis for banks and other third-party providers to launch new financial products and services. Many of these products are focused on individuals and enterprises that may have been previously financially excluded and may not have been possible to serve economically.

Although this research is valuable, it overlooks an essential segment of the population: the underbanked and financially excluded. Spread all around the world and in many different life stages, these are the individuals and small and medium-sized enterprises (SMEs) that usually cannot count on the traditional financial industry to fulfill their financial needs and are forced to rely on informal networks.

Yet this is precisely the segment of the population that could benefit from real-time payments. To address this need, Vocalink, a key provider of real-time payment solutions has partnered with Kapronasia, a leading Asian market research provider, to bring you this unique look at the future of real-time payments and financial inclusion in Asia.

Financial inclusion accelerated examines how real-time payments are being used globally to provide a more seamless banking experience for the financially excluded. We will discuss in this paper how real-time payments offer a level of trust for the financially excluded that was previously only available through physical cash.

Using case studies, we examine different examples of how real-time payments are helping the financially excluded, and underbanked individuals and SMEs by providing economic empowerment, financial inclusion, transparency, and efficiency. Leveraging the lessons learnt from these case studies, we then identify some key success factors for real-time payment systems globally.

We hope you find this report as interesting to read as it was for us to research.

Zennon Kapron
Director, Kapronasia
Worldwide non-cash transactions
Volume, billions

Source of costs for cash in Germany’s banking industry

Labour 54%
ATM 20%
Security 2%
Overhead 2%

Global mobile penetration and growth 2010 – 2016

Global smartphone penetration 2010 – 2016

Mobile connections / world population Growth rate
Trust

Trust is a critical part of humankind’s existence, especially in commerce. The first form of trade between humans was bartering, where one person would trade something that they had for something they needed. If a grain farmer wanted a chicken, he would go to a market and trade a few bushels of grain for a chicken. There was trust in the transaction as both parties walked away with what they were looking for.

As trade increased and the world became more inter-connected, physical stores of value or currencies were created to enable different forms of commerce. In the form of coins or even beads, these currencies often had little ‘physical value’ themselves but proved useful as they held recognised value within a community.

Paper money today is no different. Most fiat currencies are useless for their physical value. You can neither eat a US dollar nor drink it. You cannot live in it. You could likely burn it for a bit of warmth, but that might be costly and short-lived.

Yet, that dollar has value wherever you go. People trust and believe it has value and therefore are willing to trade you something for it – a chicken or maybe some grain. Your ability to use that dollar to buy products and services is based on someone else’s belief in its value, which embodies the basic concept of currency: trust.

Previously, ‘cash-in-hand’ was always the most trusted form of payment, especially for the financially excluded as it could be immediately used for purchasing goods and services. Real-time payments are the closest we have come as an industry to matching the trust that cash provides. This immediate nature of real-time payments is critical for the financially excluded.
Real-time access to money: 
a fundamental physiological consideration

In 2007, a company called Eko India Financial Services was set up in India. Loosely based on Africa's M-PESA system, the company set out to provide financial services to the underbanked. The company developed a customised core banking system (CBS) for phone-based transactions which connected directly with the State Bank of India's CBS, to create a real-time domestic payment system. Previously, most money transfers between consumers involved using banks or post office money orders and it could take weeks to move money across the country.

When Eko India launched, customers were astonished by the immediate acknowledgment of successful money transfers. Matteo Chiampo, a consultant in CGAP’s Inclusive Markets team, was Eko’s Chief Product Officer at the time and described being able to “literally see the reaction in the individual's faces when they were on the phone with the payment recipient, confirming that the payment just happened, in real-time.”

For a class of customer typically used to waiting days or even weeks to see their money make its way through the financial system, this reflected the comfort provided by the knowledge that their money had made it to their intended recipient.

Instant access to money can be, as Chiampo put it, “a powerful and soothing message.” Real-time access to money is a fundamental physiological consideration, especially for those financially excluded individuals. It helped remove one of life's bigger worries: not knowing where their money is.

Trust in money is one part of the equation, but equally important is trust in the underlying system. For many of Eko India’s early users, it was also their first experience engaging with a formal financial system, and many were wary. As they realised they were being attended to in a way they had never been before, their trust in the system grew, and they used it more. This phenomenon of trust increasing usage is supported by several research studies, including one looking at mobile banking adoption in Indonesia.

