



BANKING THE NEXT BILLION

Digital Financial Inclusion in Action

Citi GPS: Global Perspectives & Solutions

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BANKING THE NEXT BILLION

Digital Financial Inclusion in Action

Kathleen Boyle, CFA
Managing Editor, Citi GPS

If you live in the developed world, have a think about the last time you went to your local bank branch. Did you feel fortunate to be there? Did you only really get excited if you were able to get in and out of the building in five minutes flat? How about making a payment online? That's usually an infinitely better experience and time saver versus going to an actual brick and mortar bank, but did you rejoice in the knowledge that your money was sitting safely in a financial institution? In developed markets, a large majority of the population — >93% in almost all cases — is 'banked' meaning they have access to banking and credit. But that is not necessarily the case in emerging markets.

According to the World Bank, almost 1.7 billion people — nearly one-third of the global population — weren't included in the formal financial system in 2017. When asked, people give a whole range of reasons as to why they don't use financial services — they don't trust banks, it's too far to travel to one, it's too difficult to open an account or they don't have the proper documentation. But more than 50 percent of the time, the reason they chose to avoid banking was that they didn't have enough money to meet the minimum balance requirements or they couldn't afford the fees and charges that were associated with traditional accounts.

In the report that follows, we explore several financial inclusion initiatives, with a particular focus on digital initiatives, which are helping to increase the number of 'banked' individuals. We believe we're living in a period of unprecedented growth in financial inclusion and that by 2022, an additional 700-800 million adults will be included in the formal financial system, leaving just 15% of the global population unbanked (down from 49% in 2011). We also talk to a variety of experts from established leaders and policy makers to emerging digital challengers about how they are helping to transform financial inclusion.

Several financial sector business models have been at the forefront of trying to bridge the inclusion gap and we explore several traditional and non-traditional initiatives that are playing a key role in bridging the unbanked population gap. While global regulators have generally been supportive of newer models like mobile money or microfinance, identity issues have been a roadblock in several cases. New upcoming unique identity models are changing the way people bank and national identity programs have facilitated biometric information to tackle these issues.

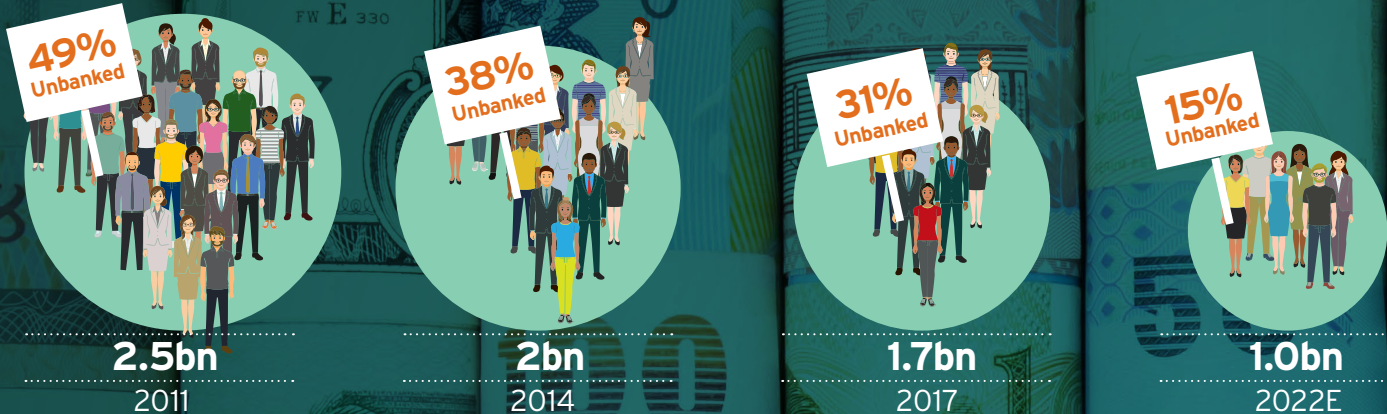
Mobile money is a technology that allows people to retrieve, store and spend money using a mobile devices. Thanks to a combination of simplicity, convenience, and safety, mobile money is becoming an alternative to bank accounts and payments in several emerging and frontier markets. Mobile money has grown at a rapid pace and mobile money operators are replacing traditional bank branches.

Several BigTech firms today have a larger customer base and broader geographic reach than leading financial institutions and with their robust customer behavior data, could increasingly provide financial products. Finally, microcredit continues to grow, accompanied by new products and enabled by mobile technology. By designing financial products and methodologies based on an understanding of their client needs and capacity, Microfinance Institutions have overcome some of the biggest obstacles to seeking access to credit or savings products.

Digital Initiatives Help Drive Inclusion

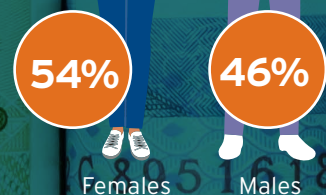
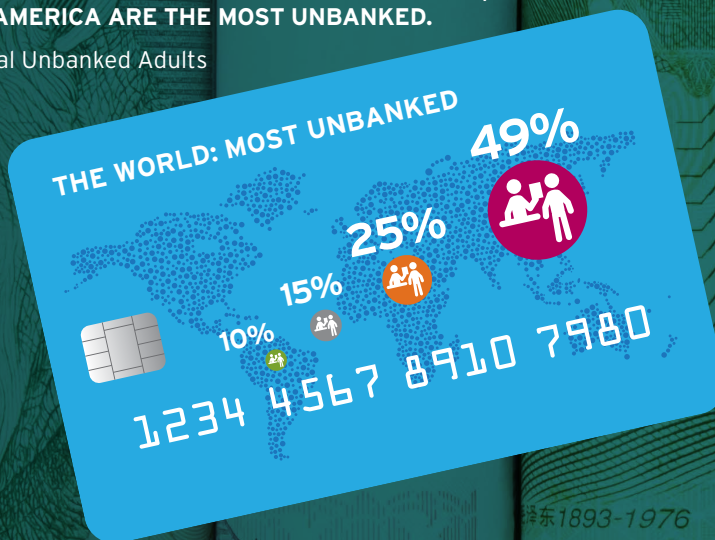
DESPITE RECENT ADVANCES, 31% OF THE WORLD'S ADULTS REMAIN UNBANKED BUT WITH CONTINUED INVESTMENT IN FINANCIAL INCLUSION, WE BELIEVE THE NUMBER OF GLOBAL UNBANKED POPULATION COULD FALL TO 15% OF GLOBAL ADULTS BY 2022.

World Unbanked Population



ABOUT HALF THE GLOBAL UNBANKED ADULTS RESIDE IN ASIA, FOLLOWED BY AFRICA BUT BY PERCENTAGE OF POPULATION, AFRICA AND LATIN AMERICA ARE THE MOST UNBANKED.

Regional Split of Global Unbanked Adults



Source: World Bank, CIA

Source: World Bank, CIA

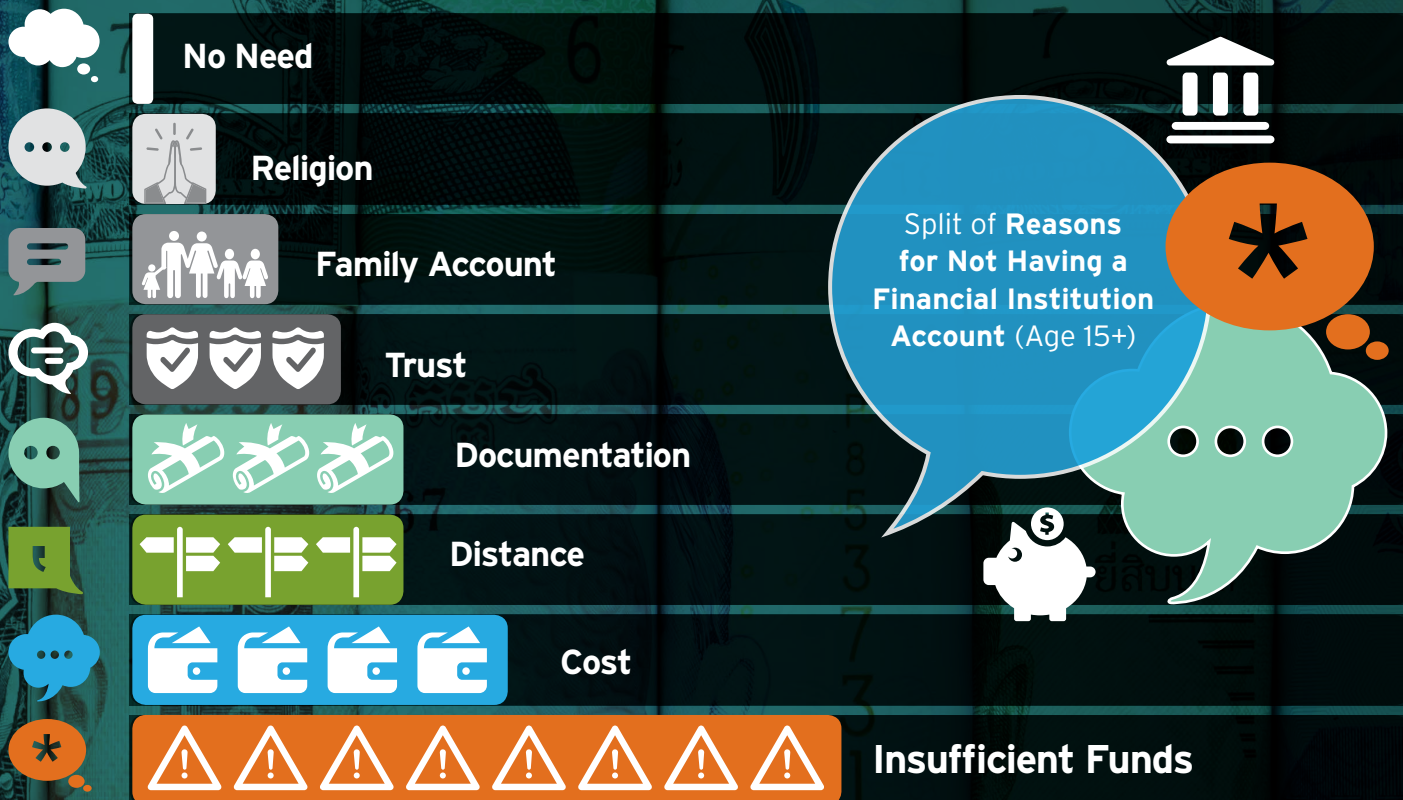
Country Split of Global Unbanked Adults



Source: World Bank, CIA

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THE REASONS FOR NOT HAVING A FINANCIAL INSTITUTION ACCOUNT VARY BUT INSUFFICIENT FUNDS AND COST ARE CITED OVER 50% OF THE TIME.



Source: World Bank



WE SEE

4

DRIVERS

THAT COULD HELP
ACHIEVE UNIVERSAL
FINANCIAL INCLUSION...



1

Unique Identity Systems

- a. Addresses banking needs for those who don't even have mobile phones
- b. Several use cases: No Frill Bank Accounts, Government-to-Person (G2P) Payments, Biometric-based Payments



3

Microcredit

- a. Global reach with South Asia in the lead
- b. Returns generally ahead of traditional banks



2

Mobile Money

- a. Agents are the new bank branches
- b. Several use cases: Person-to-Person (P2P)/ Government-to-Person (G2P) Payments, Merchant Transactions, Savings and Loan Products



4

Digital Currencies

- a. Stablecoins address the financial trust deficit
- b. Big Techs promoting digital currencies could drive financial inclusion

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Kathleen Boyle, CFA
Managing Editor, Citi GPS

Executive Summary

Despite the existence of banking for several millennia, as many as half of the world's population was unbanked as recently as 2011. The last official data from the World Bank (2017) shows just under one third of the world's adults (or 1.7 billion people) remained “unbanked” or outside the formal financial system.

Based on our analysis and current industry trends, we expect about 15% of global adults — or 1 billion people — to remain unbanked at the end of 2022. This would represent an increase of 700-800 million adults who were included in the formal financial system by the early 2020s compared to 2017 and an incredible 1.5 billion compared to a decade ago.

Looking at the headline numbers, we are living in a period of unprecedented growth in financial inclusion. In this report, we explore several financial inclusion initiatives, with a particular focus on digital initiatives, which are helping drive this unprecedented growth in financial inclusion.

We examine case studies from around the world, from Bangladesh to Kenya, Nigeria, Mexico, and points in between. We will also hear directly from established industry leaders, policy makers, and emerging digital challengers in the pages of this report on how they are helping transform financial inclusion.

About half of the world's unbanked adults reside in Asia, with Africa housing 25% them. By percent of population, Africa and Latin America are the most unbanked (which we define here as percent of adults with a formal bank account at a financial institution). Pakistan and Vietnam are among the larger countries with the lowest formal financial sector penetration. Amongst the total global unbanked adults, 46% are males while 54% are females, with some countries facing a large gender gap.

