



REPORT

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Accelerators to an Inclusive Digital Payments Ecosystem



ACCELERATORS REPORT

Many governments have already realized major benefits by digitizing payments. Yet these successes also raise important questions. Why are so many developing and emerging countries only in the early stages of their journey to cashless? Why haven't successes been rolled out more widely?

The reality is that despite the evidence about what creating digital economies means, until now there hasn't been a coherent and tailorable framework available to governments and companies about how to realize these gains. This is partly because knowledge about digital payments has been highly fragmented. The lack of a broad and cohesive analytical framework has prevented governments and companies from leveraging the experiences of other markets and players to implement digital payments most effectively.

This paper addresses this gap. It reviews 25 countries where digitization has had great impact and reveals 10 tangible steps, or "accelerators," that governments and companies can take to build inclusive digital economies.

Not every accelerator needs to be implemented to ensure success, and indeed the most suitable will depend on the contexts and conditions prevailing in the given market. However, in these accelerators, policymakers and business leaders now have a guiding map charted by others who have successfully travelled further along the path to an inclusive digital economy.

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I. EXECUTIVE SUMMARY

An extensive body of knowledge has emerged detailing how digital payments can improve lives at the individual, community, and national levels. A range of studies have demonstrated that moving from cash to digital payments can boost productivity and economic growth, improve transparency, increase tax revenues, expand financial inclusion, and open up new economic opportunities, particularly for women and disadvantaged communities. G20 leaders and the Committee on Payments and Market Infrastructure have also respectively developed principles for digital financial inclusion and payment aspects of financial inclusion.

However, to date this knowledge on the benefits of payments and the principles, remains fragmented and lacks a broader cohesive analytical framework that applies to companies as well as governments. Consequently, many stakeholders still struggle to understand what further actions can be taken to promote cashless economies. Many of these actions require coordination among a mix of players: national and subnational governments, central bank authorities, banks, telecommunication companies, retailers and other businesses, and consumers. Unfortunately, the lack of a coherent analytical framework prevents stakeholders from learning from the experience of other markets.

This study aims to address these challenges by integrating into one single, cohesive analytical framework the existing body of knowledge on digitizing payments, capturing the full range of actions available to drive forward digitization. This study identifies 10 of the most effective methods of accelerating the transition from cash to digital payments — called “accelerators” in this study. The study also provides specific action points that stakeholders can utilize to help put these accelerators to work, driving digital payments and building inclusive digital payments ecosystems.

DIGITAL PAYMENTS “ACCELERATORS”

Digital payments accelerators are activities that have demonstrated their strong impact in promoting a digital payments ecosystem. Understanding these accelerators can improve coordination and collaboration across markets, and help participants decide the best options for increasing usage and adoption of digital payments in their market. However, countries need not incorporate all 10 accelerators to have a successful journey toward a cashless economy, and there are various ways that countries can execute on each accelerator.

The 10 accelerators identified in this study are summarized below and explained in detail in the body of this study.



Promote merchant acceptance infrastructure

Promoting merchant acceptance infrastructure across Micro, Small, and Medium Enterprises (MSMEs) has the potential to deepen usage among both consumers and large players higher in the value chain (P2B, B2B). However, creating a compelling business case for going digital is often necessary to onboard merchants. Sweden’s government incentivized banks in the 1990s to invest in acceptance infrastructure and usage. As a result, today even portions of the homeless population use digital payments, exemplifying the ubiquity of acceptance infrastructure across Swedish society.



Leverage existing networks or platforms to deliver digital payment products and services

Leveraging existing networks can help to quickly extend digital payment services to far-reaching user bases (P2B, P2P, P2G). Utilizing existing resources can also improve the business case for moving into the digital payments market, reducing the cost and time associated with establishing agent networks and marketing to new users. In China, when Tencent adopted digital payments, it leveraged the success and strong user base of its social network product WeChat, enabling it to compete against dominant player Alipay. Between 2014 and 2015, Tencent’s market share in digital payments doubled to 20%.



Establish a shared digital infrastructure for players

Shared digital infrastructure, such as open Application Program Interfaces (APIs) and data exchange solutions, can reduce barriers to entry and promote innovation. Estonia’s X-Road is a data exchange layer that connects 939 public and private institutions, and offers 1,723 services. It is estimated to have produced efficiencies equivalent to 2.8 million work hours in 2014.

4 Establish interoperability

Interoperability in a digital payments ecosystem reduces barriers that confine digital transactions to a single payment platform. In this way, interoperability increases the potential channels for users to transact digitally, as their choice of a digital payment product or service can be more widely accepted. Establishing interoperability requires a significant level of collaboration among participants. Accounting for market contexts like the level of fragmentation is a key factor in driving interoperability. In Tanzania, fragmented market share among four players created a need for interoperability to increase transaction volumes. After putting in place measures to deliver interoperability, Tanzania saw a 3.5 times increase in the value of off-network transactions.

5 Develop a unique identification program

Grounding an identification system in a centralized database that both public and private sector players can access to verify identities can drive digital payments and financial inclusion. Consumer protection frameworks are essential to ensure adequate privacy, security, and data control. The Indian government developed the Aadhaar system which provides a unique identification number supported by biometric data to more than 1 billion of India's 1.2 billion people. A wide variety of public and private sector entities can authenticate the identity of Aadhaar holders, as ecosystem participants can access Aadhaar's centralized database for verification purposes.

6 Digitize routine use cases

Identifying and digitizing use cases that individuals frequently use for transactions (P2B, P2P) can increase comfort with digital payments and increase digital transaction volumes. Pay-as-you-go (PAYG) energy provides access to reliable, efficient, and affordable solar energy. Digitizing payments for this use case also promotes comfort with digital payments. In Rwanda, Mobisol found that customers were active users of mobile money, making 1.7 transactions per month using the PAYG system, well above the industry benchmark of one transaction every 90 days.

7 Digitize government payments

Digitizing government payments (G2P, G2B) is a potentially powerful way to advance a digital payments ecosystem. Pioneering programs in this area show the importance of considering the existing financial ecosystem when digitizing government payments. Brazil digitized G2P payments through its Bolsa Familia Program (BFP) which merged multiple pre-existing conditional cash transfer (CCT) programs into one electronic benefit card (EBC) linked to bank accounts at Brazil's state-owned bank. This saved the government 31% in transaction costs, while ensuring that the poorest households in Brazil — the one-quarter of the population receiving BFP payments — had access to a bank account.



Digitize government receipts

Digitizing government receipts (P2G, B2G) promotes comfort with digital payments among individuals and businesses and improves efficiencies. In digitizing government receipts, governments can collaborate with private sector players to access important technical capabilities. P2G and B2G initiatives are most successful when governments take into consideration the existing financial ecosystem. In Tanzania, the digitization of B2G payments at the Port of Dar es Salaam enabled the government to trim US \$175 million in annual revenue leakages and boost its GDP by up to US \$1.8 billion by reducing inefficiencies.



Establish regulation that promotes innovation in the digital payments ecosystem while promoting responsible practices

Regulation evolves most effectively when regulators and policymakers understand the gaps and barriers of existing regulation, leverage stakeholder consultations, and collaborate closely when developing or updating regulations. Sri Lanka's 2005 regulation relating to digital payments did not promote registration or active usage of eZ Pay, a mobile banking service. Following a 2012 revision that addressed earlier shortcomings, the re-launched service has enjoyed considerable success, with 2.2 million subscribers at the time of this report.



Implement policies that incentivize and improve the convenience of digital payments

Many countries are putting in place measures to encourage or require government entities, private businesses, and individuals to shift away from cash, sometimes in the form of policies that disincentivize cash usage. However, accounting for the appetite and infrastructure for digital payments present in an ecosystem is important to ensure an appropriate pace of digitization. For example, Sweden's policies permitting businesses and banks to refuse cash are appropriate for a country in which only 2% of transactions take place in cash, but such a policy in a more cash-heavy country may exclude portions of the population.

This study also arrives at key learnings about how to execute these accelerators most effectively. Specifically, catering to market context, investing adequately in implementation, and carefully researching customer behavior are three critical steps to effectively putting in place the accelerators identified in this study. These factors are frequently preconditions for unlocking the value of an accelerator itself.

Given the complexity associated with the volume of options available to participants in an ecosystem, a toolkit accompanies this study to help policymakers and other stakeholders navigate accelerators in a way that is most appropriate to their market contexts. This toolkit is intended to help governments, businesses, and development partners on their journeys to digitize payments.

II. OVERVIEW OF THE BENEFITS OF DIGITAL PAYMENTS

Countries around the world have demonstrated a genuine interest to innovate their financial landscapes by advancing the shift from cash to digital, with many countries, such as Sweden and Kenya, making significant progress in this space. In fact, digital payments grew faster than Gross Domestic Product across all world regions in 2014.¹ Such payments have demonstrated their potential to:

BOOST PRODUCTIVITY AND ECONOMIC GROWTH:

A 2016 study found that digital payments added almost US \$300 billion to global GDP across 70 countries over a five-year period, in addition to 2.6 million new jobs a year created in the same period.² Beyond the financial benefits, digital payments help modernize economies, drive productivity,³ and enable better public services through increased tax revenue.

IMPROVE TRANSPARENCY:

Digitizing payments improves the traceability of payments and can reduce crime and money laundering. Recipients have digital records of the amount of payments received; these digital records make it easier for the payer to identify ghost recipients.⁴ The Indian government's digitization of subsidies for liquefied petroleum gas (LPG) in 2015 enabled savings of US \$2 billion through reduction in leakages.⁵

FINANCIALLY INCLUDE PREVIOUSLY UNBANKED POPULATIONS AND INCREASE WOMEN'S ECONOMIC PARTICIPATION

Digital payments are often an individual's first entry point into the financial system and provide an opportunity to offer accounts to the unbanked for savings and payments.⁶ Estimates have found that just a 10% improvement in digital money adoption can shift 220 million individuals into the formal financial sector across 90 countries studied.⁷ Further, digital payments can drive economic opportunity by opening up new markets that are inaccessible to those trading exclusively with cash. Digitization can give women greater control over their finances and financial management decisions, increase women's labor force participation, and improve the performance of women-owned businesses, leading to greater life choices for women and potentially higher living standards.⁸

Given these benefits and many others, there is substantial interest in digital payments across governments, central banks, banks, telecommunications companies, and other market participants. The global success stories of PayPal, M-PESA, and Alipay serve as exemplars of the remarkable effects of digitization, and new innovators continue to discover different ways in which going paperless can deliver practical benefits that improve living standards.

III. METHODOLOGY: ASSESSING ACCELERATORS IN 25 COUNTRIES

This study's methodology employs a high-level analysis of the digital payments ecosystem across 25 countries. This analysis included secondary qualitative and quantitative information about the current state of digital payments in each country, based on supply, demand, and relevant policy and regulation.

However, as the focus of this study is on the activities a country has taken to arrive at its current ecosystem, the research included a bottom up of the actions taken to arrive at an understanding of key accelerators. From there, the study selected two countries — Ghana and India — for deep dives to better test the framework for understanding actions taken. These country visits helped augment the framework and identify actions that accelerate the development of a digital payments ecosystem.

THE SEQUENTIAL METHODOLOGY THIS STUDY USES IS AS FOLLOWS:

I. Selected 25 countries to landscape with a view to including G20 countries, Better Than Cash Alliance members, GSMA mobile money sprinters, and countries with national digitization policies.

II. Gathered quantitative and qualitative data points for the 25 landscaped countries on digitization of payments for mobile money, credit, and debit cards. Data encompassed supply side aspects of infrastructure and distribution, policy, and regulatory aspects of relevant public sector actions relating to digital payments, and demand side information about end users and access to and use of digital payments.¹¹

III. Assessed the payments ecosystem for the 25 landscaped countries, which include demand side stimulators, supply side drivers, and policy/regulation.

IV. Conducted more detailed research into the subcomponents to better understand how these subcomponents have impacted the digital payments ecosystem. This was done by compiling activities different countries and players have undertaken to digitize payments through elaborate research on global payments developments in order to better understand the sub-components of the ecosystem framework. Conducted qualitative and quantitative research on each activity to arrive at a list of metrics for evaluation.

V. Identified accelerators — activities that can have a strong impact on the development of the digital payments ecosystem — based on common market patterns. The criteria influencing the selection of accelerators include: relevance to other markets, opportunity to learn from the successes and failures of these initiatives, and the availability of data from primary or secondary sources to support information gathered.

VI. Selected two countries — Ghana and India — for in-country deep dives based on usage and demand data (digital transaction flow growth rate, three-year account growth rate, mobile phone ownership), Better

Than Cash Alliance membership, and other demographic factors (social, political, and economic) to test the impact of accelerators.

VII. Tested the accelerators in-market and gathered primary market research through interviews with regulators, development partners, banks, telecommunications companies, FinTech, and other organizations.

VIII. Incorporated field findings into the accelerators framework and country analyses.

IX. Extracted key learnings from each accelerator, based on in-market findings and country case examples.

X. Developed a toolkit to help participants decide which accelerators can have the greatest potential impact in the context of their own markets and existing ecosystems.

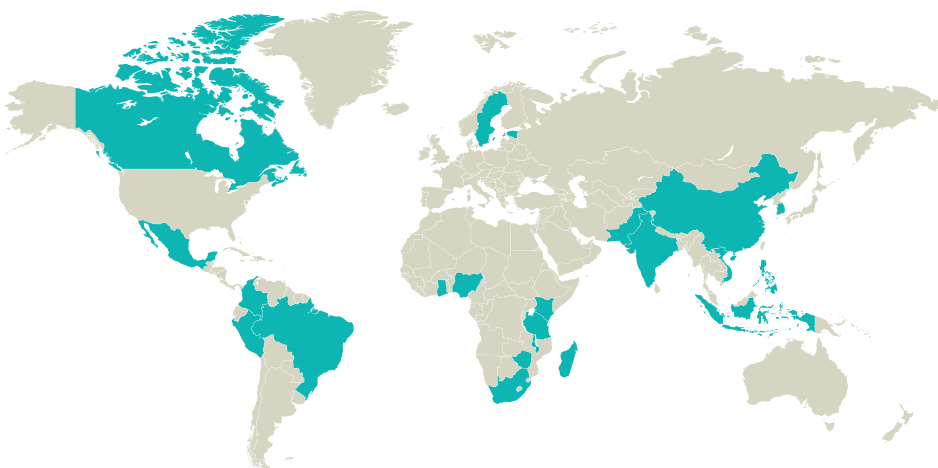
To help policymakers and other stakeholders implement accelerators effectively, this study also outlines specific actions that governments, payment providers, and the development community can take to address the many barriers to advancing digital payments, and increase adoption and usage. The barriers are detailed throughout the discussion of each accelerator.