Mobile banking, as the study’s researchers Koo and Wati considered, is one of the essential and value-added mobile services. It helps customers manage their bank accounts conveniently through mobile phones. However, despite its usefulness, penetration and usage of mobile banking services in developing countries was less than expected, which may have been due to an underlying lack of trust in mobile banking platforms.

The study examined consumer attitudes towards Bank Central Asia’s mobile banking service. They found that when system and information quality was paired with trust, it led to increased perceived usefulness and customer satisfaction. That perception of value drove further usage in mobile banking and other banking platforms.

This trust in the system is critical not just for the financial services of today, but for the future as well. This underlines the importance of real-time payments in providing that primary layer of trust to individuals globally.
Beyond providing the fundamental element of trust, real-time payments can be considered ‘faster, better, and cheaper’ than regular payments; three characteristics that benefit commercial and retail customers in different ways but which are also critical for the financially underserved.

**Faster**

Speed is the most apparent benefit of real-time payments, which often supplement existing slower payment systems. The Clearing House Real-time Payments system being implemented in the United States is intended to work alongside the existing ACH payment system, which requires 2-3 days to complete a payment. Singapore’s real-time G3 system, launched in 2014, works together with traditional giro, cheque and EFT transfers. The infrastructure for both was provided by Vocalink.

The benefits of faster payments for the financial system and economy are numerous. For example, receiving and sending payments faster allows corporates to manage their cash-flow better and ensure payments are made in a timely fashion. This, in turn, affects many different aspects of the organisation such as payroll, which, when delivered in combination with real-time payments, can be done weekly or even daily.

A good example of an organisation utilising this is Lyft. In many countries, Lyft clears payments a few times a day, ensuring that drivers are paid efficiently and promptly. Lyft also provides options for drivers to automatically invest some of their earnings in Vanguard mutual funds. Immediate payment, immediate benefit.

The increased data flow resulting from more frequent payments can also help organisations more effectively manage credit risk and provide better access to capital. This enables banks to make more informed decisions on issues such as potential fraud and credit risk, in order to more efficiently serve the financially excluded, who tend to be “thin file,” because they lack a strong credit-history.

Fundamentally, as one respondent commented, “If you can access your money faster, you can run your business faster.”

**Better**

Real-time payments also level the playing field. Most real-time payment implementations today are either driven by regional programs like Europe’s PSD2 or by local efforts, like Singapore’s G3 or Thailand’s PromptPay. These programs push, or even require, that systems provide open- or API-banking interfaces for third-party fintechs and financial services providers. This gives providers and customers more choice through increased competition, and lowers costs.

In this way, real-time payments are only the start of a broader industry transition, providing a platform for new products and services to be built on top of the payment rails. Some of these can take the form of direct value-added services around the
payments themselves or they may support broader initiatives that will reshape the financial landscape, and can also be used to address financial exclusion. Real-time payments open the market for new business products and services and allow corporates and businesses to better match consumer and business expectations.

In China, micro-insurance products from online-only insurance providers like ZhongAn have become very popular, but many of the use-cases are very short-term, as an example, shipping or flight-delay insurance. If the insurer had to wait several days for the payment, this form of scenario-based insurance would not be possible. The consumer is also able to buy insurance for particular use cases rather than rely on wider insurance policies that might cover some scenarios that the consumer would have no use for.

Real-time can also help corporates and financial institutions to serve more clients than would have been possible previously. In general, banks prefer to work with high-net-worth individuals and companies as these are clients likely to transact and hold more money with the bank. With the reduced cost of new underlying infrastructure, banks and corporates can now service clients that may previously have been inaccessible for cost reasons. Many of these include the under-banked or SMEs.

Finally, infrastructure can help drive new models of engagement through digital channels such as the mobile phone, channels that may not have been possible before. This can provide a foundation for payment systems to connect into larger global payment networks.

**Cheaper**

For many organisations, the move to real-time payments involves a broader infrastructure refresh as well to update legacy infrastructures that are not necessarily ready for the increase in volume and the immediate nature of real-time transactions.

Although such upgrades may come with up-front costs, if they are correctly implemented, they may result in lower operating expenses in the long-run due to efficiency gains and reduction in the total cost of ownership. This itself can be an incentive for many banks to make the shift to real-time.
The cost of cash

Cash, ironically, is not cheap. The cost of printing, handling, distributing and accepting cash is high for nearly all participants in the value chain.