According to our proprietary analysis based on World Bank raw data, there are several possible reasons for limited banking access, especially in emerging or frontier markets (EM/FMs), including: banking infrastructure, product design, minimum balances, documentation, trust, and religion. Several financial sector business models have tried to bridge this inclusion gap. We discuss them in this report.

In key EM/FMs, 34% of unbanked adults said they have no money to maintain the minimum balance required to open a bank account. However, it is not just about a lack of sufficient funds to open formal bank accounts; they also reference the perceived cost of banking (18%), distance (13%), documentation process (13%), and trust (10%) as other reasons for not having an account.

Interestingly, some of these same perceptions or experiences in accessing mainstream banking services in EM/FM are raised by adults who are unbanked or underserved by banks in the United States, according to the FDIC's biennial National Survey of Unbanked and Underserved Households.

Among the United Nations' 17 Sustainable Development Goals (SDGs), ending extreme poverty is goal number one. According to World Bank studies, nearly 800 million people still live in extreme poverty — earning \$1.90 per day or less. Several of these SDGs — including of course the eradication of poverty — directly or indirectly connect with achieving universal financial inclusion.

The social welfare impact of financial inclusion is significant. We believe access to formal banking channels — and reaping benefits from banking system products (e.g., access to credit, opportunities for savings, G2P transfers etc.) — can play an important role in the eradication of poverty and the social mainstreaming of marginalized people.

1. Who Do We Think You Are

Lack of identity has been a foundational challenge hindering banking access in many countries, even some countries with extensive consumer banking services. Traditional banking usually involves lengthy paperwork and formal documentation prior to opening an account. National identity (which is often digital these days) has tackled several of these issues head on by facilitating biometric information, which may address Know Your Customer (KYC) bank requirements.

Fixing the identity challenge enables many financial services use cases: Know Your Customer (no-frill bank accounts e.g., Jan Dhan in India), efficient Government-to-Person (G2P) payments (e.g., BISP in Pakistan), access to credit for the underserved sections and lowering the cost of digital transfers (e.g., Aadhaar Pay).

A key goal in several markets is to get financially-excluded borrowers into the formal credit value chain, to build credit histories, and to include more borrowers into the credit bureaus. Unique digital identities can help regulators identify the correct beneficiaries of state benefits, increasing transparency and reducing 'leakage.'

Several regulators have been pushing no-frill bank accounts with less stringent traditional KYC requirements (using unique identities) in some cases. Policymakers have been working to ensure these accounts do not fall dormant by channeling social security and other financial benefits to them.

Another focus area for regulators in the recent past has been improving domestic digital payment infrastructures and lowering the cost of domestic digital transfers, wherever possible. Biometric-based unique identity payment systems (e.g., Aadhaar Pay in India) have the ability to address this issue in an efficient manner.

Digital identity can be provided by the state (see India), banks (Sweden, Nigeria) and in the future perhaps BigTechs, among others.

2. Your Mobile Phone Number is Your Bank Account Number

Mobile money (MM) is the technology that allows people to receive, store, and spend money using a mobile phone device. Mobile money is an alternative to bank accounts and payments in several emerging and frontier markets, thanks to its combined attributes of simplicity, convenience, and safety.

Mobile money uptake has grown at a rapid pace, with an estimated 1 billion active users globally. Kenya stands out as the success story in mobile money penetration, with >70% of adults having used mobile money — a figure larger than those who hold traditional bank accounts (only about 55% of adults).

There are several other underbanked EMs and FMs where mobile money has successfully stepped in to fill the void, including China and India. Our proprietary MM model highlights Mexico and Nigeria, among others, as the larger countries with the most MM upside.

MM operators are replacing traditional bank branches with new channels (e.g., corner shops, ride drivers) and expanding their use cases to encompass a variety of new services including Business-to-Person (B2P)/ Government-to-Person (G2P) disbursement in Pakistan and Iraq, merchant transactions in Bangladesh, and loan products in Kenya and elsewhere.

The rise of mobile money in many markets has been aided by the growth in mobile money agents, which permit customers in cash-centric economies to deposit and withdraw funds conveniently. In some countries, ride-hailing platforms have leveraged their network of drivers to launch their own E-wallets.

Mobile money platforms are now playing an important part in driving financial inclusion through convenient Peer-to-Peer (P2P) transactions for migrant workers, disbursement of benefits and aid to those in need, saving and lending products for the unbanked, and newer use cases like online/offline payments which offer the prospect of cashless transactions.

3. BigTech, Platforms and Billions of Clients

Several BigTech firms today have a larger customer base and broader geographic reach than leading financial institutions. Telecom operators have a broader reach than banks in emerging markets such as Kenya or Nigeria; while in middle-income countries such as China, Internet companies have the greatest presence.

With robust customer behavior data — that could feed into the KYC process — these Internet firms are already active to varying degrees in providing financial products, usually starting in payments. BigTechs can play an important role in bridging trust gaps in EM/FM markets, albeit they remain a subject of debate.

Perhaps the most ambitious of these initiatives in terms of initial scope is the recent push for a digital payment system by the Libra Association (“working to empower people around the world through the creation of a simple global payment scheme”) and Calibra (“a new digital wallet for a new global currency”).

The Libra Association frames its mission as “broadening access to essential financial services and lowering costs for billions of people”. The Libra mission, as set out on its home page, is nothing short of ambitious — “Reinvent money. Transform the global economy. So people everywhere can live better lives.”

BigTech-owned mobile chat and payment apps in China now count hundreds of millions of active users who are able to access a wide spectrum of financial services — from payments to savings products — and are now in many ways well ahead of the offerings available to peers in developed economies.

4. Microcredit: Small Amounts, Big Impact

Microcredit, led by social entrepreneurs in South Asia and Latin America, was one of the first approaches to expanding access to financial services for those excluded from the mainstream banking system. Many trace the origins of modern microfinance back to a research project conducted in 1976 by Economics Professor (now Nobel Laureate) Muhammad Yunus, demonstrating a new model for lending to low-income rural Bangladeshi women.

Microcredit continues to grow, accompanied by new products and enabled by mobile technology. We estimate the addressable market to be at least 280 million across our sample of the largest countries globally.

Present day Microfinance Institutions (MFIs) have evolved to offer a wide variety of services, some becoming banks themselves and competing with conventional commercial banks. Some continue to offer both group lending, with forms of formal or social joint-liability, as well as individual loans and savings products.

By designing financial products and methodologies based on an understanding of their client needs and capacity, MFIs overcome some of the biggest obstacles the poor face when seeking access to credit or savings products, which include a lack of documentation, collateral, formal employment or credit history, and sometimes limited literacy.

South Asia is the largest market globally for organized microfinance alongside Latin America, according to data from local microfinance associations and central banks. India leads in our sample of markets, with total outstanding loans of over \$28 billion in 2018, followed by Bangladesh with \$6.9 billion.

MFIs have not been immune from the digital transformations taking place around the world, as rising mobile phone and data penetrations in emerging markets widen the scope and breadth of financial services that can be provided to even the poorest and most remotely based segments in society.

However, the very advances that offer operational benefits like loan disbursement through mobile wallets, also pose risks as new players enter the market and new processes arise. Digital lenders, as in Kenya, utilizing credit models based on limited historical or financial information, can lead to adverse consequences.

Financial Inclusion Remains Key to Inclusive Growth

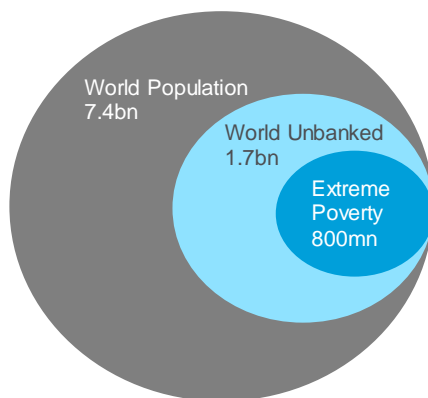
According to World Bank studies, nearly 800 million people still live in extreme poverty, earning \$1.90 per day or less. In 2015, the World Bank and its partner countries adopted new approach to development finance through the Addis Ababa Action Agenda, the 2030 Sustainable Development Agenda, and the UN Sustainable Development Goals (SDGs).

The UN SDGs are aligned with the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. Financial inclusion is positioned prominently as an "enabler" in achieving the 17 SDGs by 2030, where it is featured as a target in eight of the seventeen goals.

These include SDG1, on eradicating poverty; SDG2 on ending hunger and achieving food security; SDG3 on promoting health and well-being; SDG5 on achieving gender equality; SDG8 on promoting economic growth and jobs; SDG9 on supporting industry, innovation, and infrastructure; and SDG10 on reducing inequality.

It would be difficult to imagine global poverty eradication without providing access to banking. In fact, we believe that access to formal banking channels — and reaping benefits from banking system products (e.g., access to credit, opportunities for savings, G2P transfers etc.) — could play an important catalyst.

Figure 1. World Unbanked Population (2017)



Source: Citi Research

Figure 2. United Nations Sustainable Development Goals



Source: United Nations

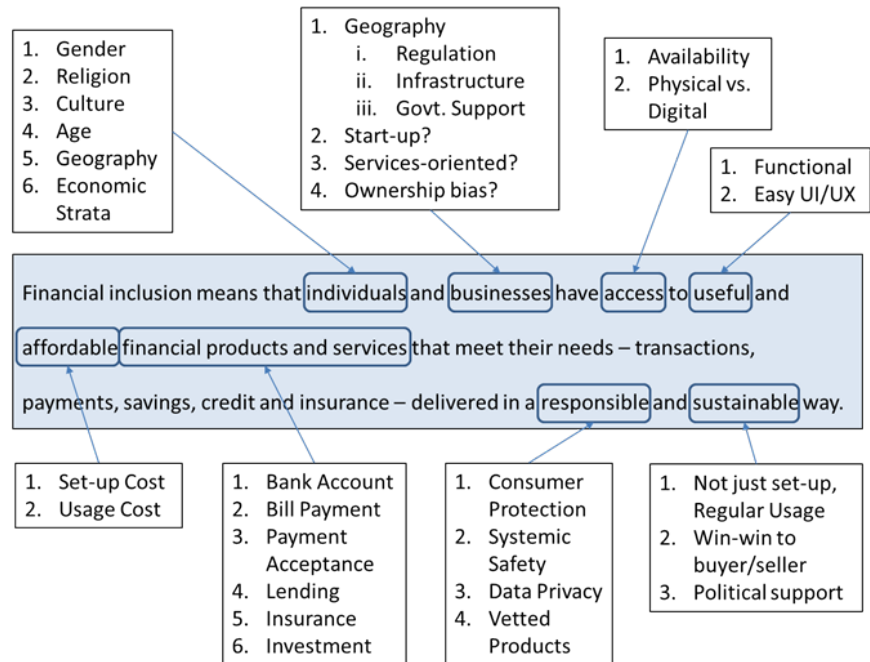
For more information on SDGs, please see: [Citi GPS: United Nations Sustainable Development Goals: Pathways to Success – A Systematic Framework for Aligning Investment.](#)

Defining the Scope of Financial Inclusion

Over a long period of time, our Financial Inclusion discussions have indicated that the topic is narrowly understood at best, by many parties. Common misperceptions suggest that financial inclusion is only relevant in frontier and emerging economies or that it is only a problem for individuals.

Thus, a good starting point is to disaggregate a commonly used definition (from the World Bank, in this case) and arrive at the many axes along which the problem may be considered. Figure 3 below provides an illustration of the many angles to consider.

Figure 3. World Bank Definition of “Financial Inclusion” Suggests Multiple Axes to Analyse the Topic



Source: Citi Research

The following discussion points should help to further clarify the scope:

1. **Access:** The question here is on the availability of traditional financial infrastructure (e.g., bank branches) as the pace at which this potentially grows can be relatively slow. A digital infrastructure is easier to scale but there are elements of this build-out that depend on government and non-government entities. For example, a telecom company needs to build out mobile infrastructure but there is often significant government involvement in this.
2. **Affordability:** The cost of basic financial services, such as a checking or savings account, debit card, ATM usage, loan servicing, etc., is important to consider. Will the client be charged a fee because their account balance is below a certain amount — and will these fees push consumers to be unbanked or underbanked?
3. **Utility:** In general, it is accepted that digital advances can bring down both customer acquisition costs and the cost of servicing the customer. But it is also important to take into account how comfortable the user is with the technology and whether they are being excluded by technology that is either too expensive (e.g., smart phones) or perhaps too intimidating or difficult to use.
4. **Customer Criteria:** Is the customer an individual consumer or a business? The questions and points below are representative (i.e., not complete).
 - **Individual Consumer/Gender:** It is important to consider whether legal requirements are similar or are there biases. Beyond the legal question, there can also be cultural and enforcement biases that are related to gender. These can cumulatively affect a range of factors from the possession of identification and educational level, to the right to open an account and the right to own property, etc.