Landscaped Countries

This study landscaped the experiences of 25 countries in their journeys from cash toward digital payments: Bangladesh, Brazil, Canada, China, Colombia, Estonia, Ghana, India, Indonesia, Kenya, Korea, Madagascar, Malaysia, Mexico, Nigeria, Pakistan, Peru, Philippines, Russia, Rwanda, South Africa, Sri Lanka, Sweden, Tanzania, and Vietnam.

Across these countries, the growth to date and future potential of digital payments is clear: The 25 countries saw an average annual growth rate of 31.6% in transaction volumes over the past decade.⁹ To put this in perspective, these same countries saw an average annual growth rate of 12.1% in internet usage between 2011 and 2014.¹⁰

After conducting quantitative and qualitative research to landscape these countries, this study includes examples from the countries that best demonstrate the accelerators identified, rather than including activities across all countries landscaped.



IV. ACTIONS TO ADDRESS THE BARRIERS IMPACTING DIGITAL PAYMENTS ECOSYSTEMS

IN GENERAL THERE IS A NEED TO:

- Promote a digital approach to financial inclusion
- Facilitate more ecosystem player dialogue to understand how business cases can be optimized to drive investment in initiatives that reach rural areas
- Establish responsible digital financial practices to protect consumers
- Leverage existing technology and current capabilities to overcome access and usage constraints
- Foster electronic Know Your Customer (KYC) innovations for a variety of payment products and user types
- Conduct more research to identify incentives to drive MSME acceptance of digital payments

ACTIONS GOVERNMENTS AND REGULATORS CAN TAKE:

- Establish regulation that is enabling and proportionate and balances innovation with risk
- Collaborate with regulators of other sectors relevant to digital payments, such as the telecommunications authority
- Show public support of digital payments by digitizing payments and receipts
- Ensure consumer protection without inhibiting innovation by ensuring payment providers treat clients fairly, protect client data, and provide client recourse
- Facilitate customer access to identification and create high quality, centralized identification solutions at speed and scale
- Identify and relieve friction within government organizations that are slowing down the adoption and usage of payments
- Devise incentives for the usage of digital payments, and remove disincentives that are working against adoption and usage of digital payments
- Maintain an open door policy for interaction with regulators
- Support financial and digital literacy and awareness
- Track digital financial inclusion progress

ACTIONS PAYMENT PROVIDERS CAN TAKE:

- Prioritize usage of digital payments by limiting the ability to cash-out, ensuring that digital money does not leak out of the ecosystem as cash
- Conduct more research to assess alternative technology-driven models (e.g., social chat platforms)
- Explore how routine use cases within a market context can accelerate usage of digital payment methods
- Drive the development and deployment of digital payments systems through means such as promoting merchant acceptance infrastructure and leveraging existing networks for delivery
- Take a human-centered design approach to developing products and services

IV.
ACTIONS TO
ADDRESS THE
BARRIERS IMPACTING
DIGITAL PAYMENTS
ECOSYSTEMS

ACTIONS OTHER BUSINESS SECTORS CAN TAKE:

- Recognize the potential and value that corporate data, networks, and payment flows represent for driving digital economies
- Identify and digitize relevant payment flows that will drive efficiencies and reduce costs in their operations
- Business sectors working collectively to grow digital payments across specific value chains
- Ensure that incentives are aligned across retail networks to ensure wide usage of digital payments among consumers and merchants



V. ECOSYSTEM AND ACCELERATORS FRAMEWORK

ACTIONS DEVELOPMENT COMMUNITY MEMBERS CAN TAKE:

- Drive collaborative conversations to promote digital payments among the many players that development organizations touch
- Ensure payments brought into the country are not increasing stores of cash and instead digitize development payments into a market

This study uses a top down approach to analyze the digital payments ecosystems of each of the 25 landscaped countries. The ecosystem framework was segmented into three areas:

- **Supply Side Drivers:** The underlying infrastructure, products, and distribution networks supporting digital payments
- **Demand Side Stimulators:** The means to increase access and usage of digital payments among end users
- **Policy and Regulation:** Policies and regulations issued in the market that establish the playing field for digital payments

This view of the ecosystem leverages and synthesizes insights from a variety of thought leaders in the space, including Mobile Money for the Poor and the Bill & Melinda Gates Foundation. This view of the ecosystem simplifies conversations in a country regarding the components to enhance in order to achieve an inclusive digital payments ecosystem, by summarizing the ecosystem into three segments.

Within each segment, taking certain actions can result in the strengthening of that component of the ecosystem. These actions are termed accelerators. All three components of the ecosystem framework are important and are necessary for an inclusive digital payments ecosystem. As such, countries can utilize this framework to identify and implement accelerators within each segment of the framework that would best serve to enhance their digital payments ecosystem.

1. Supply Side Drivers

This ecosystem component highlights the supply side which refers to the infrastructure, technology, distribution, and products that make digitized payments possible. Each market will exhibit a different level of supply-side maturity. Some aspects of this ecosystem component are prerequisites to the success of adoption and usage of digital payments.

This ecosystem component is present for the following accelerators:

- Promote **merchant acceptance infrastructure** (see pg. 16)
- Leverage **existing networks** or platforms for delivery of products and services (see pg. 18)
- Establish a **shared digital infrastructure** for players (see pg. 21)
- Establish **interoperability** in the market (see pg. 25)

2. Demand Side Stimulators

This ecosystem component highlights the reasons that people begin to use and continue to use digital payments. The study breaks down this component into access, connectivity, demographics, and usage.

This ecosystem component is present for the following accelerators:

- Develop a **unique identification** program (see pg. 28)
- Digitize **routine use cases** (see pg. 31)
- Digitize **government payments** (see pg. 37)
- Digitize **government receipts** (see pg. 39)

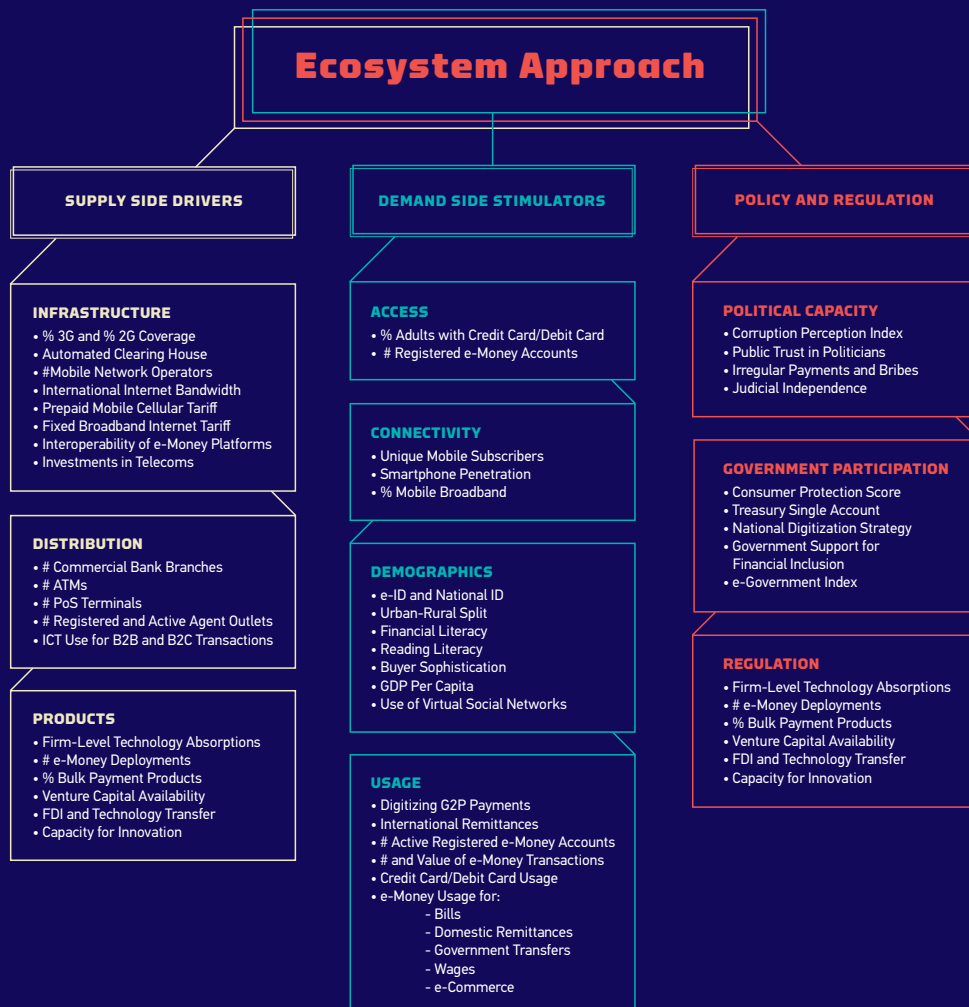
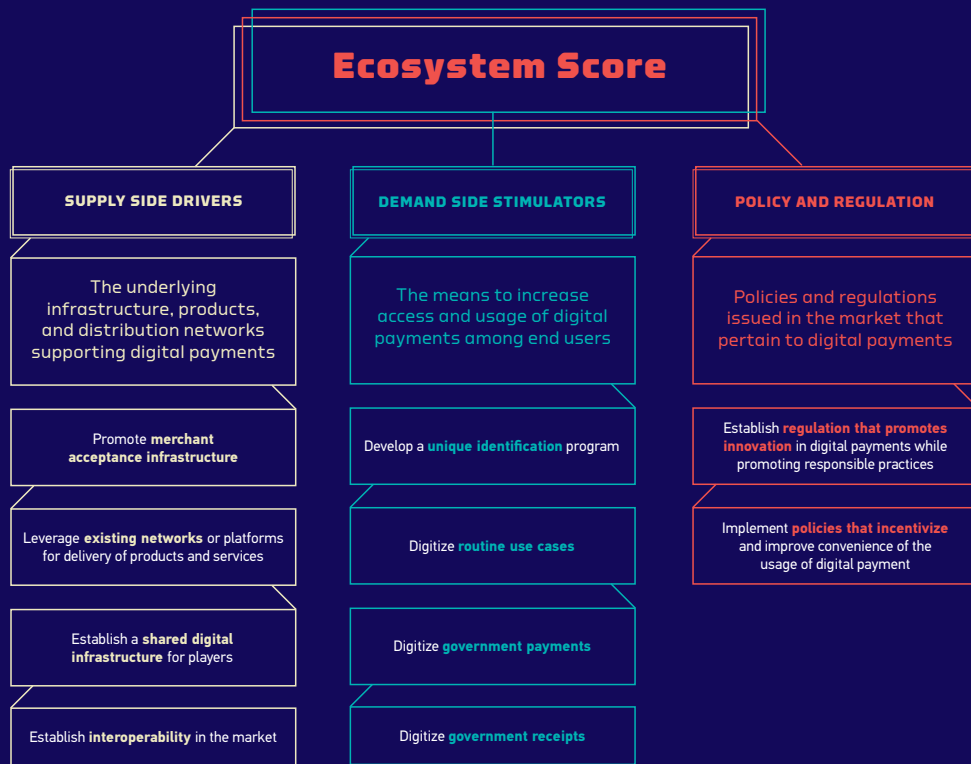
3. Policy and Regulation

This ecosystem component defines the policies and regulatory frameworks for supplying and using digital payments within a market. These frameworks define the rules of the game and aim to ensure the ecosystem is developing in a way that is accretive to all interested parties, to the extent possible.

This ecosystem component is present for the following accelerators:

- Establish **regulation that promotes innovation** in the digital payments ecosystem while promoting responsible practices (see pg. 42)
- Implement **policies that incentivize** and improve convenience of the usage of digital payments (see pg. 45)





VI. KEY LEARNINGS FROM ACCELERATORS

Through a bottom up of digitization activities across the 25 countries examined, this study identified 10 core “accelerators” — or actions that can have a strong impact on promoting a digital payments ecosystem.

ACCELERATORS: SUPPLY-SIDE DRIVERS

1. ACCELERATOR:

Promote merchant acceptance infrastructure

While promoting routine usage of digital payments is a key way to ensure a comprehensive shift away from cash, adequate acceptance infrastructure is vital for consumers to transact digitally with merchants. The digitization of payments that MSMEs accept and make offers a US \$19 trillion opportunity for growth, as 56% of MSME's total worldwide payments (valued at US \$34 trillion) remain paper-based.¹² Globally, MSMEs encompass a large share of consumer purchases and have been growing at an annual rate of 5.2% since 2000.¹³ Digitizing the payments made by and to MSMEs can have a major impact on the status of digital payments, at the same time as driving financial inclusion, productivity, and economic growth.

Ubiquitous Acceptance Infrastructure in Sweden

Sweden is currently the most cash-lite society in the world, with cash transactions representing only 2% of payments by value last year.¹⁴ The country saw a dramatic increase in card usage after the 1995 Swedish Competition Act, when greater competition incentivized banks to invest in new technology, business development, and marketing. This helped to create quality products that spurred consumer demand to transact digitally, as well as to create the necessary acceptance infrastructure to meet this demand.

Technology has continued to evolve since then. For instance, mobile Point of Sale (mPOS) platforms such as iZettle are commonplace, popular even among homeless populations selling magazines. Merchants using mPOS technology have reported sales increases of up to 30%.¹⁵ Due to the ubiquity of acceptance infrastructure for digital payments, infrastructure for cash payments is on the decline. More than half of Sweden's bank branches no longer keep cash on hand, take deposits, or have ATMs.¹⁶

Kopo Kopo in Kenya and MSMEs in Mexico: Offering Value-Added Services and Other Incentives to Promote Merchant Acceptance

In Kenya, despite the advanced mobile money market, 92% of merchants prefer cash payments, with only 2% preferring M-Pesa, as of 2014.¹⁷ In order to incentivize acceptance, the payments platform Kopo Kopo offers value-added services that make acceptance of mobile payments more attractive than cash payments for MSMEs. For example, its “Payments Hub” enables merchants to transfer electronic funds they collect from customers to supplier bank accounts at a lower cost than writing a check. As of 2015,

merchants who utilize this service witness growth in transaction volumes 22% higher than those that do not.¹⁸

Grupo Bimbo is the world's leading baking company and has offered a digital transaction platform called Red Qiubo since 2013. It has made a demonstrated commitment to develop “mom and pop” MSMEs in Mexico by integrating digital payments into these small businesses. Red Qiubo simplifies modernization in traditional “mom and pop” stores by providing small business owners with access to electronic products and services such as acceptance of bank cards and vouchers, bill payment, airtime purchases, and access to financing.¹⁹ Grupo Bimbo's launch of this service also serves as an example of leveraging an existing network, as Grupo Bimbo products are already sold in 700,000 small retailers in Mexico, facilitating the expansion of Red Qiubo.²⁰ As of 2015, Red Qiubo had installed 75,000 wireless terminals²¹ and was present in over 2,000 municipalities across Mexico.²² The terminals handle an average 50 credit and debit card transactions a month, with an average value of US \$5.71 - \$6.73 per transaction.²³

A further way to incentivize acceptance infrastructure is through direct financial benefits which recognize and alleviate the real or perceived costs that digital payments may impose — including infrastructure investment and transaction fees. For instance, in Mexico in November 2014, Visa, the tax authority, and the National Chambers of Commerce, Services, and Tourism collaborated on a scheme to provide subsidized mPOS devices to MSMEs, which comprise 64% of Mexico's 1 million grocery retailers.²⁴ As of February 2015, the scheme installed 20,000 mPOS devices.²⁵ Mexico experienced a 17% growth rate in POS payment transactions between 2014 and 2015.²⁶

This alignment of incentives can help drive digital merchant acquisition at the POS level, encouraging merchants to accept digital payments and their customers to spend digitally.