**Banks**

The cost for banks to handle cash includes maintaining bank vaults, cash counter, and staff expenses. Banks are responsible for recycling broken notes, but governments pay for it. According to researchers Kleine, Kraubauer and Weller, the German banking sector operates at a loss while handling cash.

In 2011, the total German cash value was €147 billion ($195.5 billion). Banks in total lost about €5 billion ($6.65 billion) handling cash. The most significant cost was labor as paper cash needs to be checked, accounted, stored and guarded manually, with some machine help. Banks are responsible for recycling damaged or unusable notes, but the government pays for it.

Thus, banks in Germany incur about 3.4% (€5 billion / 147 billion) of the physical cash’s value as handling cost. If we apply this number to the US, in 2017 American banks would pay $6.8 billion (200*3.4%) for cash-related transactions.

**Retailers**

According to Mark Trevor, Commercial Director of Vaultex, the UK’s largest cash processor, “Retailers will have to traverse the staggered introduction of the £5, £10 and £20 polymer notes, the new £1 coin and the Scottish notes. Factoring in the potential interest rate rise and the living wage as well and you have a lot of pressure coming up on costs.”

With technology, retailers can avoid handling cash, and pass money. A study conducted by Federal Reserve Bank of Kansas City shows the cost of making retail cash payments averaged 0.3% of the retail cash transaction value. American retail consumption reached US$4.70 trillion in 2017. Another study by David A. Price and others also shows that 75% of retail sales would be conducted in cash. This means the total cost of cash handling would be $10.6 billion ($4.70 trillion * 75% * 0.3%), representing 5.3% ($10.6 billion / 200 billion) of the total value of cash notes.

**Individuals**

Individuals keep cash for different reasons. There are people who enjoy using cash because of its physical nature, because it is easier to budget, or because it is accepted everywhere. In some regions, people have no choice but to use cash as no other options are available.

The direct cost of holding cash for individuals is low if they leave it in the bank. If they hold physical cash, the most prominent risk is theft and robbery, a risk estimated to be about $500 million a year in the US.

The other cost of holding cash is the interest lost from not having the money in the banking system. The general deposit interest rate in the US in 2017 set by the Federal Reserve is between 0.5% to 1%. Considering possible theft and foregone interest, physical cash sitting in a dresser drawer or under a mattress costs 0.25% every year.

**Governments**

Governments are responsible for designing and printing the coins and notes that are used around the world as national currencies. According to the US Federal Reserve Board, in 2017 the total budget for producing cash was $726.7 million. Given that the Fed printed about $200 billion worth of notes in 2017, that makes the average printing cost of about 3.65% across all notes.

**Summary**

Adding up all of the costs for Governments (5.3%), Banks (3.4%), Retailers (4%) and the individuals themselves (0.25%), we estimate that the cost of cash in the US is about 13% total across the entire value chain. With such a high cost, it’s little wonder that countries are pushing for digital cash.
Cost of cash across different US dollar denominations

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Cost of production</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 and $2</td>
<td>5.4 cents per note</td>
<td>2.7%–5.4%</td>
</tr>
<tr>
<td>$5</td>
<td>11.5 cents per note</td>
<td>2.3%</td>
</tr>
<tr>
<td>$10</td>
<td>10.9 cents per note</td>
<td>1.09%</td>
</tr>
<tr>
<td>$20</td>
<td>12.2 cents per note</td>
<td>0.61%</td>
</tr>
<tr>
<td>$50</td>
<td>19.4 cents per note</td>
<td>0.39%</td>
</tr>
<tr>
<td>$100</td>
<td>15.5 cents per note</td>
<td>0.16%</td>
</tr>
</tbody>
</table>

Source of costs for cash in Germany’s banking industry

- Labour: 54%
- ATM: 20%
- Security: 2%
- Overhead: 2%

- Denomination Cost of production Percentage
- $1 and $2 5.4 cents per note 2.7%–5.4%
- $5 11.5 cents per note 2.3%
- $10 10.9 cents per note 1.09%
- $20 12.2 cents per note 0.61%
- $50 19.4 cents per note 0.39%
- $100 15.5 cents per note 0.16%
Bringing individuals into the economic fold

In many emerging markets, a large part of the population lives below the poverty line and often survive hand to mouth. The United Nation’s Better Than Cash Alliance promotes the development of digital payment systems around the world and has identified several different ways that non-cash payments can help individuals, economies, and countries. Several of the same metrics and measurements can also be applied to real-time payments.