- **Individual Consumer/Ethnic Background:** Is there a systemic bias based on race or color? Are there cultural or religious criteria that need to be satisfied to provide financial services? Islamic banking is an example of the latter.
- **Business:** What kind of business is it? For example, a services-oriented business or a startup might have limited ability to put up collateral for a loan. Similarly, it is important to acknowledge that most businesses globally are small businesses, so many of the “Individual Consumer” points listed above are relevant for these businesses as well.

What is Financial Inclusion?

An Interview with Bob Annibale & Jorge Rubio Nava, Citi Inclusive Finance



Bob Annibale
Global Director of Community Development
and Inclusive Finance, Citi



Jorge Rubio Nava
Global Inclusive Finance Group, Citi

How would you define Financial Inclusion? How has the definition evolved?

Bob: Financial inclusion today refers to the design of products and services that are safe and affordable and which meet the diverse, often complex, needs of people who do not have a banking account. This means leveraging technology, such as mobile phones and QR codes, to create solutions that are accessible and easy to scale. But it also means designing solutions that can onboard people — including those who may be hard to reach, or who have special needs — with the lowest amount of friction, and which fit clearly and meaningfully into people's daily lives.

Financial inclusion was a movement that began with microcredit, but has since broadened in several directions. It now includes a wide range of financial services offered by financial institutions — both bank and non-bank — as well as new platforms and products, including credit, payments, credit and prepaid cards, and savings. We've also seen the formation of new alliances between banks, FinTech, retailers, and other financial service providers, such as insurance companies.

You can see examples of how this evolution is taking place throughout the field. For example, the Consultative Group to Assist the Poor (CGAP) has recently adopted a new theory of change which encompasses a broader view of financial inclusion — from a strategy narrowly tailored toward “poverty alleviation” to one of listening and understanding the needs, goals, and operating modes underserved people have with regard to financial services.

Additionally, financial inclusion today is seen leap-frogging. In the old days, the industry progressed gradually from cash to bank accounts, to cheques, and eventually to debit or credit cards. However, today, part of financial inclusion is helping people directly move from being unbanked to using new mobile-based solutions such as QR-code payments (e.g., seen in India and Bangladesh).

Regulators are also playing catch-up with rapidly changing technology and are looking at introducing new mobile banking rules, and frameworks to more effectively regulate financial transactions.

What were some of the major milestones/events in the early days of financial inclusion? What regions should we be looking at?

Bob: Financial inclusion initially started with non-governmental organizations (NGOs) offering savings and lending products at a group level, which did not require a banking license. Some of the early markets into financial inclusion were Bolivia, Bangladesh, and India. Grameen Bank in Bangladesh or microcredit organizations in India have been leading players.

At the time, financial inclusion was seen as a means to alleviate poverty. Today, many regulations have changed and several of the institutions have received licenses to become financial institutions themselves. The scope of financial inclusion today has grown, and no longer just focused on the poor or the unbanked.

Jorge: It is worth noting that back in the 1980's, several financial inclusion companies were unable to scale up due to a lack of digital identities and the reliance on costly, labor-intensive models. However, with advancements in technology and increasing proliferation of digital, things have been changing, allowing companies to scale very quickly.

Bob: The biggest challenge faced by early adopters was the need for digital identity in order to truly transform financial inclusion. Case in point being India, which witnessed a rapid surge in financial inclusion after the introduction of digital identities, for example Aadhaar.

Meanwhile, telecoms were able to get into financial inclusion by leveraging their large existing customer base, initially offering them payment products. Many of them are now gradually getting into lending.

There is also a general acceptance amongst regulators for the need of varied players (e.g., telecoms, banks, wallets etc.) to drive financial inclusion in order to achieve scale.

How does technology or the explosion of feature/smartphones play out in the context of financial inclusion?

Bob: Technology plays an important role in financial inclusion, starting with payments, which has helped users transfer money from one place to another. Instead of carrying huge bags of cash, they now just use their mobile phone, a touchpoint many people already have. The success of this approach has also lowered the cost and flow of cash.

Subsequently when credit latched onto the payment platforms, newer models emerged, bringing about newer challenges as well. Today, we have computer models that run analysis of Big Data (e.g. mobile airtime usage, volume of payments etc.) to determine potential borrowers.

Jorge: I think it is also worth noting that the explosive growth of technology and mobile phones have helped produce data that can continue to expand the reach of financial inclusion immensely. The sheer size of the Big Data available today has a lot of potential for several kinds of helpful data analyses.

In your opinion, what is the role of a bank in financial inclusion?

Bob: Banks have the ability to create products and services with features that are attractive to the unbanked, and to make those solutions available at scale. They can also ensure the touchpoints they design for those products fit frictionlessly into people's lives, as a tool purpose-built for helping them meet whatever their financial goals may be, with convenience and simplicity.

Banks, particularly larger institutions, also have the ability to enable trusted intermediaries, such as telcos or even smaller banks, to leverage their infrastructure and technology to reach even more people.

A perfect case example is Equity Bank in Kenya. When the bank initially started, it adopted a unique model for tapping the large unbanked population in the country. This helped it immensely to gain market share very quickly versus its peers. My second case in point would be Mexico. We found that nearly 85 percent of the new customers being on-boarded did not have any bank accounts.

Technology has surely enabled banks to go deeper, which would otherwise not have been possible given the high costs and capital requirements banks need to maintain. Regulatory support is another important aspect facilitating financial inclusion.

In your opinion, are telcos better than banks in promoting financial inclusion in frontier or emerging markets?

Bob: Telcos typically have deep penetration in most markets, often deeper than traditional banks; and as customers get more advanced phones, there is a natural opportunity for telcos to tap into here. Therefore, telcos are often a step ahead in promoting financial inclusion relative to banks.

However, there is also possibly a mutually beneficial solution — once telcos have established financial inclusion with their users, they can partner with banks to provide more elaborate financial products.

Jorge: From the telcos' perspective, a significant part of their customer base is made up of lower-income client segments, as most people will have a mobile phone even if they do not have a banking account. In many countries, lower-income populations spend a larger percentage of their disposable income on mobile and data services, and are therefore a natural area of focus for telecom providers. Their ready access to and relationship with these populations enable telcos to more readily offer financial inclusion solutions.

By contrast, it is quite the opposite for a bank, which tends to focus on the higher income segments. Consequently, telcos have also been able to maintain more trusted relationships with financially underserved populations than banks have.

From a public policy approach, what are the best ways to promote digital financial inclusion?

Jorge: I think there are a few aspects to consider here:

1. **Understand the proportionality in markets:** You cannot have the same KYC requirements for large balance accounts as you do for small. For customers with lower levels of banking activity, financial service providers need to have a simplified and proportional KYC.
2. **Leverage different networks for banking:** Companies need to leverage agent networks in remote areas where physical branches are limited. This can help reach lower income and remote communities, offering accessible locations for cash-in/cash-out.
3. **Lower transaction costs:** The cost of doing bank payments in Latin America can be as high as 18%. However, recent regulatory changes, such as the introduction of free QR code payments in Mexico, can help drive financial inclusion.
4. **Lack of sufficient funds:** Some customers simply do not have the funds required to maintain minimum balances for traditional accounts at financial institutions. The introduction of low minimum balance accounts in these markets could help drive financial inclusion.

Bob: It is also very interesting to see banks looking at FinTechs for several opportunities. Banks are actively partnering with FinTechs, connecting them on their platforms, to quickly gain scale and offer new products/services. The challenge banks face here is ensuring seamless interoperability across different channels.

We have talked about financial inclusion in a positive context. How much evidence is there to suggest that increasing financial inclusion has led to measurable social/economic welfare gains?

Bob: Financial inclusion surely helps people transact in ways that were not possible previously. Take for instance remittances that help people seamlessly send money across geographies. This may not be directly connected to a tangible financial benefit, but it surely has a social benefit.

Financial inclusion helps empower people. It gives them security and provides them with balanced access to the tools to participate in the formal economy. Whether someone chooses to apply them productively for savings/gains depends on the individual.

When did regulators start looking at the dark side of financial inclusion? Are there examples where credit started to go bad?

Bob: Regulators started to look at the dark side of financial inclusion nearly a decade ago, as challenges emerged in Bolivia, Kenya, and India such as repayment crises, misuse of funds, and political issues.

In retrospect, the biggest challenge for financial inclusion was its rapid growth in a short period. This manifested itself via the presence of multiple lenders, rapid growth in credit, and the lack of any universal credit scoring institution. There were also instances of there being a lack of visibility into what borrowers were doing with the borrowed money. This eventually led to bad loans, which led to increased regulatory attention.

Arguably, there is some need to increase regulations in response to newer financial inclusion models and for companies to show some restraint in growth.

Welfare Implications of Digital Financial Innovation

Below are excerpts from a recent article published by the Bank of International Settlement (BIS) ([full article link](#)) based on remarks by Mr Luiz Awazu Pereira da Silva, Deputy General Manager of the BIS:

"Let us be clear upfront: there is no doubt that innovation brings enormous potential for societal good and welfare. It suffices to mention the positive transformation that new technology in finance has brought to access to credit, rapidity and reliability in trade financing and insurance coverage. Indeed, technology represents a great opportunity for innovation and financial inclusion by providing access to financial services at a lower cost. Yet there are also other distributional effects. Even where there are Pareto improvements in outcomes, the relative differences between different groups may rise.

Indeed, some observers argue that the use of new digital technologies in lending and insurance – but also areas like college admissions, advertising, and even prison sentencing – will increase inequality. Let us illustrate this with examples from different areas in financial services.

(In payments) innovations are driving improvements in financial inclusion. This is likely to be Pareto-improving, and lower-income groups in particular may benefit. Mobile money has already brought hundreds of millions of new customers into the financial system, especially in China, India and Africa.

Technology is also helping to bring down the cost of cross-border payments over time, for instance in remittances. In some cases, especially cross-border payments, this has been achieved by eroding the margins of incumbent financial institutions. Yet in other cases, this improvement is being achieved through greater efficiency. Digital identity (ID) and electronic know your customers (e-KYC) solutions may improve this further.

A second area is credit. Here, the evidence on welfare implications shows progress in financial inclusion, but also developments that need to be analyzed further. In several countries, there is evidence that innovations such as fintech and big tech credit have served borrowers who are underserved by banks.

Yet as we know from the subprime crisis in the United States, and many further cases, getting access to credit is not always positive for borrowers in the longer term. Moreover, even if the cost of credit declines overall, it may benefit some groups more than others. For instance, using data on U.S. mortgages, one recent study finds that black and Hispanic borrowers are disproportionately less likely to gain from the introduction of machine learning in credit scoring models, suggesting that the algorithm may develop its own bias. ... A third area is savings. A number of fintech firms say that innovations are "democratizing" investment, and giving small consumer access to new savings products that they would not otherwise be able to use. ... Perhaps, but the evidence so far shows that the rich may benefit by more. ...

Last but certainly not least among the specific services is insurance. Use of big data in insurance is growing rapidly. In many cases, this too is leading to financial inclusion. Parametric insurance for crop failures, pay-per-use auto insurance and other new models could allow people who have until now been excluded from insurance markets to better pool risks and improve welfare."

Broadening the Definition of Financial Inclusion

An Interview with Amit Goel, Co-Founder & CSIO of MEDICI Global



Amit Goel
Co-Founder & CSIO
MEDICI Global

Can you tell us a little about MEDICI, your role in the FinTech ecosystem in India, and some of the work you have done in the area of financial inclusion?

MEDICI started in 2013 as my co-founder (who is based out of U.S.) and I wanted to build the 'Bloomberg for FinTech'.

While Bloomberg tracks public companies, we wanted to track thousands of private FinTech companies. Most of these companies are private and as a result, information gathering is very difficult. We have done a lot of work to lay out the taxonomy and we publish a lot of research, which acts as a learning platform.

This work is often done in emerging economies and we actually touch financial inclusion problems on the ground and find solutions for them from all our FinTech startups. We recently wrote a big research paper on this topic, which many people found interesting, and I think it will be good to discuss some of the findings here.

What are some of the key highlights from your research? How has mobile money and mobile technology in general, helped promote financial inclusion?

Before we go into that, I just want to explain the way we look at financial inclusion, which may or may not be very different from others. For the longest time I have felt that financial inclusion has been defined in the context of the poor and the needy, but in my mind, if a small/medium-sized enterprise (SME) wants to grow its business and is denied a loan or does not get working capital when they need it, in my mind that is exclusion. Any work done to include them should be included in the financial inclusion.

Similarly, if a person studying at a tier 1 or tier 2 college needs credit and he is not included, then that is a problem that needs to be solved. For me, financial inclusion refers to facilitating financial products and services to the entire population irrespective of the size of the entity or the age of the person or the geographic or the economic condition of the person.

Once we start looking at that angle, financial inclusion is not just a problem of the poor and needy. It is a huge problem across countries and touches everyone in some way.

Going back to the question that you were asking about mobile money and mobile technology, we feel everybody talks about M-Pesa, which is very focused on Kenya and the African region; and then in Asia we have a few platforms doing really well. For us, it has many other angles, mobile money proliferation occurred not only due to the availability of mobile phones, but also due to the presence of agent networks.