Digitizing online payments for products and services in Colombia

Beyond brick-and-mortar merchant acceptance infrastructure, online acceptance of digital payments is also a component of a digital payments ecosystem. In Colombia, Pagos Seguros en Línea (PSE) was launched in 2005 as a payment platform that enables consumers to pay bills and make purchases online by taking them from the merchant or biller's website to the bank's website so the consumer's bank account can be debited at the same time as the seller or biller's account is credited. For online purchases, PSE gives consumers another option to existing credit and debit cards, and has become a viable alternative, given the uptake of the system. Demonstrating the success of PSE, the percentage of ACH Colombia (the main private clearing house) transactions initiated through PSE has increased nearly every year, from 4% of ACH Colombia transaction volumes in 2007 to 23% in 2016.²⁷ This is especially noteworthy in a country that does have fairly low card usage.²⁸ PSE is used by a variety of players in Colombia, in

As of 2015, Red Qiubo had installed **75,000 wireless terminals** and was present in over **2,000 municipalities** across Mexico. The terminals handle an average **50 credit and debit card** transactions a month, with an average value of **US \$5.71 - \$6.73** per transaction.

both the private and public sector, including government agencies, billers, and merchants, demonstrating numerous use cases — B2G, P2B, G2B, and G2G.²⁹

PSE is a hallmark example of public-private sector collaboration, as PSE is a private sector innovation and owned and operated by ACH Colombia, but the government played an essential role in PSE's development.³⁰ Sustained government commitment for a new initiative, regardless of who is leading it, plays a significant role in the success of an initiative. However, it is important to note that PSE requires its users to have a bank account, so measures for financial inclusion can be a prerequisite to the success of such a platform.³¹

Inhibitors to Promoting Merchant Acceptance Infrastructure

There are many reasons for merchants to resist installing acceptance infrastructure and promoting digital payment methods with customers, including the investment cost in POS terminals, the merchant discount rate paid with each transaction, and the increased transparency of revenues, which can increase tax liabilities. As such, an inhibitor to promoting acceptance infrastructure is the failure to align incentives and ensure merchants install the infrastructure. Addressing this challenge requires cooperation from a variety of players. For instance, the government can have a role in optimizing merchant discount rates or adjusting the tax code, or banks can have a role in subsidizing the cost of acceptance infrastructure. As a result, understanding the value proposition for governments, customers, and merchants is vital to promoting merchant acceptance infrastructure.

Accelerator Key Learning:

- Drive merchant acceptance for digital payments across MSMEs to deepen and promote usage among consumers and large entities higher on the value chain
- Create a compelling business case for going digital to facilitate the onboarding of merchants: Policy / Regulations

2. ACCELERATOR:

Leverage existing networks or platforms for delivery of products and services

As many businesses have already created networks for a variety of products and services, agnostic of payments, parties working to promote digital payments can leverage existing infrastructure to accelerate their journeys. These networks can be physical in nature, such as post offices or agents, or virtual, such as social media or messaging platforms.

Successful applications of this accelerator consider potential synergies and market trends in different contexts – such as the ability to reach rural populations through a broad-reaching postal network involved with financial services, or the ability to merge lifestyle and consumer services through a social network platform.

Mobile Money Services by Bangladesh Post: Leveraging a National Postal Network

As the Bangladesh Post Office exemplifies, using the vast reach of postal services through strategic postal and mobile partnerships offers one model of leveraging physical infrastructure. Postal networks have established themselves as key channels for financial inclusion: One billion people across 50 countries rely on them for banking services.³² Prior to any digitization efforts, Bangladesh Post had embraced a role in furthering financial inclusion, recognizing how its extensive postal network could function to provide underserved rural populations with savings, life insurance, and remittance services.

Moving a step forward in 2010, Bangladesh Post partnered with Banglalink Mobile Company to launch a new Electronic Money Transfer Service (EMTS), also known as the Mobile Money Order Service. EMTS uses mobile and electronic technologies to facilitate instant money transfers, both domestically and internationally. By leveraging Bangladesh Post's existing distribution channels, it aimed to bring unbanked populations in rural and remote areas into the digital financial ecosystem. Bangladesh Post's distribution network included 1,500 post offices, 76% of which are in rural areas, and 8,500 additional agents, enabling it to expand beyond traditional cash-based money services. Participating offices and outlets facilitate EMTS money transfer through SMS/PIN-based verification technology.³³ While Banglalink operates the service, it is available on all mobile networks. A year after its launch, EMTS had already captured 22.5% market share for remittance money transfers to Bangladesh.³⁴ Due to services like EMTS, Bangladesh Post earned US \$3 million more revenue in 2013 than the previous year.³⁵

Observing the initial successes of EMTS, many private sector entities joined the electronic money transfer space, with bKash entering six months after the launch of EMTS, and 19 other entities joining thereafter. Cash transactions through EMTS dropped by nearly 80% between 2012 and 2015.³⁶ EMTS was still the top choice for large value transactions. For small value transactions, the Deputy Postmaster General noted Bangladesh Post's inability to reach people's doorsteps while competing against private operators who could leverage agent networks.³⁷ As such, in 2016, the government decided to expand EMTS through an agent network comprised initially of between 5,000 and 10,000 people, mainly unemployed youths. This agent network can better enable EMTS to reach people's doorsteps and compete with other players in the space.

Between May 2010 and June 2016, EMTS grew from 2,700 post offices to 8,000 agents (including both post offices and Banglalink agent points), and plans to expand its agent network to 0.25 million. Further, in this six-year time period, total transaction issues were 25,528,698 and transaction volumes were US \$1.8 billion.³⁸

Between 2014 and 2015, Tencent's market share in the mobile payments space nearly doubled from **11% to 20%**. As of November 2015, WeChat disclosed that users had connected **300 million** bank cards to the service. Estimates indicate WeChat can enable more than **US \$500 billion** in transactions in 2016.

Given Bangladesh Post's experience in entering the financial services space and digitizing in recent years, it has recently announced a further measure in these areas. In October 2015, Bangladesh Post announced a launch of e-commerce services for its customers. Its 8,500 post office branches will begin offering e-commerce services, with the aim of becoming the market leader in e-commerce by 2021. While Bangladesh Post has yet to announce the full suite of services, it will expand beyond delivering personal packages, and Bangladeshis will be able to pay e-commerce bills through cash, postal cash cards, or EMTS at branches. As the Bangladeshi e-commerce sector is growing by 8-10% per year, Bangladesh Post Office branches are well positioned to bring e-commerce to remote areas of the country.³⁹

WeChat in China: Leveraging 700 million active users for digital payments

Messaging and social networking applications offer valuable infrastructure for payments in markets with high smartphone penetration. China's vastly popular chat app WeChat, reaching 762 million monthly active users as of Q1 2016,⁴⁰ recognized the business opportunity of leveraging its massive existing online network by evolving social media platforms into digital payments. WeChat is creating a paradigm shift in how users make payments by allowing them to access Tenpay (the online payment tool of WeChat's parent company Tencent) directly from chats. Users can use the messaging platform to make wallet-based Person to Person (P2P) transfers and make payments at offline retailers and e-commerce platforms.

Tencent's ability to leverage its existing user network through its social media product WeChat facilitated rapid market adoption: Between 2014 and 2015, Tencent's market share in the mobile payments space nearly doubled from 11% to 20%.⁴¹ As of November 2015, WeChat disclosed that users had connected 300 million bank cards to the service.⁴² Estimates indicate WeChat can enable more than US \$500 billion in transactions in 2016.⁴³

WeChat's expansion into payments presented major competition to other players. Its rise in market share caused the market leader Alipay, the payment platform of Chinese e-commerce giant Alibaba, to fall from 82% to 68% of market share.⁴⁴ In an attempt to disrupt WeChat's momentum, Alibaba created its own messaging app Laiwang in 2012, which similarly leverages an existing platform (Alipay) to build its network connecting consumer, social, and lifestyle habits.⁴⁵

Inhibitors to leveraging existing networks

This accelerator necessarily relies on the existence of a digital or physical network with a broad reach to a target market — this can be an inhibitor in countries that do not have such a network. For instance, the Bangladesh Post needed to invest in expanding the reach of its branches in order to adequately reach the target market, as it was losing market share to players that had agent networks with the right reach. In this case, it was not sufficient to rely merely on the existing network.

Accelerator Key Learning:

- Leverage existing networks to extend digital payment services to wide-reaching user bases at a rapid rate and to improve the business case of breaking into the digital payments market
- Beyond riding on the network as-is, make appropriate investments to enhance the reach of the network so that it reaches the target market as well as, if not better than, competitors

3. ACCELERATOR:

Establish a shared digital infrastructure for players

A shared digital infrastructure can reduce barriers to entry for players, both small and large, as it reduces costs for providers.⁴⁶ A variety of players can spearhead the development of a shared digital infrastructure, but successful implementation typically requires collaboration among both public and private sector players, as demonstrated through the examples of India, Estonia, and Peru.

India Stack: Opening the Market to Innovations through Open APIs

As a variety of third parties, including private sector entities, can access Aadhaar's database, its existence and ubiquity have helped drive novel business models in digital payments. Being able to leverage Aadhaar for KYC has brought the time required to verify identities for account opening and transactions from 15 days to mere seconds, making it easier to scale new businesses.⁴⁷ A 2016 MicroSave study found that Aadhaar-enabled e-KYC processes can save banks and telcos US \$1.5 billion over the next five years by eliminating inefficient paper-based verification, and movement and storage of paper documents.⁴⁸

Aadhaar is a major element of "India Stack," the complete set of APIs that facilitates payment-enabled applications. These APIs are open, as part of the Indian government's 2015 mandate for an open API policy. Other elements of India Stack include Digital Locker for documentation, e-Sign, and Unified Payments Interface (UPI). These components all build on one another — for any transaction Aadhaar helps to establish the identity of the parties, Digital Locker authenticates documents by the issuer, e-Sign lets the parties sign digitally, and UPI enables digital money movement.⁴⁹ This creates a comprehensive digital architecture for paperless and remote transactions. Together, India Stack has the potential to revolutionize India and enable a "transition from a technology-poor to innovation-rich society." As it is open source, a key aspect to sharing digital infrastructure, India Stack is seen as an enabler for lowering barriers to experimentation by entrepreneurs.⁵⁰ Private sector players can focus on building solutions that ride on India Stack, rather than building infrastructure from scratch. India Stack only became possible through policies that the government issued in 2015, so its possibilities are only starting to be realized; however, there is clear potential for a broad range of innovations leveraging the open APIs.

A **2015** World Bank study reported that by eliminating the need for in-person interactions, X-Road saved an estimated **2.8 million** total working hours, equivalent to **3,225 years, in 2014.**

A further initiative out of India to promote innovation through shared digital payments infrastructure comes from the National Payments Corporation of India (NPCI), and was established in 2008 as an umbrella organization for all retail payment systems in India. It has developed products and services such as a domestic card network called RuPay and an interbank, instant electronic funds transfer system called the Immediate Payment Service (IMPS). Recently, NPCI created the Unified Payment Interface (UPI) as an API to sit over all NPCI products, beginning with IMPS. UPI is a unique interoperable payment system that requires just a single identifier for transactions, and allows for both push and pull of payments, solving the IMPS pain point. NPCI collaborated with the many banks operating in India to develop UPI. NPCI has noted that one of the key benefits of UPI is that it is open to all banks, from small to large, and from public to private. This levels the playing field and creates room for innovation for all.⁵¹ While UPI is not fully rolled out yet, 29 banks are developing products for the platform.⁵²

Estonia's X-Road: The Backbone of a Digital Society

Estonia's X-Road is a data exchange layer that enables secure internet-based data exchange between information systems. Public and private sector enterprises and institutions can all connect their information systems with the X-Road. This is a form of shared infrastructure the government deploys, making it easier for public and private institutions to innovate, as they are able to leverage the already-existing infrastructure for data exchange, saving resources.⁵³ Prime Minister Taavi Rõivas explained in 2015 that the purpose of such digitization initiatives was to "put in place the right conditions so that digital innovation can flourish."⁵⁴ By fostering digital innovation, X-Road thus helps create an enabling environment for digital payment services to arise and prosper by lowering barriers to entry. For example, by facilitating rapid movement of data between systems and integrating e-services, X-Road helped enable a digitized income-tax declaration system through linking employment tax records to individual citizens' tax records.⁵⁵

As of 2015, X-Road connects 939 government institutions, local municipalities, and private sector databases, and operates 1,723 services.⁵⁶ A 2015 World Bank study reported that by eliminating the need for in-person interactions, X-Road saved an estimated 2.8 million total working hours, equivalent to 3,225 years, in 2014.⁵⁷

Other countries have been inspired by Estonia's digital initiatives. Estonia shares its secure X-Road technology free of charge, and Finland is in the process of implementing the platform. In the United States, Utah used an Estonian-made e-voting system for the Republican presidential caucus in 2016. Players can transfer Estonia's digitization strategy to other markets where there is a similar demand for digital services (e.g., markets with high mobile and internet penetration, and strong connectivity).

Bim in Peru: The Story of a Collaborative, Public-Private Approach to Developing Shared Digital Infrastructure

In Peru, over 87% of households nationwide use mobile phones,⁵⁸ demonstrating significant potential for greater financial inclusion through mobile money. As such, instead of encouraging individual entities to compete and develop their own platforms, Peru took a collaborative approach in taking advantage of the high levels of mobile penetration. In the summer of 2015, Peru's government, financial institutions, telecommunications companies, and large payers and payees created a partnership and constructed a shared infrastructure for mobile payments. This partnership is known informally as "Modelo Perú." They developed an innovative payment service called "Bim," which is the first fully interoperable mobile money platform in Peru. No other program includes all national banks; in addition, all three major Peruvian mobile network operators offer users access to the service. Bim pools existing financial infrastructure across Peru, and members of Modelo Perú can use the Bim platform to issue affordable products, competing on design within an interoperable platform.

Bim only launched in February 2016, and is still in its early stages. The service is targeting 5 million registered accounts by 2020. Within just three months of launch, more than 126,000 accounts have opened. The platform is still launching new features, but policymakers and other stakeholders around the world are paying close attention to this novel approach to building an inclusive digital payments ecosystem.