Transparency

In countries without mature payment infrastructure, there is often little transparency, especially when intermediaries and agents are involved. As an example, government payments in India would historically go from the State Governments to regional governments, then to towns, and finally to individuals. In many cases, each of the agents would take their cut of the transaction, leaving the recipient with much less than they would have expected.

Andhra Pradesh was one of the first states in India to introduce electronic payments as early as 2006 via a smart card system. J-PAL (an evaluation agency based at MIT) partnered with the Andhra Pradesh state government to implement electronic payments in some, but not all, sub-districts. Research on the project showed that the percentage of funds lost through “leakage” fell from 30.7% in control areas to 18.5% in the areas that had shifted to digital. The estimated total reduction in National Rural Guarantee Act leakage across the studied districts was $38.7 million per year. This was about nine times the cost of implementing a digital payment scheme.

The 2012 World Bank Development Report also estimated that by digitising subsidy flows, the Indian government could save 1% of its gross domestic product annually, an amount equivalent to about $20 billion. Digitising has enormous financial gains for the state and its citizens enabled by the transparency of direct real-time payments.

Safety

Tied into the trust element of payments discussed earlier, physical cash also provides the physiological feeling of security and knowledge that the money is safe. However, carrying around cash can also run an enormous safety risk, considering that many of the developing countries are some of the most dangerous. Swaziland’s GDP is 1/50th of the GDP of Canada, but you are more than three times more likely to be robbed in Swaziland than in Canada.

In Venezuela, inflation reached over 2,600% in 2017 which meant that the largest bill, the 100 bolivar note, was worth approximately $0.05 on the black market. For many, this means carrying around a large stack of physical bills and cash. The owner of a tiny kiosk selling newspapers, cigarettes, and snacks in one of Caracas’ nicer neighborhoods said that each evening he quietly stuffs a plastic bag full of the day’s earnings, around 100,000 bolivars (about $52) in notes of 10, 20, 50 and 100 bolivars. The shrinking value of the currency has meant that withdrawing the equivalent of $5 from the ATM produces a fistful of at least 100 bills. The challenges of handling and protecting cash have prompted many Venezuelans to pay their tabs with credit cards, but it is expensive for small businesses to buy and set up credit-card machines. Carrying around that much physical cash, even in a developed society, carries significant risk.

Economic opportunity

When a company or an individual receives money either through cash or a real-time payment, they can immediately put that money to work.

In India, since the launch of the Aadhaar & UPI system, the number of retail bank accounts has increased dramatically. With a unique system that ties an Indian’s identity to their bank account, when an individual or an SME receives money in their account, they can invest it, or use it to buy new products or services. Its introduction was akin to “democratising” financial services, with the goal of banks being able to serve the entire population.

In China, Tencent’s WeChat Pay has a variety of different retail wealth management products. Many of the products have very low minimum investments, sometimes as little as 1 RMB (~$0.15) and will start paying interest within a day.

These are both economic opportunities that would not be available if it were not for real-time payments.
Digitising Bangladesh’s milk industry

Bangladesh has one of the highest densities of dairy cattle in the world with over 25 heads of dairy cattle for every square kilometer. Dairy is an integral part of the overall Bangladeshi economy; livestock represented 1.6% of Bangladesh’s GDP in 2016, and the industry hires one out of every five Bangladeshi nationals in full-time work and about half of the population in part-time work.

Despite its importance, the industry has struggled to be profitable. Bangladesh’s first dairy plant was set up in the 1940s, still, by 1970, the central commercial dairy plants had closed, leaving farmers to trade in small markets. In 1973, the government decided to consolidate the industry and establish a cooperative dairy development program: the Bangladesh Milk Producers Cooperative Ltd., more commonly known as Milk Vita. By the mid-1980s, Milk Vita had virtually collapsed as well.

Today, the government has pulled out of Milk Vita, and professional management has brought the company to profitability. Yet, only about 10% of milk is sold through cooperatives, with the rest still sold at small markets. One of the critical challenges is the nature of the milk sales process at the cooperatives.