For me, it is the coming together of man and the mobile phone. But unless M-Pesa had a great agent network, mobile money would not have been that successful.

How important is the smartphone in today's digital financial inclusion story? In the early days, if we go back to the genesis of M-Pesa (and even today in many African MM networks), the system is built on feature phones. What are the ways in which smartphones/cheap data can help in financial inclusion?

Africa is still largely a feature phone-driven story, whereas what we see in China and India is largely driven by smartphones. The latter is supported by falling smartphone prices and reducing prices of data.

We often talk about the network companies in India who were launched and made data very cheap, i.e., 20-30 gigabyte (GB) of data available for under £10 (\$13) a month. As a result, you find even rickshaw drivers/housemaids using 4G Internet, consuming almost a gigabyte of data every day. This has changed the landscape quite a bit with people starting to use WhatsApp and other applications.

Further, the push to open bank accounts and several initiatives taken by the government, have led to a sharp increase in the number of bank accounts over the last few years. There are roughly 900 million people with bank accounts in India. Imagine you have a bank account, a mobile phone, and cheap data. All of this coming together, has led to transactions.

Of course, a few events also helped further the cause, i.e., demonetization, whereby ₹500 and ₹1000 currency notes were discontinued. During this period, which lasted a few months, the only way to pay was through digital platforms, providing a strong uplift to payments in India. Many people in the market now accept cards and digital modes of payment.

I believe the cumulative effect of opening bank accounts, cheap data, and reducing smartphone prices is changing things. Notably, it is different in different regions. For example, the African market is still led by feature phones. However, China and India are likely to be smartphone-led stories in the long-term.

When you look at these regional differences, apart from the form factor (smartphone vs. feature phone), what are the other things we should be thinking about, particularly in the 'inclusion' space? What are the other major differences we should think about when it comes to model, be it technological or business?

Aside from feature phones and smartphones, two to three other parameters also differ across markets.

One of them is the strength of the banking system in these countries. For instance, we know that in Kenya and most other African countries, the banking system was not as strong. People did not have bank accounts and then the operators started offering a way to do digital money transfers. This provided them an avenue to not just transfer money easily and actively, but also a safer means of carrying money.

If you look at India or China, both have very strong banking systems and strong regulators. In each of these markets, nearly half a billion people already have bank accounts and the government has pushed initiatives to open bank accounts for everyone. These programs have been very successful, with over 80% of the population in India today having a bank account.

Given the level of banking system in India, M-Pesa was not very successful in there, despite trying very hard, as the model in India is very different. We already have bank accounts, now you have to figure out a way to make money flow. Notably, the

first stage is opening bank accounts. The second is having real financial inclusion, i.e., people use their accounts to transfer money, take loans, buy insurance etc.

In India, the creation of the Unified Payments Interface (UPI) platform allows for real-time payments. The system is actually powering many payments in tier 1 and 2 cities and is now expanding to tier 3 cities. Platforms like this help to power financial inclusion in countries like India. Whether you are a FinTech, a bank, or an American company like Facebook or WhatsApp, everybody is using UPI as a standard for using real-time payment systems. I think that is a differentiating factor from a country like Kenya or any other African country.

In contrast to that, Alibaba, and Tencent in China are huge platforms for social and ecommerce and they have millions of customers. Both firms are large and are enabling financial inclusion in areas where banking was not prevalent. Even food carts that do not have a cash option, accept payments through Alipay or WeChat.

We have discussed the case studies of FinTech and financial inclusion. Can we step back and think the big picture. We are assuming financial inclusion is a good thing. Can we quantify how much economic or social welfare digital-driven financial inclusion has achieved? Are there examples where it is a force for bad? Are we making it easier to do something socially or economically damaging?

Firstly, let's put some data points on the positive side in terms of economic impact. Mobile money transactions in Kenya amount to almost half of The data point I find most interesting, is that M-Pesa has brought 2% of the population out of extreme poverty. Studies by various organizations have found that once we enable financial inclusion, it has a direct impact on GDP and helps uplift per capita income. We have seen a very clear-cut case in Kenya. That is positive news. I think we will start seeing these data points in countries like India and Indonesia as well.

On the negative side, I feel you might have heard stories of there being many issues with P2P lending or P2P FinTechs in countries like China and Indonesia. Once you have a P2P system, it is very hard to control why people are lending money or why borrowers run away. There have been many ill effects from that byproduct.

In addition, when we have a digital lending FinTech company funded by venture capital (VCs), an important objective is to get as much user growth as possible, at any cost. In one of our informal studies, we found that people were taking small amounts of loans from 4-5 different digital lending FinTechs at the end of every month, as they were spending way more than what they could afford. These people are over-leveraged and are unlikely to be in a position to repay their debts in the event they lose their jobs. Can you imagine the extent of defaults at a system-level? This can also ruin lives of borrowers and their families?

In my opinion, digital lenders/FinTechs are only focused on increasing their user base at this point. Many FinTech start-ups have also not witnessed an economic cycle. I would not like to generalize, but in several cases, FinTechs do not know how to do collections very well. This creates a problem, especially since you are creating over-leveraged borrowers.

Lastly, the extent and nature of the data content they are collecting, in some cases, is very questionable. You never know the extent of access they have to SMS/emails, which they use in order to take credit decisions. These are some of the issues I see becoming big in the future.

Using Technology to Drive Financial inclusion

An Interview with Krishnan Dharmarajan, Executive Director of CDFI



Krishnan Dharmarajan
Executive Director
Center for Digital Financial Inclusion

What is the history, role and mission of CDFI? What are the problems you are trying to address?

CDFI stands for the Centre for Digital Financial Inclusion. The idea behind CDFI was to look at how we can use technology to promote financial inclusion on one hand and facilitate welfare programs/direct benefit transfers to the people on the other — both of which are linked aspects.

We use technology to promote these aspects through innovations; initially piloting them and then scaling them across large geographies. We also do research on the impact of new technologies as a supporting piece in the area of financial inclusion.

When you talk about financial inclusion, what exactly are we talking about? Can you define the scope of the problem?

Financial inclusion is linking people to the financial mainstream via banks or other financial service providers. Why is this important to do? Well, it is one of the most important ways to bring people out of poverty.

In order for the very poor to even remain where they are, they need to be protected against the vicissitudes of life. For instance, even if everything is going fine at home, if somebody suddenly falls ill, the poor often do not have the money to tide over such ups-and-downs in life. This pushes the entire family deep into poverty. Hence, I believe, even in order to just remain where they are, the poor need some kind of financial support.

In order to build up further from where they are (e.g., grow in their livelihoods, get a better education etc.), they need additional money. Financial inclusion is not only important for people to maintain their current state, but also to move up the economic ladder.

The number of bank accounts in India have gone up tremendously. How did this happen?

Nearly four to five years ago, the Government of India launched a major country-wide drive, whereby every household would have a bank account. That is the first step towards bringing somebody into the formal mainstream.

You first need to provide basic bank accounts and do it at scale. The Government of India has done a massive drive, which is unprecedented elsewhere in terms of speed and scale. This occurred in an orchestrated fashion at around the same time in the space of 3-4 years. I do not see this happening elsewhere.

Meanwhile in parallel, they created low-cost P2P payments and interbank payments infrastructure, both of which are critical to start transactions. Behind all this is a biometric authentication, identification program, done country-wide, which is linked to bank accounts/payments and enables the opening of bank accounts.

Banks played a fantastic role in making all this happen. In the financial sector, technology has have been very innovative. They have really gone ahead and taken

risks. In India, you have the opening of bank accounts tied to the identity infrastructure and low-cost payments, as well as new forms of banking transactions and financial inclusion — all of which are very new in India.

We now have a large percent of the population that is banked. However, this raises an interesting question on the definition of financial inclusion, as many of these people are still not really fully included in the financial system.

When we look at financial inclusion, there are multiple parts to it.

Step 1 is bringing people to the financial mainstream through a bank account.

Step 2 is to give these people the methods, opportunities, and need to transact with their bank account.

Gradually, as they transact over time (maybe 6-12 months), they mature enough to start looking at products arising from these transactions. Additionally, you also need to create products for the poor.

In India, the first step has been completed effectively; while the second step is still ongoing in a small way. Today, India has amongst the lowest transaction cost infrastructure anywhere. A bank-to-bank transaction in India through mobile is the lowest globally. As a result, we have provided very low cost methods for people to start transacting with these bank accounts.

One also needs to improve awareness in order for people to transact more in their bank accounts, and build imaginative products for them. Currently, products for the poor are mostly built by banks in the cities with exposure to the affluent. Do we really have products tailored for the needs of a farmer in a village? I do not think this is adequately addressed. Banks need to do more.

If people are not transacting, banks are partly responsible, as they are not being imaginative enough. Arguably, there might not be any need for people to transact, as their bank accounts are not linked to their livelihood. In these cases, the bank account is just a number; enabling transactions is the way to move forward.

Could we dig a little deeper into the specific point of how the financial industry is run by people with experience in urban or higher income customers? What are the things that someone like CDFI or other similar bodies can do to supplement the existing financial system?

We work on three broad areas.

Firstly, we support the government in activating bank accounts by putting money into them as part of a welfare payment. For instance, if there is a scholarship program for students or a mother needs to get funds at the time of her pregnancy, we prefer to put the money directly into the bank account.

CDFI has worked with the government to set up an automated platform where welfare payments can be made at scale and tied in to multiple bank accounts. This serves two purposes: (1) the basic purpose of a welfare payment; and (2) it gives people the opportunity to start transacting with these bank accounts.

We have developed a product for enabling this at scale, wherein a welfare scheme can be quickly on-boarded, beneficiaries authenticated and linked to bank accounts, and that payment is made through the government financial system. This product was used to roll out one of the largest welfare programs for expectant mothers.

This is how technology can be used to push payments directly to women in their own bank accounts. It is a form of empowerment and also how we are pushing the envelope on financial inclusion.

Secondly, I think bank accounts need to be linked to people's livelihoods. For this, we have successfully piloted a project across several mail collection centers in very remote rural areas. When a farmer visits the center with the daily proceeds from the sale of his produce, the small value transactions go directly into a bank account.

Since we have digitized the transactions and have built analytics on top of them, we can also build credit scores using a person's transaction history. With that information, we can bring in the banks saying — 'Hey these farmers are highly bankable, in fact, they are earning money twice a day. They sell milk twice a day. Why don't you lend to them?' This is an example of how we are using technology to link livelihoods of the poor to the financial mainstream. Next, we are trying to scale this project across geographies.

Thirdly, at a broader level, we are looking at the agricultural space. We have put in place an end-to-end agri-business platform, where farmers get together, farm collectively, and sell produce to member farmers through cashless transactions. We enable these outlets where farmers can transact digitally and the money goes directly to their bank accounts. Again, this is an attempt to generate activity in their bank accounts and link it to their livelihoods.

We need to look at financial inclusion in a larger way, i.e., choosing technology to get into the livelihood of people, understanding what they do, and then getting deeper into that. CDFI is trying to bridge this gap.

Could you walk us through some case studies of how technology can work today to deliver financial inclusion solutions in practice?

Let me take two quick examples.

The first is related to one of our research studies, which looked at the huge migrant population in the country. According to government estimates, there are close to nine million people who migrate from rural to urban India every year. Let's use the example of a poor man coming from his village to the city. He wants to send money back home to his wife/family every 15-30 days. How these migrants send money home?

Interestingly, we found that due to the Jan Dhan Yojana program, almost all households in rural areas have a bank account. However, close to a third of those who have migrated, do not have a bank account in the city. This is an interesting situation, as the actual wage earner does not have a bank account. We also found that even in the age of mobile and bank accounts, a significant proportion of the money, probably around 40%, is still sent home through friends and relatives.

We studied the typical amounts people send, how much they were willing to pay in order to make this process easier, and the kind of interesting products that can be created. A small proportion of users have smartphones, can we build them an app? This is an example of a ready opportunity. Very conservatively, we estimate the opportunity of domestic remittances inside India at around ₹67,000 crores (or Rs670 billion).

Some research is needed to identify the opportunity and to verify facts and figures, before reaching out to formal financial institutions and asking them to do more than

what they are already doing. It's not as if they are unaware of the problem, but it is just that they are not doing enough, given the huge opportunity.

The second example is around what I spoke about earlier. Let's look at a farmer selling milk in a small village. How do we ensure this milk is collected and the transaction is digitized? And, can we in a very low-cost way (via mobile phone or computer) tie it up to technology to weigh the milk, test the fat content etc.

By doing this, you can record not only how much milk the farmer is selling daily, but also ensure all payments go directly to his bank account. The model needs to be low-cost, as each transaction is small in value, and it should be able to collect sufficient information to drive a credit-scoring algorithm. This score can then be used to provide loans at a village-level before subsequently involving banks.

When we talk about technology, it's usually about FinTech, algorithms, credit-scoring etc. We do not need these big pieces, just very simple, rugged technology. In order for it to work well, it needs to be done at low cost and with the people in the village. Connectivity is not great in most places we work do not so there needs to be mechanisms where things still work without connectivity.