Inhibitors to establishing a shared digital infrastructure

As demonstrated through the case of India, Estonia, and Peru, establishing a shared digital infrastructure requires collaboration among a variety of private and public sector players. A challenge is getting the right players at the table and aligning incentives to dedicate toward successful implementation and maintenance of the infrastructure. Lack of technical capability to strategically plan and execute for a form of shared infrastructure is also an inhibitor. The cases shown exemplify the technical skill necessary for implementation and maintenance.

Accelerator Key Learning:

- Shared digital infrastructure can reduce barriers to entry for participants and promotes innovation
- Ensure such digital infrastructure is open source with appropriate access rights so that players are not excluded from the benefits of the platform



4. ACCELERATOR:

Establish interoperability in the market

Interoperability in a digital payments ecosystem increases the potential channels for users to transact digitally, as their choice of a digital payment product or service can be more widely accepted.

Types of Interoperability

The International Telecommunication Union (ITU) defines interoperability between payment systems as “when payment systems ... allow two or more proprietary platforms or even different products to interact seamlessly. The result is the ability to exchange payments transactions between and among providers. This can be done by providers participating in a scheme, or by a variety of bilateral or multilateral arrangements. Both technical and business rules issues need to be resolved for interoperability to work.”⁵⁹

Interoperability can be characterized by the type of channel involved. The most common types of interoperability that appear in digital payments are:

- **Account-to-account (A2A) mobile money interoperability:** the ability to transfer money between accounts in mobile money schemes and accounts at banks⁶⁰
- **Agent-level interoperability:** the ability of agents of one service to serve customers of another service⁶¹
- **ATM interoperability:** the ability to use services of ATM systems across any bank’s ATMs
- **POS interoperability:** the ability for a POS to accept payments from multiple providers / payment types (e.g., cards, mobile money)

While A2A interoperability can promote greater transaction volumes in digital payments, it can create challenges for a mobile money service provider, as the differentiation of products becomes harder.⁶² However, increased transaction volumes can unlock potential for greater transaction fees and access to float, which can counteract these challenges.

When implementing interoperability, it is imperative to account for market context. Varying ecosystem arrangements enable different approaches to interoperability to succeed, but can also impede interoperability from emerging at all.

Mobile Money in Tanzania: Successful Interoperability through a Private-Sector Driven Approach to Bilateral Integration

Prior to implementing A2A interoperability in 2014, mobile money services in Tanzania were already independently connected to the broader mobile financial ecosystem through bilateral arrangements or aggregators with banks, ATM networks, or merchants. Therefore, service providers were primarily interested in collaborating on P2P transactions.⁶³ IFC acted as an independent facilitator of this industry-based initiative. In June 2014, three mobile money providers in Tanzania — Tigo, Airtel, and Zantel —

The fragmentation of Tanzania's mobile money market was crucial for this accelerator to succeed. Vodafone, as the dominant player, had **54% market share** of active wallets, while Tigo, Airtel, and Zantel had **29%, 13%, and 4%** respectively.

announced a new interoperability agreement, enabling customers with different mobile wallets, and on different mobile networks, to send money to each other. The agreement marked the region's first domestic interoperability, and another bilateral wallet exchange agreement quickly followed between Vodafone and Tigo in 2015. As a result of these developments, mobile money grew more convenient for consumers in Tanzania, as switching costs are low and providers seek to compete on product.

The fragmentation of Tanzania's mobile money market was crucial for this accelerator to succeed. Vodafone, as the dominant player, had 54% market share of active wallets, while Tigo, Airtel, and Zantel had 29%, 13%, and 4% respectively.⁶⁴ Private sector players were willing to collaborate because doing so offered a solution to a challenging market issue; the inability of users to send mobile money across providers had caused industry-wide fragmentation, limiting the utility and uptake of mobile financial services.⁶⁵ Further, since the three smaller players had incentives to come together to compete with Vodafone's market share, Vodafone then had little choice but to join in on the advancements in interoperability, starting with its bilateral agreement with Tigo. After announcing the June 2014 interoperability agreement, the three mobile money platforms that initially interconnected saw an increase of 3.5 times the value of total offline transactions.⁶⁶

Mobile Money in Pakistan: Successful Interoperability through Private-Sector Driven Switch Arrangements

Achieving interoperability in Pakistan required a very different approach than in Tanzania due to differing market contexts. Mobile money in Pakistan is bank-led. As such, interconnections existed between the bank leading the platform and the platform itself, but not between the platform and the broader mobile financial ecosystem; there were fewer existing bilateral connections in the market than in Tanzania.⁶⁷ Further, the operators, as banks, were familiar with the concept of a switch and understood the benefits. In this context, connecting to the existing switch was the most cost-effective and strategic approach to achieve interoperability, rather than pursuing many bilateral connections. Following the connection of mobile money platforms to the national switch in 2014, providers benefited from organic growth that bank-to-wallet and wallet-to-bank usage generated. The number of transactions grew exponentially and organically, without above-the-line or below-the-line marketing activity.⁶⁸ According to the State Bank of Pakistan, the value of mobile money transactions tripled in just three quarters between 2014 and 2015, from US \$22.4 million to US \$74.5 million.⁶⁹

Interac in Canada: Low-Cost, Secure Transactions Using Network Capability

The Interac system is illustrative of a model that offers low-cost services and a national open-loop system. The system was founded in 1984 as a collaborative nonprofit interbank network between four of the five largest financial services companies and the largest association of credit union

banks: RBC, CIBC, Scotiabank, TD bank, and Desjardins. By 1990, Interac expanded its network by establishing standards that create a secure, real-time POS debit network. This collaborative effort between the larger banks delivered interoperability in Canada. Over time they developed different forms of interoperability use cases such as real-time bank-to-bank (P2P) transactions and also enabled online bank-to-e-commerce transactions (P2B) to increase the usage of the service.⁷⁰

The development of a national network through a collaborative effort highlights the value of this approach and commitment to bringing low-cost transaction services to merchants and consumers instead of focusing on revenue opportunities to providers. As a result, Interac has enabled digital payments and handled ~5.2 billion debit card transactions in 2015.⁷¹

Inhibitors to Achieving Interoperability

The mobile wallet market in China shows the role fragmented market share can play in achieving interoperability, and how a lack of fragmentation can pose a barrier to interoperability. The two dominant mobile money platforms in the Chinese market are WeChat and Alipay. Competition is fierce between the two players and while Alipay is still ahead in terms of market share, WeChat is on the rise. Between 2014 and 2015, WeChat's market share nearly doubled from 11% to 20%, while Alipay's share fell from 82% to 68% in response.⁷² Since the digital payments ecosystem in China is dominated by these two major players, interoperability is not foreseen in the short term due to lack of incentives — both Alipay and WeChat are succeeding independently, reducing the need to collaborate.⁷³ As a result, the inability for consumers to send and receive money between platforms remains an ongoing challenge to China's mobile payments landscape.

Another inhibitor to interoperability is a failure to adequately align business cases and ensure individual platforms are at a sufficient level of technical capability before interoperating. This is exemplified in Ghana, where among the mobile money players there are concerns regarding different business cases and behaviors. One key concern regarding agent interoperability is the investment that individual mobile money players make in ensuring agent quality. If agents are non-exclusive, the mobile money operators are disincentivized from making investments in a large, high quality agent network due to “free-rider” concerns. Additionally, mobile money players have noted that their appetite to interoperate is low until they make the desired technical improvements to their mobile money platforms.⁷⁴

Accelerator Key Learning:

- Bring the right players to the table to collaborate on establishing interoperability and ensure business cases are aligned
- Account for market contexts like levels of fragmentation to successfully implement interoperability

ACCELERATORS: DEMAND-SIDE STIMULATORS

5. ACCELERATOR:

Develop a unique identification program

Inability to prove an official identity cuts off individuals from accessing basic services, enjoying full rights, and marginalizes the individual's participation in the economy. Typically, individuals who lack birth registration and official forms of identification are the most vulnerable people in the poorest countries.⁷⁵ However, as digital networks become increasingly common to deliver both public and private services, consumers' ability to remotely access such services through identification becomes all the more important. Studies have found that access to a legal identity is critical for achieving financial inclusion goals.⁷⁶ Once access to a legal identity is established, enabling public and private sector participants to access a data source to verify customer identities can support the growth of digital payments products and services available by streamlining the customer acquisition process and reducing costs.⁷⁷

However, as players develop ID programs, privacy concerns and data control issues are crucial to keep in mind. When developing identification databases, establishing a solid consumer protection regulatory framework is essential for maintaining confidentiality and security. Services are to only share data with consent, and shared databases include only the most relevant and pertinent consumer data. Furthermore, security measures are necessary to protect against data hacks. Such measures are especially important when reaching previously underserved populations with low financial and technological literacy.⁷⁸

India: Giving identity to millions through Aadhaar numbers and a centralized identity database

Prior to developing and issuing a centralized identity solution, many poor Indians faced barriers to obtaining any form of identification, as every major form of ID required at least one other form of ID,⁷⁹ such as a birth certificate or voter ID. This excluded millions of Indians without a form of identification from the formal labor market. Most of these people could not vote, sign up for government welfare schemes, open a bank account, or access many other rights and services. This also encouraged fake and duplicate identities, diverting benefits intended for properly qualifying poor.⁸⁰ While the government was spending 4% of GDP on subsidies, estimates were that 40-50% of this spend was lost as leakages.⁸¹

Recognizing these issues, the Indian government established the Unique Identification Authority of India (UIDAI) in 2009. UIDAI is the independent authority that spearheaded the development and issuance of Aadhaar, 12-digit unique identity numbers that accompany biometric and demographic data of Indian residents. UIDAI deliberately designed Aadhaar for scale and speed, bringing together a dedicated group of public and private parties to ensure optimal development and deployment, a clear example of the benefits of cross-sectoral collaboration. UIDAI has provided

a unique identity number to over 1 billion of India's 1.2 billion residents since its inception, or two-thirds of the country in less than five years.⁸²

The Indian government leveraged the near-ubiquity of Aadhaar for other successful policy initiatives. In August 2014, Prime Minister Narendra Modi announced an initiative to open a bank account for every household — known as Pradhan Mantri Jan Dhan Yojana (PMJDY). This initiative was successful in delivering universal household coverage by January 2015⁸³ partly due to the ease of KYC that Aadhaar enabled.⁸⁴ Further, Aadhaar has helped the government to revamp the way it delivers benefits to the poor. In 2015, the government digitized distribution of subsidies for LPG using Aadhaar-linked bank accounts, saving around US \$2 billion from reduced payment leakages.⁸⁵ Inspired by the benefits that India's unique ID program delivered, other countries have shown interest in replicating India's initiatives, including Russia, Morocco, Algeria, and Tunisia.⁸⁶

Aadhaar has now become an open identity verification system based in a centralized database that can connect to a variety of applications, in both the public and private sector.

Further, Aadhaar demonstrates the importance of not only developing a centralized identity database, but also ensuring a framework is in place to promote its reach and usage. Working toward its goal of identifying all citizens through Aadhaar by March 2017, the Prime Minister's Office asked UIDAI to expand its services for promoting registration into states that traditionally only employed the less efficient Registrar General of India (RGI) enrollment model.⁸⁷

Estonia: Unlocking digitization through the issuance of a digital ID

The Estonian government began issuing ID cards in 2002, which evolved to mobile IDs in 2007, and digital (online) IDs in 2010.⁸⁸ The ID card system in Estonia is highly developed, and serves as digital access for all of Estonia's secure e-services. The identity system ensures secure authentication and data exchange. Estonians regularly use the ID for travel, as a health insurance card, for e-voting, to digitally sign documents, to make bank transfers, and access government databases, among other use cases. It is based on a central database, enabling third parties to verify identities.⁸⁹ Policy and regulation support the digital ID system: All citizens over the age of 15 are legally required to have an ID, and the public sector is legally required to accept digitally signed documents. Estonia engaged in public-private partnerships to accelerate innovation associated with the digital ID, such as collaborating with the private sector to build and secure the digital signature certification systems. More than 1.2 million ID cards in Estonia are active, representing 94% of Estonia's residents.⁹⁰ Currently, 98% of banking transactions and 95% of tax declarations are made electronically. Digitizing government payments has enabled savings that equate to around 2% of GDP.⁹¹

Japan has recognized the benefits a digitized ID system unlocked for Estonia, and it is becoming the first large country to follow Estonia in implementing a digital personal identification card, “MyNumber.” MyNumber is Japan’s first digital ID system, which launched in January 2016 after meetings between Estonian and Japanese ministers to acquaint Japan with Estonia’s e-services.⁹²

Inhibitors to Ensuring Identity for All

Lack of a centralized database to verify identities can be a barrier to developing a strong digital payments ecosystem. In Ghana, 98% of Ghanaians report at least one form of ID,⁹³ but market participants across Ghana struggle with the wide variety of forms of identification and identity databases in existence. There are currently nine separate biometric databases in use across the various government and public entities. This makes it difficult to perform efficient KYC. In order to verify the form of ID a potential or current account holder provides, the company must be able to access the accompanying database. The lack of a national, centralized identification method and database has hampered the development of Ghana’s inclusive digital payments ecosystem.

Low levels of literacy are a further barrier. Often, traditional forms of identification require authenticating identity through a signature. Therefore, the inability to read or write can be a barrier to obtaining and using an ID. Countries are looking toward biometrics as a way to overcome this obstacle. For instance, Nigeria found that individuals with low literacy were staying away from mainstream banking due to an inability to open and access their accounts, contributing to financial exclusion in poor communities.⁹⁴ In 2014, Nigeria launched a national eID card. The card has biometric prepayment technology built in, enabling financial inclusion and access to digital payments for millions of Nigerians.⁹⁵ Nigeria has a target of issuing 100 million cards,⁹⁶ with special attention given to young girls and women to provide them their first formal identity and basic financial services.⁹⁷ The issuance of these cards constitutes the broadest financial inclusion program in Africa.⁹⁸ Since the initiative launched in 2014, Nigeria has had a year-over-year growth of 18% in digital payment transaction volumes.⁹⁹

Given the importance of identification for promoting digital payments and access to financial services, efforts to address disconnected databases and low literacy levels can deliver greater success in an ID program.

Accelerator Key Learning:

- A unique ID is an enabler of financial inclusion
- Incorporate digital technologies like biometrics to combat the barriers to ID posed by poor literacy
- Provide online access to a centralized database to verify identity information, but ensure proper safeguards to safeguard consumer privacy



6. ACCELERATOR:

Digitize routine use cases

Digitizing transactions that occur on a routine basis can be key for promoting access to and usage of digital payments. For instance, if a use case is restricted to digital payments, like bus travel in Sweden, then every person that wants to transact in that use case must possess a digital form of payment.

Further, comfort and trust in digital payments increase the more individuals transact digitally, as evidenced in the case of monthly payments for pay-as-you-go energy and daily payments for transportation. However, it is important to note that the use cases that occur on a routine basis may vary across countries.