Today, Bangladeshi farmers bring their milk in massive metal milk jugs to the cooperative. The milk is then poured into a vat along with all the other farmers’ milk. When the vat is full, the cooperative measures the milk-fat content of the milk and then all the farmers who had their milk in that vat are paid based on the weight in kilograms of milk that they supplied, and the average milk-fat of the entire vat. The farmers are then paid 8-10 days after their milk is given to the cooperative.
This process presents two challenges. First, the delay in payments poses a significant problem. Although there are more substantial dairy farming operations, 90% of Bangladesh’s farmers have only 1-3 cattle. With such a small operation, waiting to be paid can exert unsustainable pressure on their cash-flow. It also makes it difficult to invest and grow farming operations if there are continued delays in payments.

Second, there was little incentive for the individual farmers to improve, or even maintain, the quality of the milk that they were selling. Since each farmer’s milk was mixed in with milk from all the other farmers, unless all the other farmers were providing the same or higher-quality milk, the individual farmer would get less than his milk was potentially worth.

With those challenges, it is clear why a farmer might choose to sell directly at a local market rather than a cooperative. If a farmer sells his milk in a local market, he would be immediately paid for the product he produced rather than having to wait for payment and be reliant on the quality of another farmers’ milk.

In January 2017, the Milky Wave Project launched and may change all of that. The company behind the project is CloudWell Technology Limited. Cloudwell was founded in 2012 and is a Bangladesh-based application service provider, working for multiple verticals with a particular concentration in the payments sector. Faizul Hamid, Co-founder and MD of CloudWell, said they initiated the Milky Wave Project to address the pain points and the gap in the processes around milk collection and its payments.

CloudWell’s platform is integrated with Bank Asia, a local bank, and the principle agent for the project. The platform offers dairy farmers an agent banking account with an NFC enabled “Agricultural Card” to do all the transactions using that account. The card also contains a QR Code to identify the farmer and provide necessary personal information.

In the Milky Wave – Digitized Milk Collection and Payments System, when the farmer arrives at the milk collection hub or co-operative society to sell, the farmer first swipes his or her identification card. The milk is then weighed and individually tested by the cooperative using milk-specific measurement machines that CloudWell imported from Bulgaria, one of the largest manufacturers of this type of technology.

Once the farmer’s milk is measured, it is poured into the vat with the rest of the milk. In real-time, the milk is then attributed to the farmer and, using financing from CloudWell, the farmer’s card is credited in real-time with the amount due. As little as eight days later, CloudWell is paid by the milk buyers.

The new system delivers a number of benefits to the farmers:

- The digitisation reduced processing time. Previously, a typical trip to the milk cooperative would take a farmer about 2-3 hours. In the new system, it takes 15 minutes from start to finish.

- Farmers also receive what they should. By leveraging the Bulgarian milk-testing technology, milk can be tested in small-batches, and more quickly than previously. This ensures that farmers receive the payment as per the fat content of the milk since the money received depends on the fat content at the time of sale, rather than an average payout dependent on other farmers’ milk.

- The platform ensures that the farmers are paid immediately and transparently through the use of the agent banking card. Thanks to the financing provided by CloudWell, payments are instant and transparent, with little ‘leakage’ due to third-party agents.

- The CloudWell system provides a platform for additional financial products and services. Many of the farmers would have had little or no previous credit history, which would have made it difficult for them to obtain credit. By leveraging the transaction data that system creates, CloudWell can develop a relatively clear picture of each individual farmer’s financial situation and credit rating. That information can then be analysed to help the farmer obtain credit and borrow if need be.
Leveraging real-time payments in India

Beyond the private efforts of players like Eko-Financial and PayTM, the Indian government has made significant strides in the last few years to develop a platform called the 'India Stack': one that provides a unified digital infrastructure to help modernise India.

The India Stack includes four main layers:

- **Presence-less layer** – in which a universal biometric digital identity allows people to participate in any service from anywhere in the country
- **Paperless layer** - where digital records move with an individual's digital identity, eliminating the need for massive amount of paper collection and storage
- **Cashless layer** - a single interface for all the country’s bank accounts and wallets to democratise payments
- **Consent layer** - which allows data to move freely and securely to democratise the market for data.

Together, the four layers provide a standard set of APIs to enable other products and services. This has the potential to solve many of India’s challenges around safety, transparency, corruption and financial inclusion.

One of the elements that has been built on the India Stack is the United Payments Interface, or 'UPI.' The 24/7 UPI payment platform is managed by the National Payments Corporation of India and enables companies and individuals to more easily map and connect into India’s payment infrastructure and process real-time inter-bank transactions.