In India, lot of the enabling factors are government or public sector driven (e.g. building digital identity). What is holding back the private sector?

We need to distinguish between what banks are doing on ground versus what they talk about — there is a huge difference. The advantage of public-sector banks is there is at least a drive from the government to reach out to their people, as they have a larger social objective. We find many private sector banks are less interested in this.

Getting banks interested in these opportunities is a hurdle, across all kinds of products, including payments or trade-related. Banks have to start thinking that opportunities exist beyond just the affluent.

When we wanted to start an agri-platform in rural areas, it took a lot of effort to get even a point-of-sale (POS) machine. Banks asked us all sorts of questions, including the kind of verification, who the person was, how much we would transact every day, etc. The process was initiated with a lot of doubt about the kind of transactions. If this were a large shop in the city with three POS machines and they were looking to add a fourth one, there would be no problem. However, if these are shops in rural areas, the difficulty increase.

Part of the problem could be a general air of overall caution. The other could be that people are hesitant as it requires thinking beyond 'business as usual' and starting something new. There will be some risks. However, people have to start experimenting and strengthening this model.

Expanding Digital Payments in Mexico

An Interview with Miguel Diaz, General Director of Payment Systems & Market Infrastructure at Banco de México



Miguel Diaz
General Director of Payment Systems &
Market Infrastructure
Banco de México

Could you share with us the level of financial inclusion (or banking penetration) in Mexico?

Let me start with a disclaimer that numbers for Mexico will vary, depending on the definition of financial inclusion you follow. There is a difference between financial inclusion and opening or having a bank account.

There are roughly 37.5 million people with a bank account in Mexico out of a total population of 129 million. However, if you look closer at the available data, many of these use the account only once or twice a month to access/withdraw their salary. This is not real financial inclusion in my opinion. I believe, true financial inclusion constitutes people having access to various financial products and services like electronic payments, credit facilities, debt and credit cards, insurance etc.

We have nearly 100 million debit cards, but very few POS machines, which makes these cards practically useless. People withdraw cash for day-to-day expenses and it is considered normal if no one accepts card in a community. This is not financial inclusion. Arguably, people do not perceive the cost of cash and therefore prefer to use it. They believe cash is very efficient, since one does not charge any fees or commission for their use.

However, Mexican people are also tech-savvy and we have around 80 million smartphones in Mexico. The Central Bank of Mexico has rolled out a RTGS system and it allows banks to open accounts with only a smartphone, so that customers do not have to visit a physical branch to submit documents.

If you look the trends in the last few years, Mexico has picked up on bank accounts and the numbers are very similar to Brazil. Albeit the size of both countries is very different, the receptiveness of Mexico is similar to Brazil. Usage of non-financial digital services is very high and we are moving towards financial digital services too.

Mexico recently launched a new digital payments system (CoDi) that went live in September 2019. Can you explain how CoDi works? How is the take-up so far?

CoDi is a way to make payments face-to-face through QR codes, or using an e-commerce platform. It is a simple functionality for digital payments, where people can send/receive payments using just a message to anyone in the financial system. In the case of big retailers, they can send a message to the customer, requesting payment. CoDi also helps simplify the new account opening processes as banks can now do KYC using various identity documents.

Notably, Mexico started with 38 million bank accounts, but 70-80 million smartphones. Every Mexican should be able to send/receive money and electronic means can play an important role in financial inclusion. The more pertinent question relates to how we generate product and incentivize people to pay electronically.

CoDi started as a pilot in April 2019. On October 1, we initiated a measure that banks with more than 3,000 accounts have to allow for digital payments if initiated by their customers. There is no obligation to pay but an obligation to receive.

Almost 1.2 million users have been on-boarded in just two months and it is estimated that nearly 1.8 million transactions will be completed on CoDi in 2019 since its October launch. We also expect to on-board around 10 million users on CoDi by September 2020.

Looking at the environment, we might be able to reach that number even earlier. There is a lot of investment going on and there are many potential participants in the system, to generate different business cases that CoDi can support.

Could you please tell us the benefits of going digital and the likely adoption drivers? How has the preliminary response been? What are the risks (e.g., fraud)? Could we also discuss any specific metrics to quantify how it is doing in Mexico? How do you measure the reach or success?

This is not about CoDi. CoDi is like a grain of salt in the global level of digitization. Notably, it did generate a shockwave, which allowed people to think about how they can do things better. Payments is just the first step in financial inclusion, especially in a world where credit and insurance is available.

With this, financial institutions can provide better financial services and more targeted financial services. The objective is to allow people to generate transaction histories and show them to the financial system. To see them as subject of credit and some other financial services that is useful for them.

For example, stationary stores typically do good business during school seasons. If you know this pattern, you can provide an algorithm to provide savings products to the shop owners at the end of the school season. Further, if you extrapolate this, most businesses have seasonal patterns and using proper algorithms, one can target people, not only for financial inclusion, but also for the broader economy.

We have to start with what people have now. Life currently is based on cash. If you ask mom-and-pop storeowners why they don't accept card payments, they often cite (1) higher costs they incur to receive their own money (in digital they typically get 96.5/97 cents for every dollar a customer pays); and (2) the money is credited after 24-48 hours, resulting in a liquidity crunch for the merchant. As a result, card payments are a loss as well as a liquidity problem.

In CoDi, we have tried to do away with these problems. In order to compete with cash, we introduced instant settlements, wherein a shop owner can clear his dues instantly. We are trying to extract all the benefits that people see in cash. In the future, we expect some people will start using this system and banks will provide services to these customer. Eventually, people will surely start to see the benefit.

Impact Investing

As a part of Citi's 9th Annual FinTech Conference, we hosted an interesting and informative panel on "Why Financial Inclusion is a Good Investment Opportunity". Panelists Esteban Altschul (COO, Accion International) and Jacob Haar (Founder, Community Investment Management) spoke eloquently on the merits and benefits of Impact Investing as a part of this panel discussion. We have incorporated many of their comments and views into this section.

The Global Impact Investing Network (GIIN) defines impact investments as investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return. Financial inclusion is partly about providing access to financial products and services to the billions of individuals and millions of small- and medium-sized businesses that do not have it. But as Jacob Haar indicated during the above mentioned discussion, "Access is not enough. (As it relates to the provided financial products) are they quality products that ultimately, customers can build a better financial health with? Is there a productive use of this capital? Whether that's to buy inventory if you're a business or send your children to school or deal with a health emergency or fix your vehicle, so you can get to work."

The goal is to support (via direct investments or debt capital) business ideas that can help improve or transform the experience of the underserved customer. The end-customer could be an individual or a business. The underlying motivation of the business providing such a product or service may be to make a profit by charging what they view to be an appropriate economic rent — we note that the definition of what constitutes "appropriate" is the source of some controversy such that not every proponent of financial inclusion is necessarily a supporter of impact investing.

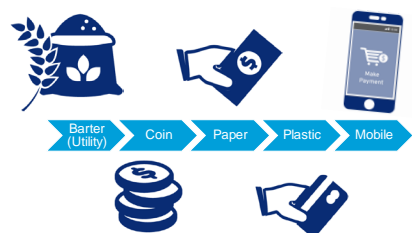
Among those who believe in impact investing as a force for social good, there seems to be an understanding that aligning financial and social goals can have a powerful benefit. Esteban Altschul provided a historical perspective when he noted that as recently as ~15 years ago "the biggest problem the industry faced was capital. Nobody was putting a dime of equity into microfinance institutions because you were going to lose your money." Some points to consider in terms of understanding impact investing.

- There are often flavors of socially responsible investing that are best expressed in terms of what not to invest in, e.g., defense companies, tobacco, companies that might own facilities responsible for extensive environmental pollution, etc. impact investing as a term emerged around 2007 and the focus was positive, i.e., seeking out opportunities to invest in rather than restricting what not to invest in.
- A notable characteristic is that these are not incidental investments, they are intentional. In other words, the investor is committed to measuring and reporting the social and environmental impact from their investments.
- While the market has grown dramatically — the GIIN said in April 2019 that ~\$502 billion was explicitly targeted for impact investing across the assets under management of more than ~1300 investors. This includes investors who direct a portion (i.e., not all) of their investments towards impact investing. The list of investors is diverse and includes family offices, foundations, banks, pension funds, as well as regular asset managers. Most of the investors are relatively small (median size \$29 million) and the vast majority are headquartered in N. America or W. Europe.
- A wide range of asset classes are used — private equity, venture investing, public equity, fixed income, etc. Some of the investments can be concessionary, in other words, they overweight the social impact by accepting a below-market return. When an investor does seek a market return, it depends on the asset class and the underlying risk characteristics (see next point).
- What constitutes a market return? Esteban Altschul provided us some flavor... "(we have) no confidentiality disclosures for the exits we've done... on the microfinance financial institution side, our average returns are in the high teens... so 16% to 18%. And that's what we look for. And this is over 40 investments in more than 30 countries." He also noted a different set of expectations for Accion's VC fund. "(Given the FinTech focus) we expect some catastrophic failures, as you do in early-stage pre-series A or series A and up to series B. But then we expect a number of home runs to more than make up.... overall, we're looking at 15% to 20% returns. And we've been able to have that track record over the last two decades." Meanwhile, Jacob Haar was restricted from mentioning specific outcomes but indicated that "all our funds are privately placed, so I can't get into too much detail. Being a debt fund, you would expect high single-digit type returns for what you invest in. And we're commensurate with the market."

Sizing the Problem

The Evolution of Banking

Figure 4. The Evolution of Money



Source: Citi Research

Money has moved over the past 5,000 years from clay ledgers, metal coins, and paper bills to plastic cards that are ever-present in the markets of Europe and North America today. The oldest form of money transfer or trade known was done on a barter basis with the exchange of utilities or services. As human civilization developed, a wide variety of tokens were used as 'money'. Precious metals or other commodities, in weighed quantities rather than counted amounts, were a common form of money in ancient times.

Paper money was invented by the Chinese, initially starting as promissory notes during the Tang Dynasty (618-907 AD) and evolving to state-issued paper money during the Song Dynasty (~1100s), which was backed by silver or gold. Plastic cards began to emerge in the U.S. in the late 1940s and proliferated in the U.S. and Europe in the following decades (credit cards in the U.S., debit cards in Europe, both in the U.K.). But in Asia and so-called emerging markets, countries appear to be leapfrogging to mobile money in the past decade.

Partly linked with money, the structure of global banking has also evolved over centuries. The oldest form of banking developed within the society — people would borrow money from family or friends — and eventually temples that were seen as the center of "trust". There are records from Ancient Babylon, Egypt, Greece and Rome that suggest temples loaned money out, in addition to keeping them safe. The fact that most temples were also the financial centers of their cities is the major reason that they were ransacked during wars.

The goldsmiths started doing banking in medieval Europe. Since it was the business of the goldsmith to deal with valuable commodities, the goldsmith would build strong vaults to protect their inventory. The residents of the town wanted to rent the goldsmiths' secure vault in order to keep their money safe. The goldsmith therefore started taking deposits and this was in a way the birth of modern banking.

Later in the centuries, the development of international trade demanded slightly more complex banking facilities, such as the lending of money, its exchange in foreign trade and travel, and the safe-keeping of deposits.

The roots of modern day banking — as we know it — can be traced to the seventeenth century — with the emergence of unregulated banks. There were no license requirements. Anyone who wanted to could set up a bank. This era continued until the 1600s. By then, banking had become big business and led to the emergence of some of the powerful banking families (e.g. Rothschild, Medici).