Driving usage of digital payments through solar pay-as-you-go energy (PAYG) in Rwanda, Tanzania, and Kenya

PAYG energy is a use case that can promote everyday usage of digital payments while improving the livelihoods of populations. In PAYG energy, energy-poor consumers make a small down payment or deposit on a solar device, and then prepay for the ability to use the solar device via a mobile money platform. Over time, by using the product and making payments, the customer pays off the solar device and owns it. Such initiatives give energy-poor people access to reliable energy connections that are efficient and affordable, while also onboarding them onto mobile money platforms that they can use to make purchases and payments for other goods and services. This type of use case can also serve as a gateway to financial inclusion, as participating in a pay-as-you-go energy scheme helps customers prove their creditworthiness and gain access to other types of financial services, such as loans.

Of the countries landscaped in this study, the PAYG energy use case appeared in Tanzania, Rwanda, Ghana, India, Kenya, and Peru.

Founded in 2011, M-Kopa's rent-to-own solar energy products provide poor rural households with cheap solar power in Kenya, Tanzania, and Uganda. After making a small upfront payment of US \$35 for a solar power kit, customers make daily micro-payments of 45¢ for a year, after which they fully own the system.¹⁰⁰ The kit lasts four years in design, and comes with a two-year warranty. It includes a solar panel, LED flashlight and bulbs, a rechargeable radio, and phone charging adaptors. Users with good payment histories are able to remortgage their products to acquire other goods like televisions.¹⁰¹ M-Kopa's revenue grew rapidly, from US \$15 million in 2014 to an estimated \$30 million in 2015, and expects to double again in 2016.¹⁰² As of July 2016, M-Kopa has provided over 375,000 homes with affordable service, with projected savings for these customers of US \$280 million over the next four years.¹⁰³

In Rwanda, Berlin-based Mobisol engaged in a partnership with MTN Rwanda in 2013 to offer off-grid customers solar home systems paid off through a 36-month loan term. The customers use their mobile wallets to buy prepaid energy credit to use the system. In an analysis of 2014 data, Mobisol found that customers made an average of 1.7 payments per month via MTN for the system, making them very active mobile money users in comparison to the industry benchmark of one transaction every 90 days.¹⁰⁴ In the same analysis, Mobisol found that 20% of their customers were newly registered for MTN mobile money when they became Mobisol customers, indicating that this new use case spurred registration. This trend provides opportunities to significantly boost adoption and usage of digitized payments.

Digital payments for water payments improving efficiencies and saving time / money in Tanzania

Historically, making payments for water to the Dar es Salaam Water and Sewerage Corporation (DAWASCO) was extremely challenging, largely due to long travel times and costs required to reach DAWASCO offices as well as high corruption. In 2009, DAWASCO became the first urban water utility company in sub-Saharan Africa to offer mobile-enabled payments for water utility bills through mobile money services, mobile banking, and networks of wireless pay points. This offering took off: Within two years, there were more than 2 million users of mobile-based water utility payments.¹⁰⁵ As a result, the government achieved a 13.4% increase in water utility revenues per customer through the trimming of leakages.¹⁰⁶ Further, providers benefited from offering the option for water utility payments; payment aggregators are adding up to 200,000 new customers a month just from POS-based platforms for utilities payments.¹⁰⁷ Finally, customers are saving time and costs from no longer having to travel long distances to DAWASCO offices.

Digitizing payment for transportation in India, Kenya, and Rwanda

Payment for transportation is an everyday activity for a large proportion of populations worldwide. There are numerous downsides associated with cash payments for transportation:

- Counting out exact change for the transaction can be an inefficient process that causes delays for the system, and inefficiencies in the movement of people and goods that can drag on productivity and growth¹⁰⁸
- There is potential for leakages given how payments are transferred between various parties — the traveler, the conductor, the bus driver, the bus company's finance department, and the bank account; estimates in Rwanda of leakages in the bus system are as much as 40-50%¹⁰⁹
- The amount of cash held by a bus operator can lead to safety concerns; handling cash in Sweden became considered a “work environment problem”¹¹⁰

Given these pitfalls of cash, countries worldwide have been increasingly digitizing payments for their transportation systems.

In India, the railway e-ticketing system, run by the Indian Railway Catering and Tourism Corporation (IRCTC), is one of the most important P2G services operating in the country, servicing around half of the daily 1.6 million passengers.¹¹¹ The IRCTC is the largest e-commerce player in India by revenue.¹¹² In 2015, the IRCTC expanded offerings by introducing a mobile app and an option for digital wallets for payments. The digital wallets Paytm and Mobikwik incentivize customers to use their platforms for e-tickets by offering 100% cashbacks on transaction convenience fees. To promote digital payments for everyday transactions such as with IRCTC, the Indian government eliminated digital payment surcharges, service charges, and convenience fees in February 2016. This, combined with a rationalization of the merchant discount rate, serves to incentivize digital payments on both sides of a transaction.¹¹³

As Kenya exemplifies, the transition to cashless transportation has struggled to take off in markets where it competes against misaligned incentives for cash. In 2013, Google partnered with Equity Bank to create BebaPay smart cards, NFC-based cashless payment mechanisms for Kenya's public transportation system. Implementing the transport cards in the buses and minibuses of Nairobi experienced slow uptake due to resistance from drivers. In Kenya's public transportation system, drivers and conductors profit from charging variable rates, for example tripling their prices during rainfalls.¹¹⁴ Transport cards confront this corruption and increase transparency, ensuring that passengers always pay a fixed rate. Thus, since transport cards hindered drivers' existing profit structure, many chose to bypass it by feigning malfunction or denying cashless payments. In early 2015, operators announced that they would discontinue the BebaPay service, forcing 700,000 users to find a replacement method of payment.¹¹⁵

By contrast, Rwandan buses in Kigali became among the first in Africa to successfully switch to cashless payment at the end of 2015. Kigali Bus Services was able to develop its strategy with Kenya's experience in mind. For one, it catered its solution toward benefiting consumers rather than bus companies; the intent of its shift was to improve efficiency of public transport, help recoup the revenue lost through cash leakages, and protect the environment through the elimination of paper tickets littering the city.¹¹⁶ Furthermore, it utilized a local design that controlled factors like informal economy profit structures. Compared to Google and Equity Bank's removed position in Kenya, a local Rwandan IT company Tap & Go operates the electronic bus payment system in Rwanda, in partnership with local government and transport operators. While the digitization of Kigali buses is recent, it has been considered a success to date. As of March 2016, there are nearly 70,000 active smartcards, which accounts for 20% of the bus transport market in Kigali.¹¹⁷ The bus operators have also noted improved revenue following the implementation of the digital payment option — Kigali Bus Services' revenue increased from US \$6,500 to US \$15,600 in February 2016 due to reduced leakages.¹¹⁸ Due to Rwanda's successful experience, Tap & Go announced that other African countries have reached out with interest to replicate the cashless bus system in their own countries.¹¹⁹

Riding on Existing Behavior and Cultural Norms in China

In China, it is common to give red envelopes containing cash gifts on special occasions. In 2014, to celebrate the Chinese New Year, WeChat launched a P2P payment feature called Red Packets. In the 2016 celebration of the Chinese New Year, over 420 million WeChat users sent 32 billion digital red envelopes over the platform over the course of six days, with peak usage coming in at 409,000 red envelopes being sent per second. Since then, over 60 million WeChat users in China continue to send Red Packets each day.¹²⁰ Tencent credits its year-over-year growth in active users between 2015 and 2016 of 39% partially to the red envelope service.¹²¹ Leveraging existing cultural norms and incorporating digital payments can accelerate usage.

Digitization of remittances as a means to reduce the cost of sending money and increasing usage of digital payments in the Philippines

The movement of people from rural to urban areas domestically and from country to country internationally has become a norm; in 2013, the UN found that more than 232 million people lived outside their country of birth and over 700 million had migrated within their own country.¹²² This creates demand for services that enable people to send money from person to person domestically or internationally. Such money transfers have been part of the global economy for centuries and are only growing — the World Bank predicted a 7.8% increase to US \$571 billion in remittances between 2013 and 2014.¹²³ A well-functioning remittance ecosystem plays a critical role in enhancing financial inclusion,¹²⁴ and can also unlock the many other benefits of digital payments through the increase in usage of digital payment products or services.

As such, remittances are a further example of a routine use case that may be digitized to promote access and usage of digital payments. Traditional, more cash-based methods of sending and receiving remittances have many drawbacks:

- It is expensive: The global average cost of sending remittances is 7.4% of the value sent as of the end of 2015, but this figure is on the decline partially due to innovations in the space.¹²⁵
- It is inconvenient: Sending and receiving remittances in traditional forms requires coordination between senders and receivers, locating branches to send and receive cash, travel time to such branches, paperwork and red tape, and long lines.¹²⁶

However, these drawbacks can be countered through advancements in technology. For instance, mobile sending / receiving of remittances can reduce the need for physical branches and personnel for in-person customers. Many FinTech players are joining the fray to attempt to disrupt the remittances space.¹²⁷

The case of the Philippines has showcased the opportunity to disrupt traditional forms of sending / receiving remittances through mobile money, accelerating the uptake of digital payment platforms. Filipinos have long had a strong demand for ways to send and receive remittances, due to the strong culture of domestic and international migration.¹²⁸ International remittances by 10 million overseas Filipinos made up 10% of the Philippines' GDP, or US \$26 billion annually, the third largest remittance market in the world.¹²⁹ Remittances to the Philippines play a key role in the economy: supporting domestic consumption, a source of economic growth, and keeping the current account in surplus.¹³⁰ The strong remittance industry, combined with the Philippines' heavy mobile use — over 100% mobile penetration,¹³¹ makes the Philippines ripe for digitization of the remittance industry by leveraging mobile.

To meet the demand for sending / receiving remittances, both Globe and Smart launched digital international remittance services in 2004, and both experienced increased success in their platforms by adding international remittances. Globe tied its international remittance offering with its GCASH platform. As of 2012, one in three customers used GCASH to receive remittances.¹³² Smart launched its service under SMART Money through a service called SMART Padala, which enables Filipinos living or working away from home to remit directly to SMART Money account holders. Within two years, by 2006, the service had a monthly average of 1.5 million users remitting US \$15 million.¹³³ The remittance space has only continued to evolve. Recently, Filipino startup Satoshi Citadel Industries launched Rebit.ph, which allows migrants to send bitcoins to the Philippines, with the recipient receiving Philippine pesos in their bank account.¹³⁴

As the remittance space continues to evolve, services are being built on top of the remittance providers for information sharing. For instance, TawiPay is a comparison website for money transfer services that enables migrants to easily find services best suited to their needs and ensure they are not over-paying in fees for a service, potentially saving migrants an aggregate US \$28 billion.¹³⁵

For countries deciding for the first time to digitize international remittances, it is important to note that a strong domestic digital payment ecosystem is important to the successful launch of digital international remittance services, so that a critical mass of users educated in the domestic mobile wallet business exists.¹³⁶ Having downstream activities available on the service, such as paying bills, also increases the probability for individuals to use the service to send / receive remittances.

Inhibitors to Digitizing Routine Use Cases

There are three significant inhibitors to digitizing routine use cases:

- Ensuring that the approach taken to digitize payments accounts for the incentives associated with cash transactions, as exemplified in Kenya, where participants benefited greatly from cash payments and there were disincentives to digitize
- Many routine use cases, such as grocery purchases, take place at MSMEs, which often require incentives to install acceptance infrastructure and encourage their customers to transact digitally
- An adequate domestic digital payments ecosystem may be a prerequisite to the successful launch of an international remittance service

Accelerator Key Learning:

- Identify and digitize payment use cases that individuals utilize on a routine basis to increase comfort with digital payments and increase digital transaction volumes
- In digitizing such use cases, account for the existing business case associated with cash to devise the right approach

7. ACCELERATOR:

Digitize government payments

Digitizing government payments serves as an enabler for financial inclusion and women's economic participation, increasing access to financial services particularly among unbanked poor communities by bringing these individuals into the digital payment ecosystem. Digitization can offer value to all parties involved, by cutting leakages and transaction costs for governments, allowing financial providers to expand their customer base through partnership with government programs, and offering convenient and accessible banking channels to the poor, as well as the ability to participate in government benefits programs.

Bolsa Familia in Brazil, SASSA in South Africa, and Mas Familias En Acción in Colombia: Digitizing G2P Payments Through Existing CCT Programs

In 2003, the government of Brazil launched the Bolsa Familia Program (BFP) as a reform of its welfare payments system. The reform merged multiple pre-existing conditional cash transfer (CCT) programs into one Bolsa Familia electronic benefit card (EBC) linked to bank accounts at the state-owned bank Caixa. For one, BFP exemplifies how digitizing G2P payments can bring benefits to governments. By consolidating into a single EBC, BFP saved the government 31% in transaction costs.¹³⁷ Further, BFP demonstrates how digitization can benefit the livelihood of a population. Now one of the largest CCT programs globally, BFP assists 13.8 million families — approximately 50 million people, or a quarter of Brazil's population — by providing a minimum level of income through these bank-account based transfers.¹³⁸ Only a year after BFP's foundation, the 2004 annual household survey indicated that the program was responsible for 20-25% of Brazil's dramatic decrease in inequality and 16% of its decrease in extreme poverty.¹³⁹ Additionally, BFP has supported longer-term financial inclusion by promoting education, medical visits, and other services that enable economic mobility. As BFP prioritizes making payments to the female head of households, women account for 90% of the beneficiaries, thereby improving female economic agency and autonomy.