The UPI is built over the Immediate Payment Service (IMPS) for transferring funds. Being a digital payment system, it is available 24/7 and across public holidays. Unlike traditional mobile wallets where the funds are stored in an intermediate account, UPI withdraws and deposits funds directly whenever a transaction is made. Recipients are identified through a virtual payment address, account number, mobile number with a ‘mobile money identifier,’ Aadhaar number, or a one-time use Virtual ID. A mobile banking PIN is required to confirm each payment.

HSBC India was very quick to roll out a UPI solution. In late 2016 it launched a UPI product for corporate customers in the bank’s India business. India’s Shriram Transport Finance Company (STFC) was one of the first customers.

STFC is one of the largest players in the second-hand commercial vehicle finance market with over 1.3 million customers. Mr. Parag Sharma, the CFO and Executive Director of STFC described the benefits of the UPI platform:

“It was important to reduce the extent of cash and de-risk from the traditional mode of collections. Given the operational challenges that cash collection poses, which is handling, pilferage, fraud, logistical inconvenience, realisation delays and costs, we have been looking out for an alternate solution, which could eliminate these challenges and drive customer convenience, cost rationalisation, safety and faster realisation. The solution should not only reduce the operational risk but also be an enabler to the underlying business.”

The CEO and Managing Director, Mr. Umesh Revankar, further commented:

“HSBC’s UPI offering will act as a game changer and enable us to meet our strategic objective of migrating to electronic form, thereby gradually reducing the incidence of paper and cash. This proposition not only meets our strategic objective but also provides convenience to our truck owners by empowering them with fast, secure and 24/7 payment option. The ability to affect a payment through a mobile phone anywhere is of great convenience to the truck driver.”

Since the launch of the India Stack and UPI, there have been numerous banks that have followed suit to provide the market with safe, reliable and secure real-time payments. This has been a boon for companies and individuals as the direct nature of UPI avoids the significant amount of the leakage mentioned previously for retail payments, and also allows SMEs better access to capital.
The role of digital

It is essential to make a distinction between a real-time payment platform and digital payments. A real-time payment platform is the infrastructure that facilitates faster payments. Digital is the presentation layer that the customer will use to make the real-time payment. Not all real-time payments are digital, but most digital payments are real-time.

The distinction is essential, as the digital layer will define the customer experience for both retail and commercial clients. As one interviewee rightly pointed out: "You need to leverage the infrastructure to create the customer experience."

The digital experience is even more critical today with the proliferation of mobile phones. Mobile phones reached a global penetration of 106.3% in 2016, according to data from the GSMA.

This rise in mobile phone penetration also plays out in the 11% increase in the number of smartphones globally. Global smartphone penetration was 31.3% in 2016. This increased smartphone usage has redefined not just how people communicate with each other, but also how they engage their banks. In places such as China, India and, increasingly, Thailand and Singapore, consumers are using their phones for financial transactions.

Alipay and WeChat Pay in China are two of the most famous examples of mobile-based financial apps. Initially created as real-time digital payment platforms, they now provide a variety of financial products and services. Together, the apps processed over $3 trillion in payments in 2016.

Digital payments for financial inclusion

By almost all measures, China has made remarkable economic progress over the last decade. The country has brought the number of people living in poverty down from 755 million in 1990 to 25 million in 2013. China has also maintained an average GDP growth of 9.7% since 1980, and in 2014, 79% of China’s adults had a bank account. This compares to India, where only 53% of the adult population do.

Although the challenge of a large unbanked segment is not as significant in China, apps like Alipay have played an essential role in bringing vast swathes of the population into the economic fold. In 2016, nearly one-third of Alipay’s 450 million users were considered ‘rural’ users. Many of these users can use the Ant Finance Alipay platform to access consumer finance products and services - a challenge in China where most banks are state-owned and prefer to focus on larger corporates rather than individuals or SMEs.

As of September 2016, Ant Financial had lent a cumulative RMB 740 billion ($107.3 billion) to more than four million small and micro enterprises and entrepreneurs. This is a significant number, especially when compared to other micro-finance programs such as Grameen Bank, which has lent $17 billion since its inception in 1976. Jiebei, Alipay’s credit-based consumer loan service, cumulatively issued consumer loans worth RMB 300 billion ($43 billion) to 12 million users in 2016. Digital has changed the way that many users manage their finances.