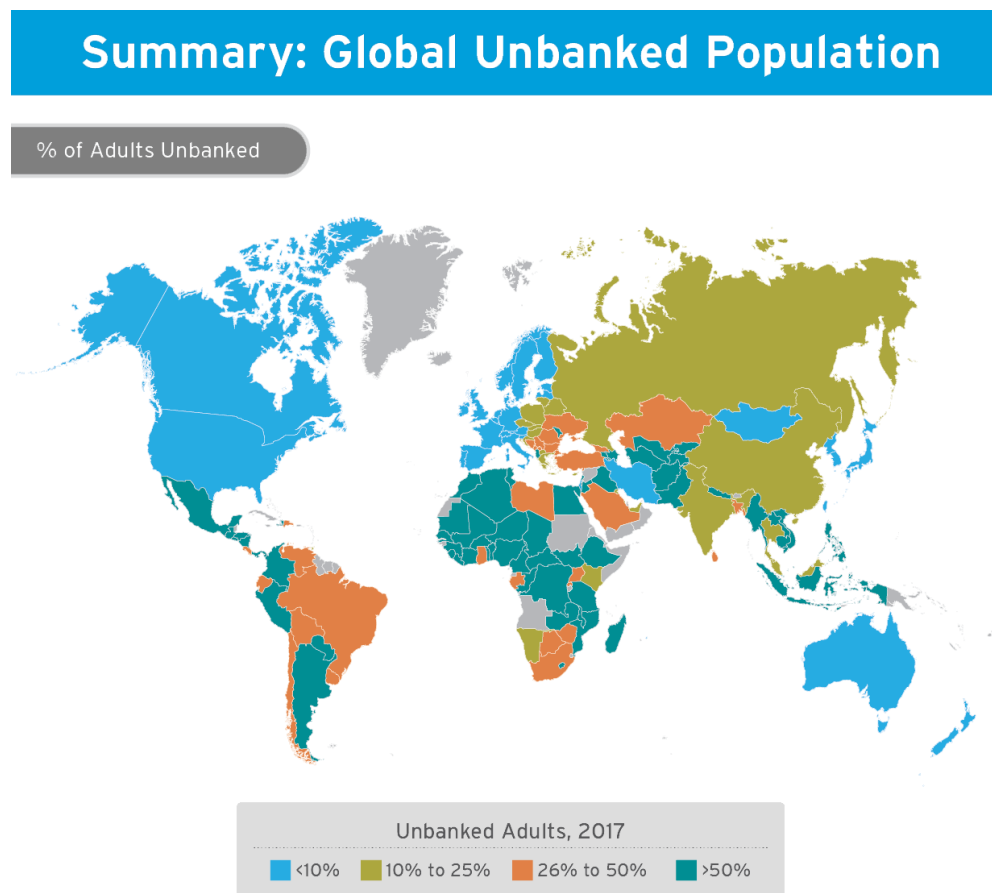
Central banks were introduced over the 1700s to bring in regulation to the banking world. Sveriges Riksbank or the central bank of Sweden is amongst the oldest central bank — established in 1668. This was followed by the Bank of England in 1694. However, central banks are still largely a 20th Century phenomenon. Many countries did not have a central bank till the past hundred years.

Universal Banking Access Still a Dream

Despite the presence of banking for several centuries now, universal access to banking remains a pipedream with 1.7 billion adults still unbanked.

Despite the existence of modern banking for several centuries now, universal access to banking remains a pipe dream. Based on World Bank 2017 data, 31% of the world's adults (or 1.7 billion adults) still do not have access to a formal financial institution account — and this unbanked population remains spread across the world. While most developed markets have been able to successfully move the majority of their unbanked population into the banking net, the progress has been slow in several emerging and frontier markets.

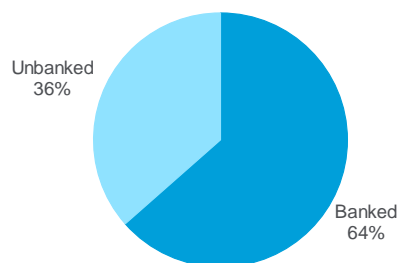
Figure 5. Global Unbanked Population Spread



Source: Citi Research, World Bank

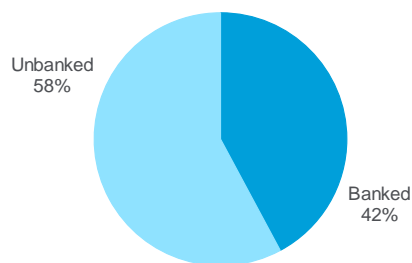
In the case of Asia, almost a third of the adult population remained unbanked as of 2017. The percent of the unbanked adults (as a percent of the total population mix) was significantly higher in the case of Africa and Latin America. In these markets, 50-60% of the population still do not have a bank account.

Figure 6. Asia Banked vs. Unbanked



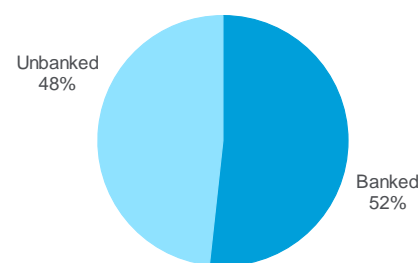
Source: World Bank, Citi Research

Figure 7. Africa Banked vs. Unbanked



Source: World Bank, Citi Research

Figure 8. Latin America Banked vs. Unbanked

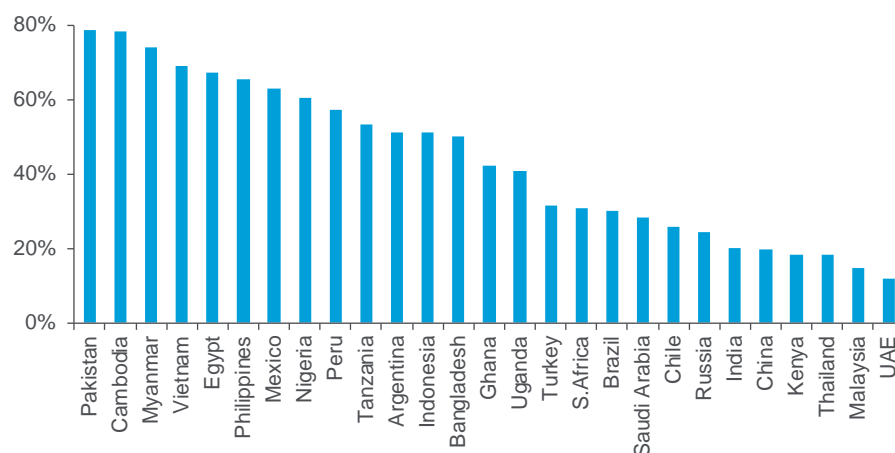


Source: World Bank, Citi Research

Pakistan, Myanmar, and Cambodia has 70-80% of their adult population without a bank account in 2017

On a country-wide basis, Pakistan, Myanmar, and Cambodia led our sample of 27 major EM/FM markets in terms of percent of adults that remained unbanked by 2017. These markets had 70-80% of their population still without a bank account. At the other end, based on our sample of 27 markets, UAE and Malaysia had been relatively successful in increasing banking account penetration — with 10% or lower population without banking access.

Figure 9. Percent of Adults Without a Bank Account (2017)

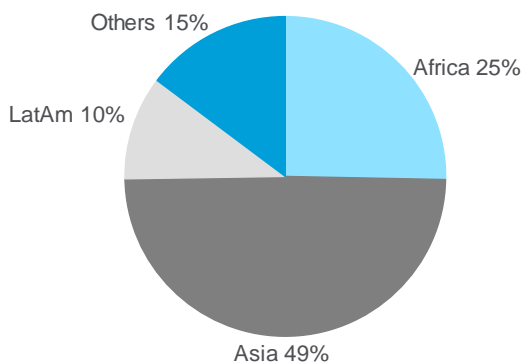


Source: World Bank

49% of the global unbanked adults are in Asia alone; with China (12%) and India (11%) having almost a quarter of the world's unbanked adults

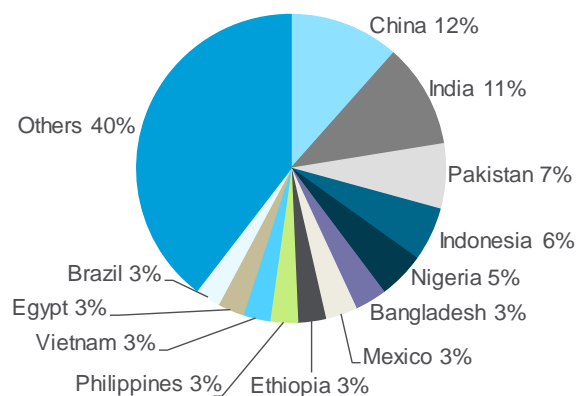
Looking closely at the spread of total global unbanked population, we note that Asia still comprises the largest percent of the unbanked adult population globally. Forty-nine percent of the global unbanked adults reside in Asia followed by Africa (25%). The two markets with the largest global population — China and India — had 12% and 11% of the global unbanked adults, respectively. The top ten markets (based on the presence of unbanked population within the global mix) together comprised 60% of the global unbanked population pool at the end of 2017.

Figure 10. Region Split of Global Unbanked Adults (2017)



Source: World Bank, CIA, Citi Research

Figure 11. Country Split of Global Unbanked Adults (2017)



Source: World Bank, CIA, Citi Research

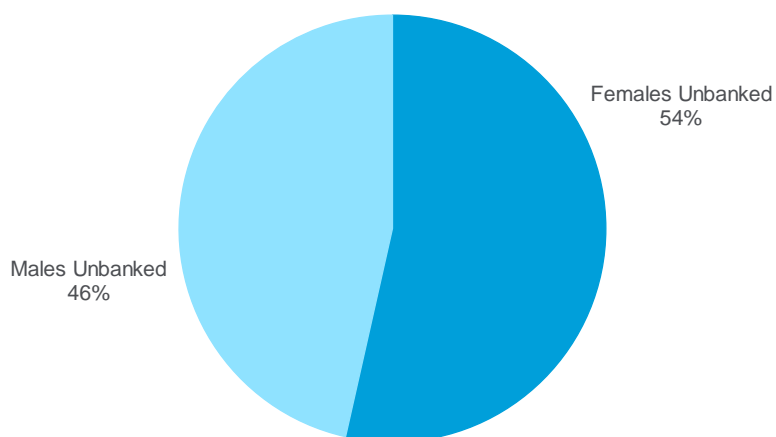
Banking Penetration Varies by Gender

Not surprisingly, female participation in formal global banking is lower than male participation. Amongst the total global unbanked adults, 46% are males while 54% are females.

Difference between unbanked female and male adults is highest in Bangladesh and Turkey (29ppt), Pakistan (28ppt) and Nigeria (24ppt)

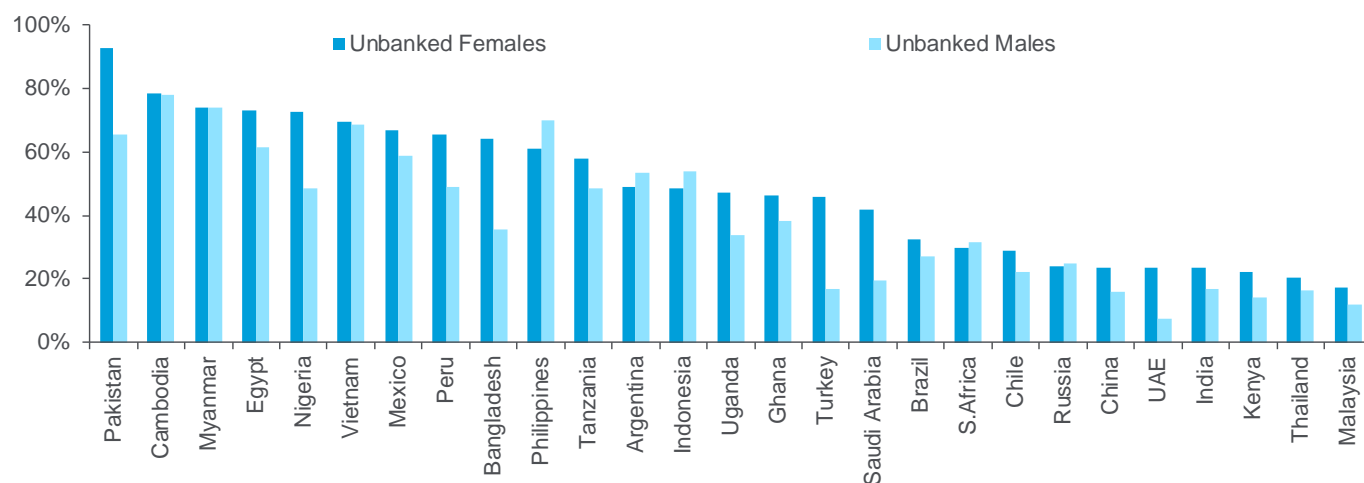
If we dig deeper into the EM/FM markets of focus for this report, Figure 13 shows that almost in all countries (except for Philippines) unbanked females are higher than unbanked males. The variance — i.e., percent of unbanked female vs. percent of unbanked male — is the highest in Bangladesh and Turkey (29ppt), Pakistan (28ppt), and Nigeria (24ppt). We believe female populations need to be at the center of any strategy formulated to bridge the financial inclusion gap.

Figure 12. Gender Split of World's Unbanked Adults (2017)



Source: World Bank, Citi Research

Figure 13. Percent of Unbanked Females vs. Percent of Unbanked Males (2017)



Source: Citi Research, World Bank

Beyond Bank Accounts: Access to Credit, Savings, Insurance

While we highlight access to a formal bank account as a major indicator of financial inclusion success, in this section of the report, we look at other forms of financial services like borrowing, savings products, or insurance to understand the differences across markets in access to these instruments.