The digitization of G2P payments by the South African Social Security Agency (SASSA), South Africa's government agency responsible for administering transfer payments, serves as another apt model. SASSA's efforts to migrate social grant recipients to electronic payment systems cut government fees by 54% when transferring payments into mainstream commercial bank accounts.¹⁴⁰ Research on different G2P digitization efforts indicates that programs leveraging existing payment networks, such as in Brazil and South Africa, achieve more success.¹⁴¹

Attempts to build distribution networks from scratch — for example, Colombia's CCT program Mas Familias en Acción — have incurred more costs for the government than cash-based programs.¹⁴² In 2009, Mas Familias en Acción shifted away from cash, and began making payments

into saving accounts it opened for its beneficiaries at Banco Agrario (BA), a government bank. Initially, digitization took a large toll on BA's resources, as the bank's ATM and agent distribution network was limited, requiring it to use expensive third-party services to facilitate the shift. A 2012 CGAP study found that the Colombian government was spending 11.3% of the grant amount to deliver the payment, in comparison with 1.2%, 2.1%, and 2.4% by Brazil, Mexico, and South Africa respectively.¹⁴³ As a result of these issues, in 2012 the government contracted Banco Davivienda's mobile money platform DaviPlata to facilitate payments to 900,000 beneficiaries of Mas Familias en Acción, helping the digitization process and forcing BA to accelerate its expansion.¹⁴⁴ As of 2015, Mas Familias en Acción makes two-thirds of its payments into accounts at BA, and the remaining third, 1.3 million, into DaviPlata mobile wallets.¹⁴⁵

Digitizing government payments to individuals and businesses in Mexico

Over a 15-year period,¹⁴⁶ the Mexican government meticulously planned a shift to centralize and digitize government payments to suppliers and individuals for payrolls, pensions, and social benefits. Prior to the new centralized approach, government payments were cash-based and highly decentralized. A 2013 study found that the new approach may be saving the Mexican government US \$17 billion per year, representing 3.3% of the expenditures related to salaries, pensions, and social transfers.¹⁴⁷ The majority of this savings came from the decrease in fees paid to the banks that handled the decentralized cash payments, the increase in interest earned by not having to deposit funds in advance of payments, and the reduction in unauthorized or incorrect payments.¹⁴⁸ Beyond the financial benefit, the government also increased transparency and laid the foundation to provide banking services to reach those who did not have access prior.¹⁴⁹

To execute on a digitization plan, the Mexican government showcases the importance of a few actions:

- Implement sound legal and technical infrastructure before shifting to ensure a coordinated effort
- Vocalize government support for the change through decrees and senior political and technical champions; given the length of time required to successfully shift government payments, such support needs to sustain over time
- Combine electronic payments with treasury centralization to unlock the full breadth of benefits Mexico achieved

Inhibitors to Digitizing G2P Payments

A major inhibitor to the success of a digitized G2P program is a lack of an existing distribution network that reaches the target recipient base. Colombia, as detailed, incurred much greater cost when digitizing its CCT programs compared to Brazil and South Africa, largely due to its initial attempt to build a distribution network from scratch.

Accelerator Key Learning:

Digitizing government payments can play a powerful role in advancing the digital payments ecosystem by:

- Capturing individuals and businesses into digital payments products and services
- Enhancing people's comfort with digital payments through the government's demonstrated support, thereby promoting usage
- Generating efficiencies and cost savings for the government and recipients
- Digitizing government payments with close regard to the country's existing financial ecosystem

8. ACCELERATOR:

Digitize government receipts

The digitization of government receipts from individuals or businesses (P2G, B2G) can unlock benefits for many parties. For the government, digitized payments can deliver higher revenue collection for governments, increased compliance, efficiency gains, higher accountability and transparency, and risk management.¹⁵⁰ For the payer – individuals or businesses – the option to make a government payment digitally provides convenience, time savings, and reliability, increasing the probability that these payers remain active digital users.¹⁵¹

Digitization of government receipts in Tanzania for motor vehicle licenses and for export / import at ports

The Tanzanian government has realized many of the benefits of digitizing government payments from both individuals and businesses.

In 2013, the Tanzania Revenue Authority (TRA) and Vodacom entered into a partnership leveraging M-Pesa for individuals' payment of the annual motor vehicle license fee. Before the government began offering a digital option to pay for this fee, individuals had to spend up to an entire day in long queues at TRA offices to collect and submit forms and make payments. Due to this inconvenience, middle-men emerged who acted as agents and conducted back-room deals for licenses, creating opportunities for fraud and heavy revenue leakages for the TRA.¹⁵² Under the new digital payment option, individuals can pay the license fee remotely via their phone or physical outlets, like banks or retailers. Within the first three weeks of the digital payment option's launch, the TRA collected US \$2.1 million for license fees, 42.5% of which was collected through mobile money.¹⁵³ Today, the digital payment option has been expanded to all mobile money platforms and the TRA is extending mobile money payment options to other types of fee payments.

In the B2G use case, the Tanzanian government has made strides to digitize payments at ports. The Dar es Salaam port handles nearly 90% of the country's export / import traffic,¹⁵⁴ clearing an average US \$15 billion

in merchandise annually.¹⁵⁵ Until 2013, it was considered one of the least efficient ports globally, and these inefficiencies impacted the Tanzanian economy as well as the economies of the landlocked countries surrounding Tanzania that also rely on the Dar es Salaam port.¹⁵⁶ A 2013 estimate found that improving the Dar es Salaam port's efficiencies could boost Tanzania's GDP by up to US \$1.8 billion, on a base of US \$33.2 billion.¹⁵⁷ The inefficiencies at Dar es Salaam port generated days-long waiting times for cargo at the port, incentivizing businesses to make unofficial payments to reduce wait times, generating revenue leakages for the government. In 2013, estimates found revenue losses for the Tanzania Ports Authority and the TRA of around US \$157 million annually.¹⁵⁸ One measure to alleviate this problem was an e-payment system, launched in 2015. The system integrates with all financial service providers and enables businesses to pay port fees remotely. The Tanzania Ports Authority hails this system as a game changer in its efforts to decongest the Dar es Salaam port,¹⁵⁹ and the system has improved safety and reliability for businesses, as people no longer need to physically carry large sums of money for services or goods.¹⁶⁰

The TRA's experience in digitizing payments for this use case showcases the role of financial intermediaries. For instance, for the digitization of road license P2G payments, the private sector player Maxcom facilitated the technical integration of the mobile money platforms with the TRA system. Maxcom also worked on TRA's backend system to ensure payments flowed through the system successfully.¹⁶¹ For the digitization of B2G payments at the port, BCX, a payment aggregator, facilitates the payment gateway. Governments do not necessarily have the technical capabilities necessary to successfully digitize their receipts, but they can benefit from the skills housed in private sector players.

Digitization of government receipts for school payments in Ghana

In 2014, the Ghana Education Service launched Back to School, a mobile payment solution for parents to make payments for their children's school, college, or university fees. The benefit of such a solution for an individual is the reduction in the cost, time, and risk of making the transaction in person. For the school, digital payments enable greater transparency for who has paid as well as more predictable revenues, helping schools manage cash flow more effectively.

Similar to the case in Tanzania, the Ghanaian government recognized the benefit of partnering with private sector players to digitize its receipts, so it teamed with MTN for the development and maintenance of the service. For MTN, it is less concerned with the revenue associated with the service, but rather sees Back to School as an investment to drive usage of value-added services that are layered on MTN's basic P2P offering.¹⁶² MTN wants to drive regular usage, build quality and relevant user experiences for customers, reach scale quickly, and capture active clients.¹⁶³ As of 2016, over 100 schools are using the Back to School service, and 5% of MTN mobile money customers use Back to School to make school fee payments.¹⁶⁴

Inhibitors to Digitizing Government Receipts

Low levels of digital penetration among a target group can pose a significant inhibitor to the successful digitization of government receipts. In 2013, the Philippines government passed the Kasambahay Law establishing that not only formal workers, but also informal domestic workers, must pay subscription fees to a number of social benefits programs. Later that year, in response to a regulation change, Smart Communications launched an electronic load called BayadLoad allowing workers to remit their P2G payments and contributions digitally with airtime agents, without an SMS fee. The e-money platform is available to any mobile phone subscribers of Smart, Talk 'N Text, and Sun Cellular, which hold a combined user base of more than 69 million Filipinos.¹⁶⁵ BayadLoad is a significant step toward financial inclusion in the Philippines as it links poor workers to the growing digital finance network — within months after launch, it was able to facilitate payments for over 10 million likely unbanked informal workers.¹⁶⁶ BayadLoad also provides access to government programs that provide long-term financial security through health care, housing support, maternity leave, and other benefits.

However, while digitizing P2G payments offers potential for financial inclusion and growth in the Philippines, it has yet to substantially take off: As of 2015, only 1% of all P2G payments in the Philippines were electronic.¹⁶⁷ Part of the slow uptake may be due to the lack of digital finance penetration among poor workers. At the time of BayadLoad's launch, only 20-30% of the national population had a bank account, and only 5% actively used mobile money.¹⁶⁸ Electronic P2G payments have been more successful in more advanced digital financial ecosystems. As this study discussed,¹⁶⁹ Estonia's strong electronic infrastructure has been central in delivering a wide range of benefits from large-scale digitization of payments, with 95% of all tax declarations made electronically.¹⁷⁰

Accelerator Key Learning:

- Digitize government receipts to promote comfort with digital payments and improve efficiencies
- Collaborate with private sector players to leverage necessary technical capabilities
- Undertake P2G and B2G efforts with close regard to the country's existing financial ecosystem

9. ACCELERATOR:

Establish regulation that promotes innovation in the digital payments ecosystem while promoting responsible practices

The legal and regulatory framework for digital payments plays a critical role in creating an enabling environment for inclusive ecosystems. A failure to establish and effectively oversee adherence to such a framework can stifle competition and innovation, threaten the safety, soundness, and efficiency of retail payment services, lead to inadequate protection of customers, and deter usage.¹⁷¹ It is imperative that regulators balance innovation and risk to achieve digital financial inclusion.¹⁷²

A country's regulatory framework has five key aspects: regulatory neutrality and proportionality, risk management, protection of consumer funds, financial customer protection and transparency, and financial integrity.¹⁷³ Regulations can impact which existing assets of an entity a service can leverage, the rate at which the service can scale, and the frictions that might arise along the way.¹⁷⁴

Tanzania: A collaborative, test-and-learn approach to issuing regulation that promotes the digital payments ecosystem

Since 2008, when mobile money began emerging in Tanzania, the Bank of Tanzania (BOT) has sought to engage with the mobile industry and other regulators, like the Tanzania Communications Regulatory Authority (TCRA). The BOT allowed the partner banks of Vodacom's M-PESA service and Zantel's Z-Pesa to launch in 2008 by issuing letters of no objection that granted MNOs the legitimacy to implement mobile money services.¹⁷⁵ BOT was specific about certain regulatory requirements for the provision of services, including the need to obtain a TCRA license, providing a risk management plan to the BOT, and establishing safeguards for customer funds.¹⁷⁶ Beyond this, the providers had a degree of freedom to innovate. As such, the regulation issued was proportionate to the maturity of the industry, with a balance of innovation and customer protection. The BOT maintained close oversight of the services to ensure the industry was sound and was ensuring consumer protection, while developing a better understanding of the market and associated risk factors.

As the mobile money market has evolved since this initial regulatory step, the BOT has taken a test and learn approach to regulation by evolving regulation to ensure sufficient legal certainty for operators, promote financial inclusion, and protect customers. For instance, in 2015, the BOT issued the National Payment Systems Act which opens the market to non-bank players to lead mobile money services, and allows mobile wallet balances to earn interest.

Throughout this evolving regulatory approach, the BOT engages closely with the Mobile Network Operators (MNOs) and their partner banks to enable the mobile money market to flourish.¹⁷⁷ As part of the BOT's engagement with market participants, it is careful to account for new technologies emerging

in the space when considering the regulatory framework.¹⁷⁸ Further, as stated, the BOT also collaborates and cooperates with other regulators in Tanzania, notably the TCRA as the regulatory counterpart of the MNOs that are providing the mobile money services.¹⁷⁹

As evidence of this success, mobile money transaction volumes in Tanzania in 2014 were US \$23.6 billion.¹⁸⁰ With a 2014 GDP of US \$48 billion, mobile money transactions represent almost 50% of Tanzanian GDP. Growth in the mobile money industry since has also helped to quadruple the number of people who now have access to formal financial services.¹⁸¹ Of the 25 countries this study landscaped, Tanzania has the highest annual growth rate for financial inclusion — 32.1% year-over-year between 2011 and 2014.¹⁸²

Sri Lanka: Pivoting regulation following low uptake

Under the Payments and Settlements System Act of 2005, the Central Bank of Sri Lanka (CBSL) is the body with responsibility for regulating Sri Lanka's payments landscape. The CBSL initially required that mobile money services be bank-led with non-proportional KYC/AML requirements to open an account. During this period, the National Development Bank received authorization from the CBSL to partner with a leading MNO Dialog, and launch a mobile banking service called eZ Pay. The service failed to gain meaningful traction due to the restrictive regulatory framework, tapping into a mere fraction of its potential user base.

Initially, regulators had feared that an MNO-led mobile banking system would make money laundering and terrorist activities easier, and MNOs themselves were concerned with their ability to meet all the KYC rules.¹⁸³ However, regulators recognized the limitations of their policy and devised a strategy to promote innovation while safeguarding consumers.

The CBSL issued new regulations in 2012 that qualified non-banks to offer mobile money service and allowed for a proportional approach to KYC/AML requirements. In doing so, the regulation converged the service delivery and consumer protection paradigms of both the financial sector and the telecommunications sector,¹⁸⁴ indicating collaboration between CBSL and the Telecommunications Regulatory Commission of Sri Lanka (TRCSL). Further, in 2012, TRCSL lauded CBSL for its "far sighted vision and efforts in developing the necessary enabling regulation."¹⁸⁵ As shown in the case of Tanzania, mobile money impacts both the financial services sector as well as the telecommunications sector; as such, both regulators play a role in the space.

In the newly open playing field, MNOs to whom the CBSL granted licenses were able to operate as payment service providers and create their own competitive mobile money platforms. Accordingly, Dialog acquired a license to relaunch eZ Pay as eZ Cash in 2012, a user-friendly platform accessible to users without traditional bank accounts that offers bill payments, transfers, online shopping, savings, and other mobile banking services. Enjoying rapid success, eZ Cash reached 1 million users within a year of launch, with 300,000 in the first month alone and an impressive 20% active rate.¹⁸⁶ As of

2016, eZ Cash had expanded to more than 2.2 million subscribers and now enables a wide variety of consumers without access to traditional banking to shop at 4,000 retailers through their mobile bank accounts.¹⁸⁷

An Inhibitor Encountered when Establishing Regulation

An inhibitor to establishing effective regulation for a market is the challenge of ensuring regulation promotes, rather than inhibits, digital payments. In Ghana, the central bank was an early recognizer of the potential for branch-less banking and digital payments, and issued guidelines in 2008 to support and encourage the development of such ecosystems. In the guidelines, the Bank of Ghana called for at least three banks to be involved in every service, as it aimed to create a system that was open and interoperable, but driven by banks. Under these guidelines, three major mobile money platforms emerged — Airtel Money, MTN Mobile Money, and Tigo Cash — with each of the telcos partnering with three to 10 banks. However, incentives under this model were misaligned. Given the fairly small size of transactions in mobile money as well as the many parties involved in each platform, banks did not see a significant business case for making investments in the platform. As a result, the telcos involved with each platform developed the technologies, building the agent networks and investing in marketing; however, legally they did not own the service, customers, or agents. They also did not have a direct line of communication with the Bank of Ghana to voice concerns and share news from the ground about mobile money.

The regulatory pivot that Ghana undertook in July 2015, which formally opened the ecosystem to non-bank players, took into account these challenges and also leveraged consultations with key participants in the digital payments ecosystem. Ghana's challenges in its initial regulation exemplify the inhibitors often involved when establishing regulation.