‘Light’ apps

However, it is important to strike a balance. Smartphone penetration in China is about 72% of the population, primarily driven by the availability of cheap domestically produced smartphones. Although these phones are sufficient for basic communication, they can struggle with more complex applications. In fact, APAC leads the way in ‘app un-install’ rates with 32% of apps being uninstalled in any four-week period.

In India, this number is 27%. One of the main reasons for this uninstall rate is the smaller memory space that exists on cheaper phones. When a phone has limited memory, apps sometimes need to be uninstalled to install other apps even if users have the intention of using those uninstalled apps again.

Because of this, we are seeing a trend towards ‘lighter’ app development as both banks and third-party developers work to make sure their products take up less memory and are manageable for users.
Global mobile penetration and growth
2010–2016

Global smartphone penetration
2010–2016
Thailand's PromptPay

Over the last decade, Thailand has gone through a dramatic digitisation. Mobile penetration reached 81.4% in 2016, with smartphone penetration at 50.5% of the population. The country's e-commerce industry reached a gross merchandise value (GMV) of $2.9 billion in 2016. It is a far cry from China's $2.1 trillion of GMV, but still much higher than its Malaysian or Singapore neighbours which spent $894 million and $1,080 million on e-commerce in 2016.

It is in this context that in December 2015, the Thai government launched the National e-payment Initiative, which aims 'to create a cashless society, integrate the informal economy into the banking system, capture data on current social programs, and introduce greater transparency.' One of several programs under the initiative was PromptPay, which was launched on 27 January 2017.

PromptPay allows registered customers to transfer funds using a mobile phone with only the mobile number or Citizen ID number of the recipient. It can also be used to receive payments from government agencies, for example, social security benefits, retirement payments, and tax refunds. An ambitious project, especially when just over 97% of Thailand's retail payments were handled in cash in 2010.

The PromptPay system coincides with the shift in Thai culture away from a cash-based economy, by encouraging users to transfer funds electronically with the simplest of proxies. It has already proven very popular, with 36.2 million people, over half of the population, registered for PromptPay monthly transfer services and 23.5 million of those users registered with their ID cards.

The initial growth in PromptPay can be traced back to the government's move to provide tax refunds via the platform. A typical tax refund could take a substantial length of time to reach an individual's bank account, and then the individual would need to write a cheque, go to the bank, or to an ATM to withdraw the money. With PromptPay, the refund is available almost immediately.

Businesses have also began using PromptPay to lower the cost of transactions and make it easier to manage their expenses. In some cases, customers pushed retailers to adopt the platform for their mutual convenience.

PromptPay accounts can also be tied to phone numbers, which makes it easier for Thais to share payment details, as a phone number is often easier to remember than a bank account. This is also more secure as it doesn’t involve sharing any additional identifying information and makes it easier for retailers to keep track of their customers without having to ask for further information.

The PromptPay platform makes it easier and safer for individuals to obtain a secondary income through selling products or services online because it integrates seamlessly with social media and many e-commerce platforms. Sellers, whether they are individuals or SMEs, look more professional, and the transactions, because they are digital rather than cash, are by definition more secure.

Use of the PromptPay platform grew through word of mouth and advertising increased awareness and knowledge of the platform. The government pushing tax refunds through the PromptPay platform was also an excellent way to drive initial interest in and adoption of the product. Public services use-cases also open the door for future potential uses including payments between individuals and government, such as taxes or social security benefits and other disbursements.

PromptPay is also promising for cross-border transactions. Although South-East Asia does not benefit from a European-style ‘Single European Payment Area’ (SEPA) which allows for seamless cross-border payments within Europe, there is significant South-East Asian trade that would benefit from cheaper payment solutions. Using PayPal for example, a $10 cross-border payment, could result in up to 7.5% in fees.

Malaysia, Singapore and Thailand are exploring their real-time payment systems, so that individuals can make seamless payments connecting the three countries. This is one of many cross-border payment initiatives that we may see in South-East Asia in the future. Real-time payment platforms provide the basic infrastructure over which new products and services can be implemented. Similar to the way real-time payment data supports credit scoring in China or Bangladesh, it could also be leveraged to provide individuals or SMEs with access to credit or other accounting products and services.
Key success factors

Although there is no one-size fits all approach to how real-time payments have aided financial inclusion, there are a few common themes that we can identify in markets where real-time payments have made a difference.