In 27 key markets we focus on in this report, on average 75% of the borrowing was from sources other than financial institution

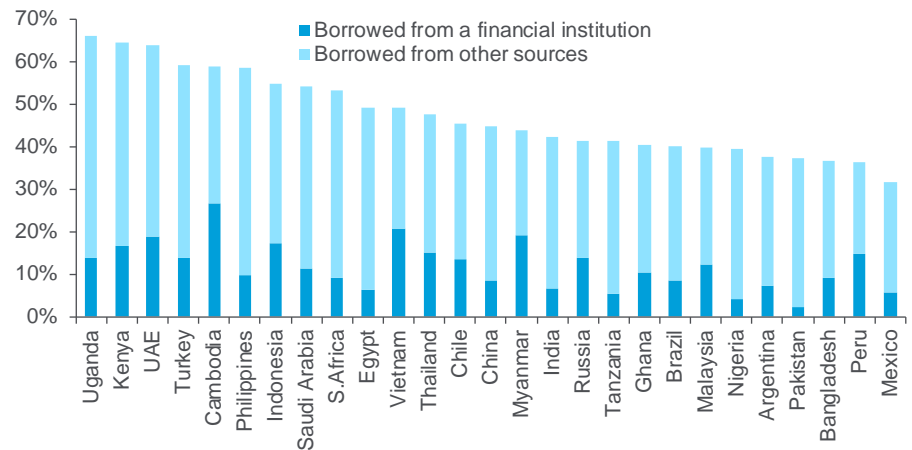
Limited formal access to credit has been a sore point for several sections of society in major emerging and frontier markets. Mexico, Peru, and Bangladesh lag the most amongst markets in our sample on access to credit facilities — either through a formal financial institution or otherwise.

To put things into context, amongst the people who had access to credit (and hence have borrowed any money), based on 2017 World Bank Findex Data, on average only 25% of borrowing in the 27 key markets we focus on was through financial institutions. The remaining 75% came from family sources, informal money lenders, or other sources (e.g., borrowing clubs etc.).

Markets with biggest % of non-bank borrowing are Pakistan (94%), Nigeria (90%), Egypt and Tanzania (both 87%)

Markets that had the biggest percent of non-bank borrowing were Pakistan (94%), Nigeria (90%), Egypt, and Tanzania (both 87%). At the other end, in this sample, markets with the lowest percent of non-bank borrowing were Cambodia (55%), Myanmar (56%), and Peru (60%) — albeit still >50%.

Figure 14. Split of Borrowing in the Last Year (% of People, Age 15+, 2017)

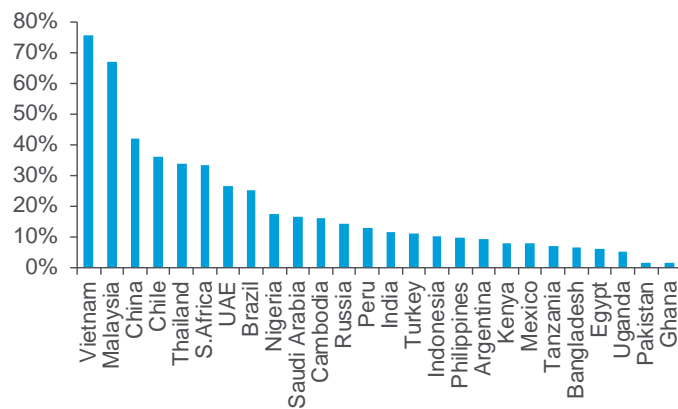


Source: World Bank Findex Data 2017, Citi Research

Retail bank lending penetration is lowest in Pakistan, Ghana, and Uganda and highest in Malaysia

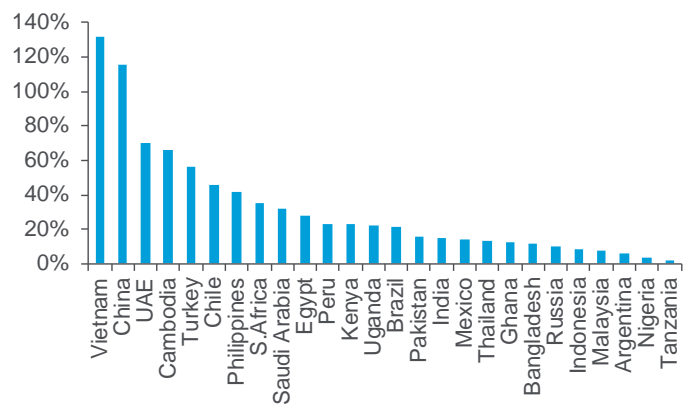
We also monitor the loans/GDP percentage of our sample global markets to understand this trend — especially the retail loan/GDP percentage. Based on our analysis, retail bank lending penetration remains lowest in Pakistan, Ghana, and Uganda. Amongst our sample markets, retail lending penetration is high for Malaysia. Markets that rank relatively high on corporate credit penetration include Vietnam, China, and UAE, while Argentina, Nigeria, and Tanzania appear to lag on this metric.

Figure 15. Retail Loans as % of GDP



Source: Haver, Citi Research

Figure 16. Corporate Loans as % of GDP



Source: Haver, Citi Research

Financial Inclusion and MSMEs

Small and Medium Enterprises (SMEs) represent about 90% of businesses and more than 50% of employment worldwide, according to recent World Bank data. Further, SMEs contribute up to 40% of national income (GDP) in emerging economies. If one includes Micro-enterprises – many of whom might be essentially gig economy workers – these numbers generally tend to be higher.

Definitions of what constitutes a small business or micro-enterprise vary by country and tracking organization (e.g., IMF or SME Finance Forum) but the conclusions tend to be similar. MSMEs are responsible for a majority of global employment, regardless of geography, and generally constitute the vast majority of employers.

Considering how important regular employment is to promote financial inclusion, MSMEs (Micro, Small and Medium Enterprises) have a multi-pronged impact.

1. Smaller firms do tend to grow faster and have an impact on employment growth. Companies need funding to grow and MSMEs are no exception. However, according to the SME Finance Forum, a global gap of over \$5 trillion (U.S.) exists between the financing needs of MSMEs and the institution-based financing available to them.
2. There is clearly a knock-on effect on economic growth from the above-mentioned funding gap (suboptimal investments, including in headcount).
3. These firms tend to be in rural jurisdictions and they tend to be service-oriented companies, which means there is likely both an access issue and often a shortage of good SME solutions.

Closing the SME financial inclusion gap with respect to emerging market and developing economies would help increase annual economic growth. Gains in labor productivity and employment further help GDP growth. Relaxing constraints on SME financing further helps. Again, there are knock-on effects to consider.

1. Technology-enabled financial inclusion for SMEs can result in greater transparency and hence higher tax revenues for the government. In other words, there can be a benefit to fiscal policy.
2. Better data about the health of MSMEs can help increase access to formal lending among MSMEs. Interest rates associated with formal lending practices tend to be lower, which helps the health and success of the MSMEs but also can help formalize the role of the interest rate in an economy (particularly true for smaller economies where market structures can tend to be under-developed) and potentially help monetary authorities to control inflation.

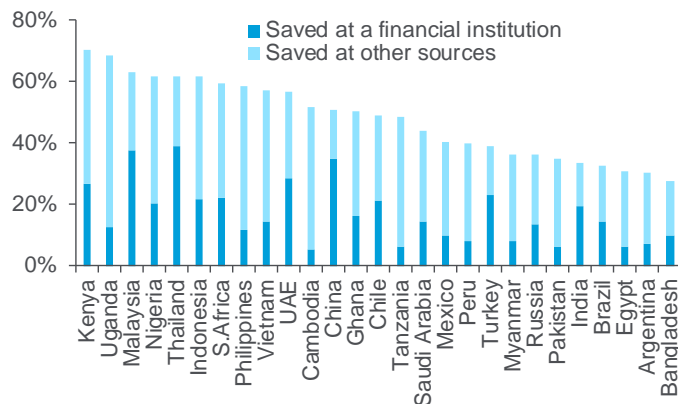
There are tertiary factors to consider as well. These are contributors to the development and success of the MSME ecosystem – presumably if this ecosystem grows, there should be a benefit that accrues to its participants, both employers and employees.

1. An IMF study recently pointed out that when a country has a higher level of public sector investment or if state-owned enterprises are recipients of extensive government support, it tends to dampen the entrepreneurial impulse by crowding out the provision of credit to private enterprises in general.
2. Lack of proper infrastructure and tools to collect and analyze credit information can affect the level of collateral requirements and borrowing costs. Many SMEs tend to be services-oriented rather than based in an industrial economy (i.e., there tends to be limited access to assets that can be used as collateral).
3. Having legal and institutional frameworks for property rights and contract enforcement is important for financing (i.e., identifying collateral and/or cash flow sources) and risk mitigation. There are gender-specific factors to consider because not every country has gender-neutral property rights (and enforcement).

Similar to the data on access to credit, we notice that Bangladesh, Argentina, and Egypt lagged in terms of access to savings products — with Kenya, Uganda, and Malaysia leading. Again, looking at the split of people who had access to savings products, we realize that formal financial savings products form a small percentage of savings done in most markets.

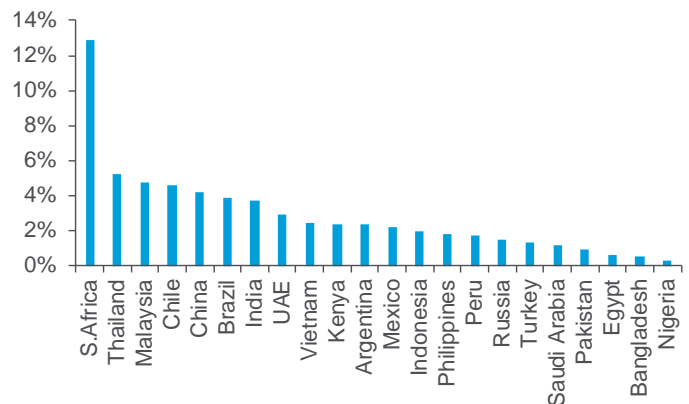
In terms of access to insurance products, we see South Africa leads on insurance premiums as a percent of GDP — but this metric is much lower in the case of Nigeria, Bangladesh, Egypt, and Pakistan — potentially pointing to limited penetration of such products in these markets.

Figure 17. Split of Savings Trends Over the Past Year (% Age 15+)



Source: World Bank Findex, Citi Research

Figure 18. Insurance Penetration: Premiums as % of GDP



Note: Excludes 5/27 of our focus markets as no data is available.

Source: Sigma SwissRe, Citi Research

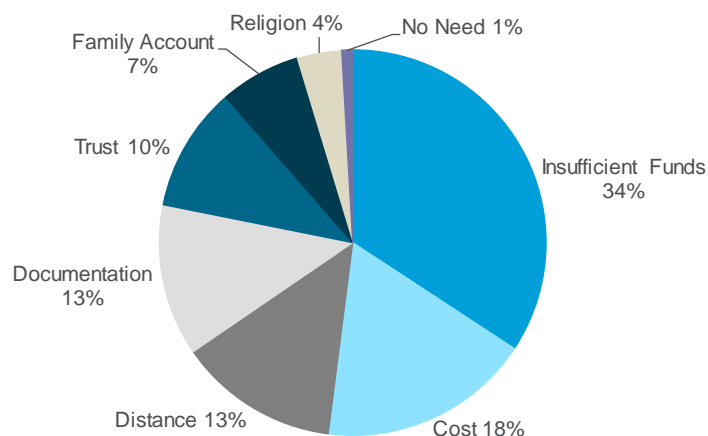
Issues with Traditional Banking Models

Traditional banking usually involves a few caveats such as maintaining minimum level of funds (infamously known as minimum balance), tedious paperwork and documentation before even opening an account (i.e., KYC requirements), cost of banking including annual maintenance charges, balance enquiry charges, withdrawal charges, money transfer charges etc., and also factors like proximity of a bank branch and existing account of family members amongst others.

34% of unbanked adults claimed to have no money to maintain the minimum balance required to open a bank account followed by cost of banking (18%), distance (13%), documentation process (13%) and trust (10%)

World Bank 2017 data suggests various reasons people have quoted for not having a formal bank account. Based on our analysis, using 27 EM and FM countries' averages, 34% of unbanked adults claimed to have no money to maintain the minimum balance required to open a bank account. This could be for variety of reason such as hand-to-mouth living conditions which requires keeping most money in cash to pay for daily basic living needs. Cost of banking (18%), distance (13%), documentation process (13%), and trust (10%) were the other reasons for not having an account.