Accelerator Key Learning:

- Establish and oversee a regulatory framework that is sound, nondiscriminatory, and proportional in order to promote innovation, adequately protect customers, and promote usage of digital payments
- Consult with players in the digital payments ecosystem to establish regulatory frameworks that appropriately account for players' needs and observations
- Evolve a regulatory framework as the market changes by understanding the gaps and barriers of existing regulation, consulting with stakeholders, and collaborating with other regulators

10. ACCELERATOR:

Implement policies that incentivize and improve convenience of the usage of digital payments

Public sector institutions in many parts of the world are adopting measures to encourage or require government entities, private businesses, and individuals to shift away from cash. In some countries, this has taken the form of policies that disincentivize cash usage. Further, national digitization policies can also demonstrate a government's commitment to digital payments in the country and strengthen the needed ICT infrastructure.

Cashless Nigeria: Penalizing Usage of Cash by Businesses and Individuals

In 2012, the Central Bank of Nigeria (CBN) implemented a policy that imposed penalties on all businesses and individuals who deposited or withdrew cash from their bank accounts in excess of prescribed limits. This came three years after the CBN's policy limiting the value of check payments — any transfers above US \$66,000 would have to be made using electronic payment instruments. However, the volume of checks actually increased after this policy, as businesses and consumers were merely writing more checks at a lower value, encouraging the CBN to try a different approach to reducing physical payments — the “Cashless Nigeria” policy.¹⁸⁸ This policy featured a daily cumulative limit on free cash withdrawals as well as a service fee on withdrawals in excess of these limits. It imposed these restrictions and penalties in varying degrees, on both individual and corporate customers of banks. Further, the government accompanied the Cashless Nigeria policy with a massive deployment of shared POS terminals through a commitment from banks to buy and deploy POS terminals. This commitment aligns with this study's finding that sufficient levels of digital acceptance infrastructure are important to achieving a transition away from cash.

A 2013 study by the Better Than Cash Alliance of the Cashless Nigeria policy found that digital payments have passed a tipping point in Nigeria's corporate sector — for large businesses, there is no longer a question of whether to transition to digital payments, but rather “when” and “how.”¹⁸⁹ This is largely due to the direct disincentive applied to the usage of cash through fees levied. As testament to the increased digital payment volumes following the Cashless Nigeria mandate, the volume of digital payments increased 14% year over year between 2012 and 2015.¹⁹⁰ As a component of Cashless Nigeria was deployment of POS terminals; it is notable that between 2012 and 2015, the volume of transactions at POS experienced an annual growth rate of 136%.¹⁹¹

Sweden: Reducing the presence of cash through policy initiatives

Sweden is on its way to becoming the first cashless society in the world, with now only 2% of transactions in cash.¹⁹² While there are many factors responsible for this transition, including ubiquitous acceptance infrastructure deployed by the private sector and high consumer comfort with transacting digitally, one further reason is the action taken by Sweden's public sector.

Since July 2015, Sveriges Riksbank (Sweden's central bank) has kept interest rates in negative territory, thus encouraging account holders to spend their money or otherwise see their account balances decrease. At the same time, declining cash infrastructure and the fees associated with cash transactions have made transacting with cash more costly.¹⁹³ This has helped to promote digital payments in the economy. Between 2014 and 2015, the number of banknotes and coins in circulation in Sweden decreased by 5%.¹⁹⁴

Other public sector initiatives have driven the near-cashless nature of Sweden's economy. It is legal for retailers and restaurants to refuse cash entirely. Further, banks are also under no obligation to accept cash as a means of payment.¹⁹⁵ Five of Sweden's six big banks operate cash free to the extent possible.¹⁹⁶

Along with these policy initiatives to promote cashless, it is important to consider members of the population that prefer to use cash. In March 2016, the Riksbank Governor Stefan Ingves issued a statement that, in some ways, steps back on some of its cashless initiatives. Notably, the Riksbank called for the Swedish parliament to introduce a legal requirement which would place a duty on banks to provide cash service as a basic feature of payment accounts. The Riksbank stated that the supply of cash services is not meeting demand for such services, as banks have transitioned too quickly away from cash handling. To avoid the possibility that cash will disappear before alternative means of payment have become wholly widespread and accepted, and to prevent excluding anyone from the payments market, market participants can manage the rate of transition.¹⁹⁷ Payment functions that meet customer needs can help an economy transition away from cash at a pace appropriate for all members of society.

Digitization policies in Uruguay: Growing digitally empowered societies through e-payments

In 2014, Uruguay launched a financial inclusion policy, promoting the gradual transition to a digitally empowered society through e-payments. Since October 2015, the policy has granted all past and present workers, social benefit recipients, and small businesses free access to digital financial services. Looking forward, it states that all salary, pension, and social benefit payments will be electronic by May 1, 2017. To boost its efforts, the government of Uruguay introduced a number of incentives — for example, temporarily reducing value-added tax for digital payments — encouraging the expansion of the POS network. As a result, the POS network tripled between 2011 and 2015, while debit card transactions grew seven-fold from before the introduction of tax incentives.¹⁹⁸

Inhibitors to Policies that Increase Usage of Digital Payments

As showcased through the examples of Sweden and Nigeria, countries may encounter obstacles when relying on policies to increase usage of digital payments if sufficient acceptance infrastructure for digital payments does not exist and if enforcement oversight is limited.

Accelerator Key Learning:

- Demonstrate commitment to the transition away from cash through public sector policy initiatives
- Account for the demand and infrastructure for digital payments present in the ecosystem to ensure an appropriate pace of digitization

VII. OVERARCHING LESSONS FOR IMPLEMENTING ACCELERATORS

While this study outlines 10 accelerators toward digitizing payments, one recurring finding of this study is that how accelerators are implemented is just as critical as the accelerator itself. Factors supporting effective execution of accelerators are set out below:

IMPLEMENTING SERVICES ACROSS DIFFERENT DIGITAL PAYMENTS LANDSCAPES WITH MARKET FACTORS IN MIND

Tailoring digitization approaches to specific market contexts is crucial for successful implementation, as socio-economic and regulatory factors can impact the feasibility of an approach. Applying cross-market learnings is only helpful when policymakers consider the role that a country's market profile plays in the development of its digital payments landscape. The same initiatives are not likely to deliver identical results in different market contexts.

Vodafone's mobile money service M-PESA holds largely different legacies in Kenya and South Africa. Originating in Kenya in 2007, M-PESA grew to 2 million active users within one year and 15 million within five,¹⁹⁹ and constituted 43% of Kenya's GDP in 2013.²⁰⁰ In contrast, despite numerous launch attempts to break into the digital payments market in South Africa, M-PESA failed to attract more than 76,000 active users six years after its initial launch in 2010.²⁰¹ This experience suggests insufficient consideration given to the impact of disparate market contexts, in the attempt to transplant a similar approach from Kenya to South Africa without tailoring its implementation to the national payments landscape. M-PESA's platform was able to quickly command Kenya's sizable unbanked population — 18.9% financially included in 2006²⁰² — as it provided low barriers to entry into the financial system. On the other hand, 77% of South Africans were financially included in 2010,²⁰³ meaning access to financial services was a lesser challenge. The greater challenge, instead, was to leverage technologies to support and augment how people were already saving, spending, and investing their money. However, the launch of M-PESA in South Africa did not address this challenge sufficiently, utilizing many of the same use cases offered in Kenya without developing new ones for the South African consumer.²⁰⁴

ACCOUNTING FOR EXISTING CUSTOMER PRODUCTS WHEN DELIVERING NEW ONES TO ACCELERATE LAST MILE DIGITIZATION

Many digital payments initiatives struggle to reach the last mile, due to low levels of profitability, resources, and financial literacy among poor, unbanked populations. To overcome this barrier, participants can develop specific products and services that take into account the existing technological infrastructure available to last mile consumers.

In China, the Shanghai-based technology company F-Road has helped accelerate last mile digitization by catering its technology solutions and business ventures to its target consumers. F-Road launched in 2008 as a collaboration between Taisys and the IFC. It is a banking platform that merely requires a hardware chip that consumers can layer over any SIM card, in comparison to internet-based mobile banking applications that require certain types of handsets. F-Road's SIM-overlay technology can operate on 95-97% of all smart and functional phones,²⁰⁵ even including low-end feature phones, providing a crucial opportunity for financially including China's unbanked poor, as only 5% of the country's rural population uses smartphones.²⁰⁶ Recognizing its appeal to this specific user base, in order to facilitate the execution of its last mile effort, F-Road embraced partnerships with Rural Credit Cooperatives, the largest formal group of credit unions serving 73 million of China's rural poor.²⁰⁷ As of 2014, F-Road had successfully extended its SIM-overlay cards to 4.3 million rural consumers through over 1,100 partnerships with financial institutions.²⁰⁸ Given the potential this technology offers, other countries are looking to it as a potential model. In July 2016, F-Road's partner company Taisys announced a collaboration with YES BANK to launch a similar product.²⁰⁹

In Kenya, Equity Bank teamed with Airtel to launch Equitel in September 2014 as a mobile money service that uses SIM-overlay technology and is available to all of Equity Bank's account holders. The technology can be attached to existing SIM cards to give handset users access to more than one network, and can also enable cross-border transactions and direct receipt of international remittances. Equitel enables a form of interoperability in the market, as users are able to send and receive money agnostic of their MNO. Further, installing this technology eliminates a user's need for mobile applications to access financial service applications, as a simple feature phone can work like a sophisticated smartphone with this technology installed. Equity Bank Group has stated that the Equitel platform is part of Equity Bank's goal to promote financial inclusion.²¹⁰ By March 2015, while still in its pilot phase, Equitel had signed 700,000 subscribers, and had 1.7 million subscribers by December 2015, 90% of which are active.²¹¹ Between 2014 and 2015, Equitel recorded a 1,000% growth in transaction volume, from US \$135,000 (Sh 13.7 million) in 2014 to US \$1.5 million (Sh 151 million) in 2015.²¹² Along with the growth in transactions, Equity Bank has also seen a reduction in staff costs, due to the successful roll-out and adoption of Equitel, as more people are leveraging mobile access rather than brick and mortar.²¹³

INVESTING IN CUSTOMER-CENTRIC EXECUTION OF DIGITIZATION STRATEGIES

Understanding the end user of digital payment products is key to successful implementation of any accelerator. Further, providers can gain an understanding of people's behaviors and cater appropriately by taking a human-centered design approach. Nick Hughes, the founder of M-PESA

and co-founder of M-KOPA, attributes the success of these ventures to staying focused on customers' needs and using technology to address those requirements, observing customers' actual behavior, and changing direction when needed.²¹⁴

When Airtel Money in India attempted to expand its loan repayment use case, it considered different markets it could target and implemented a human-centric solution. It partnered with the microfinance institution Swadhaar and the NGO Accion in 2011 to increase market penetration of this use case by specifically focusing on economically active but resource-poor women. The partnership allowed Swadhaar's 170,000 active borrowers — the majority of whom are poor urban women — to utilize Airtel's mobile service for loan repayments.²¹⁵ Further, since Indian women's adoption of mobile money has been very low — with only 0.1% usage, in large part due to poor technical literacy²¹⁶ — Airtel Money took the time and resources to invest in execution efforts. With the support of a 2014 GSMA Connected Women Innovation Fund grant, Airtel and Swadhaar were able to overcome such barriers to adoption among this target user base by launching a Peer Educator Connection Programme. After peer educators assisted new customers, loan repayment use grew from 37% to 84%, and other transaction uses grew from 5% to 47%.²¹⁷

CONDUCTING DUE DILIGENCE TO ENSURE SUCCESSFUL IMPLEMENTATION OF A STRATEGY

The presence or absence of a well-researched strategy can determine whether an action will accelerate or inhibit digitizing of payments. In South Korea, the government incentivized consumers to use credit cards by providing income tax rebates to those who reported their annual expenditures using credit cards. As a result, in 2006, credit cards transacted nearly half of private consumption in South Korea, approximately US \$491 billion.²¹⁸

Ecosystem participants such as bKash in Bangladesh have encountered challenges relating to not adequately identifying and incorporating incentives into business models. Over-the-counter (OTC) transactions made up 50% of all business made in the bKash mobile money service. In Bangladesh, agents charge customers an extra amount for OTC transactions, in addition to the commission they receive from providers. As a result, bKash enabled the agent to earn twice, creating an incentive for the agent to not promote registered wallet usage.²¹⁹ However, registered wallet usage would encourage financial inclusion as well as transacting digitally, rather than cashing out OTC with an agent. It is imperative to understand and carefully craft the incentives associated with digital payments across players in the ecosystem to promote active usage of payments products.

VIII. CONCLUSION

As this study demonstrates, there are a wide variety of options open to governments, private sector entities of all sizes, and individuals to harness the power of digital payments. Clearly there is no panacea for digitizing payments given that every country's landscape is unique, making the selection of those options that will be most effective in any given context a complex process. However, policymakers and other stakeholders are not alone in their journeys to digitize payments; they can share and learn from others' experiences of what activities have, and have not, worked in particular market conditions. This study attempts to facilitate that sharing of information and experiences in a practical way.

However, stakeholders can also — and in many cases should — undertake deeper and more specific diagnostic efforts to better understand their market context as it relates to digitization of payments. Accordingly, this study has sought not only to articulate specific accelerators and action points, but also to shed light on areas where deeper diagnostic work may be needed. In this context, this study should be viewed not as a conclusive summation of knowledge around digitization of payments. Rather, this study is a further step in a collective journey that recognizes the very real impacts that inclusive digital payment ecosystems and tools can have on the living standards of people around the world.