Real-time as a building block

When real-time payments first started to grow globally, banks would often take a short-term view of the costs and opportunities of real-time payments. In fact, real-time payments are a piece of critical infrastructure to enable more forwarding looking models.

As we have seen in the examples in this paper, from Thailand to Bangladesh, financial institutions and third-party providers are looking at new and unique business models to help drive financial inclusion and provide new products and services to a segment of the population that was previously underserved.

Government engagement and collaboration with banks

Many of the real-time payments implemented around the world are driven by governments and are often used to support a national agenda of innovation to drive economic growth. An efficient payment infrastructure helps to accomplish that goal. Singapore’s G3, Hong Kong’s Real Time Payments and Australia’s NPP have all been government-led.

Banks themselves are typically less enthusiastic, and this has caused issues in the past. Australia’s NPP was delayed by a year in 2014 as five institutions pulled funding for the project. The system will finally be implemented in 2018. At the same time, third parties have taken advantage of the indecision between banks and are using digital payments as a way to drive new streams of revenue and enable new products and services.

This underscores the importance of collaboration. Governments need to involve banks early in the conversation to ensure that the benefits and challenges are understood all around. Often third-party organisations can help in this regard.

The Dutch Payment Association is an excellent example of how collaboration can help. Working with its members, they have created a forum where issues around payment systems can be identified and addressed. Their members, which include banks, regulators, the government and other interested third-parties, even drill down to specific industry issues such as cyber-crime.

The role of digital

With smart-phone penetration continuing to rise globally, mobile-focused app and site development is obviously important, but should not be done at the expense of other channels in certain markets. As we have seen in this paper, feature phones, cash and traditional channels all still have a place and should not be completely removed.

A centralised real-time payment infrastructure that still caters to omni-channel banking not only ensures that you are ready for the future, but are still able to serve the emerging market clients of today.
Conclusion

With many countries around the world deciding on or moving forward with real-time payment platforms, it is clear that real-time payments will be the norm in the future.

These systems have many positives for the governments and financial institutions that use them, but they also provide tremendous benefits for the underbanked, who often lack access to financial products and services.

Real-time payments are also just the start. Many of the case studies examined in this report leveraged real-time payments infrastructure to build new financial products and services, creating value-propositions for users that may not have been available before and enabling banks and financial institutions to serve clients they may not have been able to previously.

However, challenges remain. The traditional financial industry is still very much focused on how real-time payments fit into profitability for their leading retail and commercial businesses. Financial inclusion is more of an after-thought for some, although there are exceptions made for banks such that have consciously decided to focus on rural banking.

Technology can also be a hindrance, with feature-phones and low-spec smartphones limiting the complexity of banking applications and interfaces. Even so, examples like M-Pesa, which was designed to run on feature-phones, prove that the technological challenges are not insurmountable.

With countries around the world continuing to implement real-time payments systems, and others such as Thailand and Singapore building products and services to run on its rails, we are only scratching the surface of what is possible with real-time payments. Not only for commercial customers, real-time payments are helping to significantly accelerate financial inclusion.

“We are only scratching the surface of what is possible.”
References

1. As of January 2017
2. CapGemini World Payments Report (various years)
3. CGAP, or the Consultative Group to Assist the Poor, is part of the World Bank and is a global partnership of 24 leading organizations that seek to advance financial inclusion through practical research and active engagement with financial service providers, policy makers, and funders to enable approaches at scale.
9. US Census Bureau
18. Kapronasia
28. Kapronasia Analysis, PayPal.com
Contact

For any further questions on the research, please contact:

Mark Colleran
Director, Research & Insights
mark.colleran@mastercard.com
About Vocalink

A Mastercard company, Vocalink designs, builds and operates industry-leading bank account-based payment systems.

Our technologies power the UK’s real-time payments, settlements and direct debit systems, as well as the UK’s network of nearly 70,000 ATMs.

In addition, our real-time bank account-based payment solutions provide more payment choice to customers in Peru, Singapore, Thailand and the United States.

For more information about Vocalink, visit vocalink.com

About Kapronasia

Kapronasia is a leading provider of market research covering banking, payments, capital markets, and insurance. From our offices in Shanghai, Hong Kong, New Delhi, and Singapore, we provide clients across the region the insight they need to understand and take advantage of their highest-value opportunities in Asia and help them to achieve and sustain a competitive advantage in the market.

For more information about Kapronasia, please email research@kapronasia.com or visit kapronasia.com