ANNEXES



Acronyms

A2A	Account to Account
AML	Anti-Money Laundering
APIs	Application Program Interface
ATM	Automatic Teller Machine
B2G	Business to Government
BA	Banco Agrario (Colombia)
BC	Business Correspondent
BFP	Bolsa Familia Program
BOT	Bank of Tanzania
CAGR	Compound Annual Growth Rate
CBN	Central Bank of Nigeria
CBSL	Central Bank of Sri Lanka
CCT	Conditional Cash Transfer
CICO	Cash-In, Cash-Out
DBT	Direct Benefit Transfer
EBC	Electronic Benefit Card
eID	Electronic Identification
e-KYC	Electronic Know Your Customer
FII	Financial Inclusion Insights (CGAP)
G2P	Government to Person
GDP	Gross Domestic Product
ICT	Information, Communication and Technology
ID	Identification
IFC	International Finance Corporation
IMPS	Immediate Payment Service
IRCTC	Indian Railway Catering and Tourism Corporation
IT	Information Technology

ITU	International Telecommunication Union
KYC	Know Your Customer
LPG	Liquified Petroleum Gas
LTE	Long-Term Evolution
MNO	Mobile Network Operator
mPOS	Mobile Point-of-Sale
MSMEs	Micro, Small, and Medium Enterprises
NFC	Near-field Communication
NGO	Non-governmental Organization
NPCI	National Payments Corporation of India
OTC	Over-the-counter
P2G	Person to Government
P2P	Person to Person
PAYG	Pay-as-you-go
PMJDY	Pradhan Mantri Jan Dhan Yojana
POS	Point-of-Sale
PPI	Prepaid Payment Instrument
PPP	Public-Private Partnership
Q	Quarter
RBI	Reserve Bank of India
SASSA	South African Social Security Agency
SMS	Short Message System
TCRA	Tanzania Communication Regulatory Authority
UIDAI	Unique Identification Authority of India
UPI	Unified Payments Interface
US	United States

Data Used to Inform This Study

- Financial Restrictiveness (World Bank Services Trade Restrictions Database, 2012)
- Telecommunication Restrictiveness (World Bank Services Trade Restrictions Database, 2012)
- Business impact of rules on FDI (WEF, 2015-2016)
- Digitizing G2P Payments
- Consumer Protection Score (USAID Market Viability Tool, 2015)
- E-ID (World Bank, 2016)
- National ID (World Bank, 2016)
- Government Support for Financial Inclusion (EIU Microscope, 2014)
- E-Government Index (UN E-Government Survey, 2014)
- Corruptions Perception Index (Transparency International, 2015)
- Public trust in politicians (WEF, 2015-2016)
- Irregular payments and bribes (WEF, 2015-2016)
- Judicial independence (WEF, 2015-2016)
- % 3G Network Coverage, by Population (GSMA, Q1 2016)
- % 2G Network Coverage, by Population (GSMA)
- Automated Clearing House
- # Mobile Network Operators (GSMA, 2015)
- International Internet Bandwidth in kb/s per user (USAID Market Viability Tool, 2015)
- Prepaid Mobile Cellular Tariff in PPP \$/min (USAID Market Viability Tool, 2015)
- Fixed Broadband Internet Tariff in PPP \$/month (USAID Market Viability Tool, 2015)
- Interoperability of Mobile Money Platforms
- Investment in Telecoms per Capita (USD) (World Bank, 2014)
- Firm-level technology absorptions (WEF, 2013-2014)
- Number of Mobile Money Deployments (GSMA)
- Bulk Payment Products, as % of mobile money deployments (GSMA)
- Venture Capital Availability (WEF, 2015-2016)
- FDI and technology transfer (WEF, 2015-2016)
- Capacity for innovation (WEF, 2015-2016)
- Financial Literacy Rate in Poorest 40% of Adults (S&P FinLit Survey, 2015)
- UNESCO Adult Literacy Rate (2015)
- Buyer Sophistication (WEF, 2015-2016)
- GDP Per Capita in USD (IMF FAS, 2014)
- Use of Virtual Social Networks (WEF, 2015)
- Unique Mobile Subscribers as % of Population (GSMA, Q1 2016)
- Smartphone Penetration (of total connections), GSMA (Q1 2016)
- % Mobile Broadband (GSMA, Q4 2015)
- % of Adults with a Credit Card (Findex, 2014)
- % of Adults with a Debit Card (Findex, 2014)
- Number of registered mobile money accounts per 1000 adults (IMF FAS, 2014)
- Active Registered Mobile Money Accounts, per 1000 adults (USAID Market Viability Tool, 2015)
- Value of Mobile Money Transactions, as % of GDP (USAID Market Viability Tool, 2015)
- Mobile Money Transactions, per 1000 adults (USAID Market Viability Tool, 2015)
- Used an account to make a transaction through a mobile phone (% age 15+) (Findex, 2014)
- Credit card used in the past year (% age 15+) (Findex, 2014)
- Debit card used in the past year (% age 15+) (Findex, 2014)
- Paid utility bills using a mobile phone or account at a financial institution (Findex, 2014)
- International Remittances as % of GDP (World Bank, 2014)
- Received domestic remittances through a financial institution or a mobile phone (Findex, 2014)
- Sent domestic remittances through a financial institution or mobile phone (Findex, 2014)
- Used an account or card to receive government transfers (%) (Findex, 2014)
- Used an account or card to receive wages (%) (Findex, 2014)
- Used the internet to pay bills or buy things (%) (Findex, 2014)

Interviewees

NAME	TITLE	ORGANIZATION
OVERALL		
Xavier Faz	Lead, Digital Finance Frontiers	CGAP
Yasmina McCarty	Head of Mobile for Development	GSMA
Eshanti Ranasinghe	Manager, Strategy & Impact	Omidyar Network
Alexandre Lazarow	Principal	Omidyar Network
Jacob Winiecki	Director of Innovation	Off.Grid:Electric
Olga Madhvani	Global Adviser for Innovation, Digital Finance, and Financial Inclusion	CGAP
Leon Perlman	Specialist Consultant on DFS	Columbia University
Fernando de Olloqui	Lead Financial Markets Specialist	Inter-American Development Bank (IADB)
Prabhat Barnwal	Assistant Professor, Department of Economics	University of Chicago (visiting), Michigan State University
Daniel Radcliffe	Senior Program Officer, Financial Services for the Poor (FSP)	The Bill & Melinda Gates Foundation
Sacha Polverini	Senior Program Officer, Financial Services for the Poor (FSP)	The Bill & Melinda Gates Foundation
Ganesh Ramakrishnan	Deputy Director, Financial Services for the Poor (FSP)	The Bill & Melinda Gates Foundation
Ben Lyon	Entrepreneur in Residence, DFS Innovation Lab	Caribou Digital
Carol Benson	Glenbrook Partners	Managing Partner
GHANA		
Archie Hesse	CEO	GHPSS
Buddy Buruku	DFS Consultant	CGAP, World Bank
Carl Ashie	MFS Manager	Vodafone Cash
Clara B Arthur	Director	CHB Services
Dr. Settor Kwabla Amediku	Head of Payments System Oversight	Bank of Ghana
Dr. William Derban	Director, Financial Inclusion & CSR	Fidelity Bank
Ebo Richardson	Chief Information Officer	Barclays Bank of Ghana Limited

ANNEX 3.
INTERVIEWEES

NAME	TITLE	ORGANIZATION
Eli Hini	Mobile Money Commercial Senior Manager	MTN
Hermann Messan	Microlead Expansion Programme Specialist	UNCDF MicroLead
Isaac Kofi Amoah	Head of Strategic Programmes	GhIPSS
Jesse Acquah	E-business Relationship Officer	CAL Bank
Jill Moss	Democracy Fellow	USAID
Kwadwo Ntim	CIO	GhIPSS
Kwame Oppong	ex- General Manager	Tigo
Leopold Armah	Head of Technology	GT Bank
Martha Acquaye	Relationship Support Officer	CAL Bank
Mary Dei Sarpong	Head, Business Development - Delivery Channels	GhIPSS
Nate Heller	Co-Founder and Chief Operating Officer	PEG Energy
Owureku Asare	Cluster Head, Cards and Electronic Banking	Ecobank WAMZ
Veronica Boateng	Director, Application Systems	NITA (National Information Technology Agency)
Vincent Musah	Head of E-banking	Zenith Bank
William Boateng	Head of Business Banking	Bank of Africa Ghana
Michael Acolatse	Project Manager- IFC-Tigo Cash Partnership	Millicom International Cellular (Tigo)

INDIA

A Ramesh	Chief Project Officer	NPCI
Arushi Govil	Compliance Officer	PayU Payments Private Limited
Abhishek Sinha	Co-founder & CEO	Eko India Financial Services
Ajay Kaushal	Director and Co-founder	Bildesk
Anish Williams	Co-founder	TranServe
Anubhav Sharma	Product Lead - Unified Payments Interface	NPCI
Dilip Asbe	Chief Operating Officer	NPCI

NAME	TITLE	ORGANIZATION
Dr. Alok Pande	Director, DFI	Ministry of Finance
Dr. K.G Karmakar	ex-Managing Director of NABARD, Professor	NABARD
Dr. R.K Pattnaik	ex-RBI, Professor	RBI
Gautam Bhardwaj	Director	PinBox Solutions Pte. Ltd, Micro Pension
Jitendra Gupta	Founder & CEO	Citrus
Krishnan Dharmarajan	Executive Director	Center for Digital Financial Inclusion
Lara Gidvani	Regulatory Specialist, Asia	GSMA
Madhusudanan R	Founder, Oynk, M2P	M2P
Manisha Sinha	Regional Postmaster, Agra	India Post
Manju Agarwal	DMD, New Initiatives	SBI
Parul Khanna	Head	Micro Pension Visa Lab
Pawan Bakhshi	Senior Program Officer	Gates Foundation
Purti Bansal	Head - Strategic Alliances & FinTech Initiatives	Reliance Jio
R.K Saraf	Deputy Managing Director, Corporate Strategy & New Business	SBI
Rahul Joshi	Head, Mobile Banking and Commerce	ICICI
Rajpal Duggal	Head, Group Strategy & Planning	Oxygen
Raman Taneja	Financial Inclusion	Reliance Jio
Ravi Prakash	General Manager, Payment Solutions	SBI
Rohit Krishna	General Manager, Payment Solutions	SBI
Rohit Krishna	COO	Vodafone mPesa
Sandeep Moonka	Director, Head, Banking Products	PayU Payments Private Limited
Sanjay Jain	Former Chief Product Officer	UIDAI
Sheetal Kapur	Vice President - Legal & Regulatory (Head of Department)	PayU Payments Private Limited
Shinjini Kumar	CEO	Paytm Payments Bank
Shweta Banerjee	Senior Consultant	CGAP, World Bank
Varad Pande	Partner	Dalberg

CENTRAL BANK TRANSACTION FLOW METHODOLOGY

Methodology

- Data was retrieved from the central bank websites of each country.
- Channels included were based on data availability on each central bank website in May 2016. Channels were based on the ITU's definition of e-money: a record of funds or value available to a consumer stored on a payment device such as chip, prepaid cards, mobile phones or on computer systems as a non-traditional account with a banking or nonbanking entity
- Years included are restricted based on availability

Data

COUNTRY NAME	REPORTED CAGR	CHANNELS INCLUDED	DATE RANGE
Bangladesh	70.4%	- Electronic fund transfer transactions	2012-2015
Brazil	12.5%	- Non-paper based credit transfer transactions - POS payment transactions - E-Money payment transactions - Payments by card with debit function - Payments by cards w/ credit function	2010-2014
Canada	5.8%	- Debit - Automated banking machines - Prepaid cards - EFT - Credit card - Online transfers	2011-2014
China	25.0%	- Bank card transactions - Internet banking payment transactions	2012-2014
Colombia	8.3%	- ACH CENIT transactions - ACH Colombia transactions - Card transactions	2010-2014
Estonia	7.4%	- Total volume of cashless payments (includes card payments, direct debit, mobile phone payment at POS, credit orders)	2010-2015
Ghana	174.6%	- RTGS transactions - ACH direct credit transactions - ACH direct debit transactions - e-zwich transactions - gh-link transactions - Mobile money transactions	2011-2014

India	21.2%	<ul style="list-style-type: none"> - RTGS transactions - Retail electronic clearing transactions - Credit card transactions - Debit card transactions - Prepaid payment instrument (including m-wallet) transactions - Mobile banking transactions 	2013-2015
Kenya	16.5%	<ul style="list-style-type: none"> - ATM card transactions - Prepaid card transactions - Charge card transactions - Credit card transactions - Debit card transactions - Mobile payment transactions 	2012-2015
South Korea	11.1%	<ul style="list-style-type: none"> - Internet banking - Firm banking - Mobile banking - Giro credit transfer - CMS system - IFT system, CD system, Local bank shared system, E-commerce system, and EFTPOS system - Credit cards - Check cards - Prepaid Cards - IC debit cards 	
Indonesia	22.2%	<ul style="list-style-type: none"> - ATM/debit card transactions - Credit card transactions - E-money transactions 	2011-2015
Madagascar	6.2%	<ul style="list-style-type: none"> - Checks transactions - Transfers transactions 	2012-2014
Malaysia	6.2%	<ul style="list-style-type: none"> - Checks transactions - Transfers transactions 	2012-2014
Mexico	9.5%	<ul style="list-style-type: none"> - ATM transactions with debit and credit cards - POS transactions with debit and credit cards - Electronic banking transactions - Internet banking transactions - Mobile banking transactions 	2010-2015
Nigeria	52.0%	<ul style="list-style-type: none"> - ATM transactions - POS transactions - Internet transactions - Mobile payment transactions 	2010-2015
Pakistan	18.9%	<ul style="list-style-type: none"> - PRISM transactions (RTGS) - ATM transactions - POS transactions - RTOB transactions - Internet banking transactions - Mobile banking transactions 	2011-2015

Peru	11.7%	<ul style="list-style-type: none"> - Debit cards - Credit cards - ATMs - Virtual banking 	2013-2015
Philippines	15.4%	<ul style="list-style-type: none"> - Prepaid cards - Debit cards - Credit card 	2007-2012
Russian Federation	27.3%	<ul style="list-style-type: none"> - Cards transactions - E-money operators - Other payment instruments 	2013-2015
Rwanda	83.9%	<ul style="list-style-type: none"> - ATM transactions - POS merchant transactions - POS agent transactions - Mobile payment transactions - Mobile banking transactions - Internet banking transactions 	2012-2015
South Africa	9.6%	- Total settlement values settled in the SAMOS system (real-time line, EFT, cards, checks, SASWITCH, AEDO, NAEDO, real-time clearing)	2010-2014
Sri Lanka	17.3%	<ul style="list-style-type: none"> - RTGS transactions - SLIP system transactions - Credit card transactions - Debit card transactions - ATM financial transactions - POS terminal transactions - Mobile phone based banking transactions - Internet based banking transactions 	2010-2014
Sweden	7.2%	<ul style="list-style-type: none"> - Debit card transactions - Credit card transactions - Electronic credit transactions - Direct debit transactions 	2010-2014
Tanzania	132.1%	<ul style="list-style-type: none"> - ATM transactions - POS transactions - Internet banking transactions - Mobile (SMS) banking transactions - Mobile payment systems transactions 	2010-2012
Vietnam	11.5%	<ul style="list-style-type: none"> - ATM transactions - POS / EFTPOS/ EDC transactions 	2014-2015

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The Better Than Cash Alliance Case Study Series

The Better Than Cash Alliance case studies seek to highlight specific examples of shifts to digital payments by governments, companies, and international organizations. Each case study aims to provide insights for a wide audience on the factors that have helped or hindered the digitization process, and also present key results and benefits of the transition away from cash. We hope that readers will be able to adapt the lessons from these cases to their own contexts and local conditions.

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About The Better Than Cash Alliance

The Better Than Cash Alliance is a partnership of governments, companies, and international organizations that accelerates the transition from cash to digital payments in order to reduce poverty and drive inclusive growth. Based at the United Nations, the Alliance has over 50 members, works closely with other global organizations, and is an implementing partner for the G20 Global Partnership for Financial Inclusion.

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