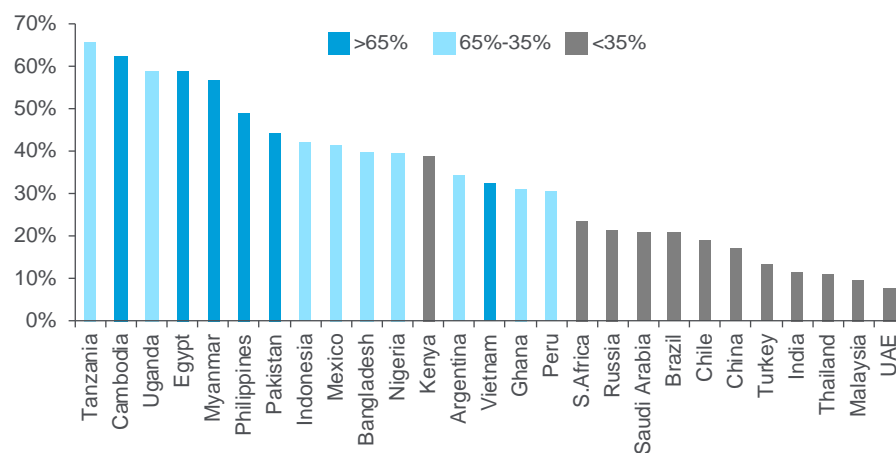
Figure 19. % Split by Region for Not Having a Financial Institution Account (Age 15+)



Note: Computed using average of Uganda, Egypt, Kenya, Tanzania, Myanmar, Cambodia, Indonesia, Philippines, KSA (Saudi Arabia), Nigeria, Bangladesh, China, Argentina, Brazil, Chile, Mexico, Thailand, S. Africa, India, Russia, Pakistan, Malaysia, Ghana, UAE, Peru, Vietnam, Turkey
Source: World Bank, Citi Research

Looking at country-wise data of adults above the age of 15 years without a bank account, we see a high percentage of adults reporting insufficient funds to maintain the minimum balances required with traditional banks as their primary reason for not having an account. Tanzania (53% adults unbanked), Cambodia (78% adults unbanked), and Uganda (41% adults unbanked) led the pack with the highest percentage of adults quoting maintaining minimum balances as the hindrance in owning bank accounts, while UAE and Malaysia had the smallest percentage of adults citing the same.

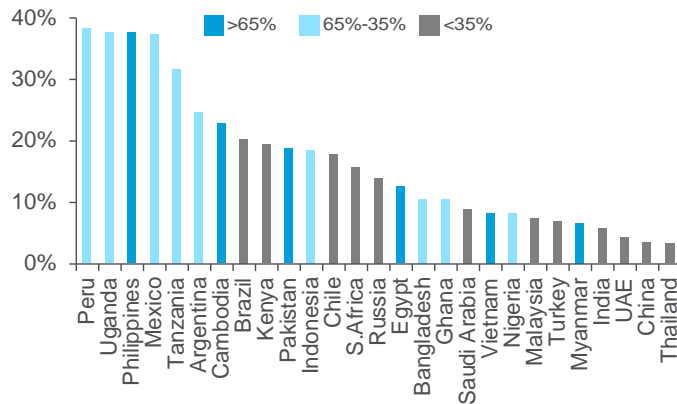
Figure 20. % of Unbanked Adults Without an Account Reporting Insufficient Funds as Barrier (Age, 15+)



Source: World Bank, Citi Research

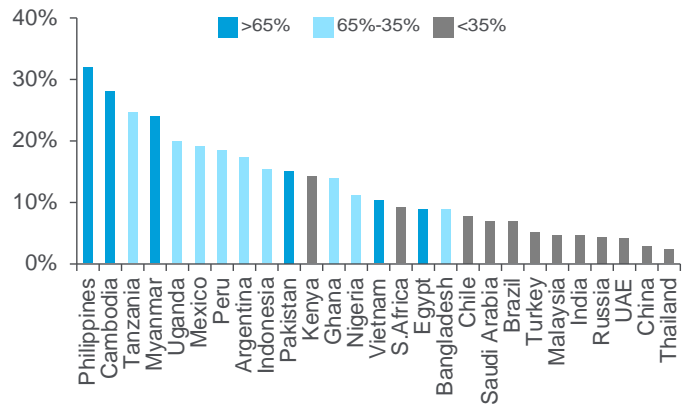
Similarly, the charts below give the country-wise split of unbanked adults citing cost and documentation as reasons for not having a bank account.

Figure 21. % of Unbanked Adults Reporting Cost as Barrier (Age 15+)



Source: World Bank, Citi Research

Figure 22. % of Unbanked Adults Reporting Documentation as Barrier (Age 15+)



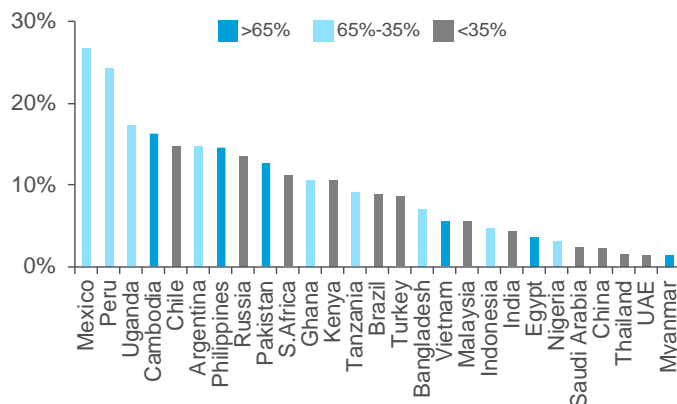
Source: World Bank, Citi Research

4 out of top 6 markets citing lack of trust to open an account were LatAm countries Mexico (27%), Peru (24%), Argentina (15%), and Chile (16%)

In addition to minimum balance requirements, banking costs, and documentation lack of trust (in the financial institution/system) to open an account was evident in LatAm countries as four out of the top six markets rated trust as a barrier to open an account include Mexico (27%), Peru (24%), Argentina (15%), and Chile (15%). These markets registered unbanked adult populations (%) in 2017 of 63%, 57%, 51%, and 26%, respectively.

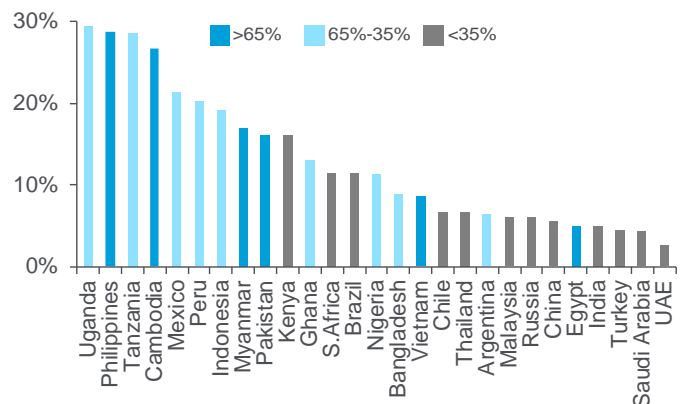
Finally, distance to a bank branch is also a factor that has hindered growth in traditional banking. Based on our analysis, while about 41% of adults in Uganda remain unbanked, 30% found distance as barrier to owning a bank account. Other countries where distance was considered as a barrier are Philippines (29%), Tanzania (29%), and Cambodia (27%).

Figure 23. % of Unbanked Adults Reporting Trust as Barrier (Age 15+)



Source: World Bank, Citi Research

Figure 24. % of Unbanked Adults Reporting Distance as Barrier (Age 15+)



Source: World Bank, Citi Research

The traditional infrastructure of ATMs and branches is basically prohibitively expensive in some markets. Traditional financial services infrastructure has been relatively limited in its rollout, catering essentially to major urban centers and salaried individuals — where these banks see stronger commercial return to their branch investments.

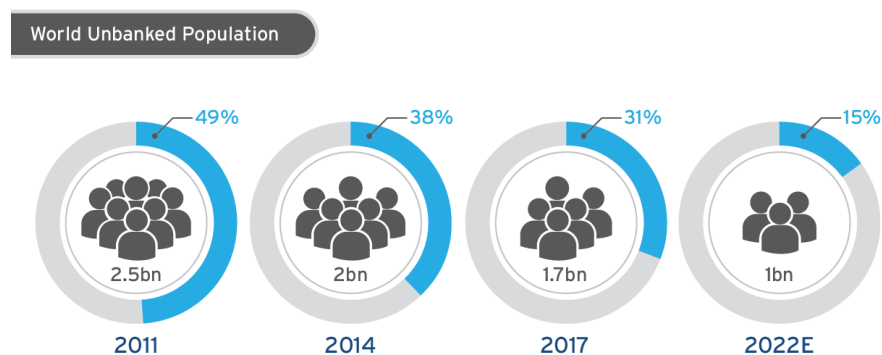
One and a Half Billion Adults Join the Financial System

Looking at the headline numbers, we are living in a period of unprecedented growth in financial inclusion. A decade ago, in 2011, half the world's adult population were unbanked. By end 2022, we expect around 15% of global adults — or 1 billion adults — to remain unbanked. So in just over a decade, we could have witnessed almost 1.5 billion adults become incorporated into the formal financial system.

Between 2011 and 2014, the percent of unbanked adult population globally declined from 49% to 38% — registering an 11 percentage point (ppt) decline over a three year period or ~3ppt per year on average. Similarly, between 2014 and 2017, the percentage of unbanked adult population globally further declined from 38% to 31% — a 7ppt decline over these years or 2ppt per year decline on average. So between 2011 and 2017, the unbanked adult population declined 2-3ppt per year.

Building on the historical trends over 2011-17 (i.e., on average 2-3ppt decline annually), we estimate an underlying 10ppt additional reduction in the percent of unbanked adults over 2017-22 (5-years multiplied with 2ppt per year reduction). On top of this, we think that the latest advancements and usage of technologies to address the financial inclusion gap could further accelerate the decline in the percent of unbanked over the next five years (we estimate this impact to be 5-6ppt over 2017-22).

Figure 27. World Unbanked Population Trends



Source: World Bank, Citi Research Estimates

Unique Identity Drives Financial Inclusion

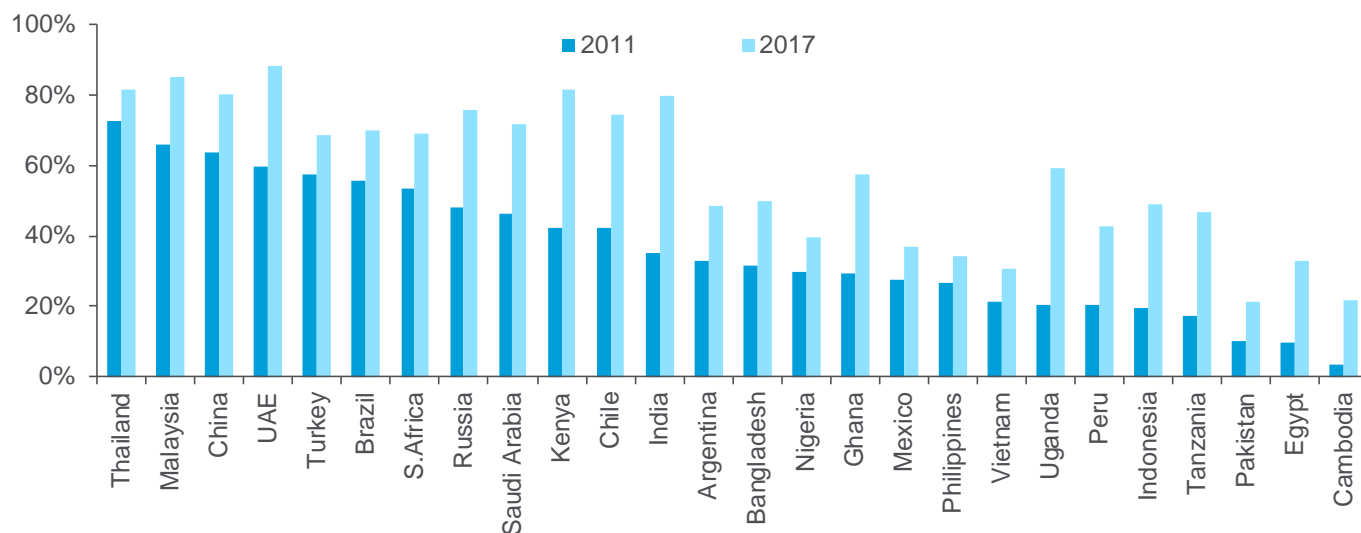
EM/FM Regulators Focus on Banking the Unbanked

According to the World Bank Findex database, in 2011, ~75% of key EM/FM markets had <50% bank account penetration

Less than a decade ago, an overview of global financial access conditions painted a bleak picture. According to the World Bank Findex database, in 2011, almost 75% of key EM/FM markets had <50% banking account penetration. Cambodia was lowest in our sample with a mere 4% bank account penetration in 2011. Egypt and Pakistan were laggards as well — with only 10% of population holding a bank account.

These metrics have improved drastically over the past decade. Many central banks, governments and regulators have pushed to bring in as many people under a basic financial ecosystem as possible — by utilizing newer banking models (e.g., mobile money, micro lending etc.), and also by looking at ways to optimize traditional banking channels.

Figure 28. % of Adults with Bank Accounts (Age 15+, 2011 & 2017)



Source: World Bank Findex Database

Some regulators have championed the growth of no-frill banking accounts with limited fees and minimum (or zero) balance requirements

Some regulators have pushed banks to open newer accounts or championed the growth of no-frill banking accounts with limited fees and minimum (or zero) balance requirements, while other have taken measures to see that credit reaches the sections of society that would usually be overlooked by traditional banks.

Most recently, there has been a push towards digital banking and promoting non-cash payment technologies, which has been supported by regulators through more relaxed KYC requirements and lower cost transfers.

Figure 29. Examples of Regulatory Initiatives Towards Financial Inclusion

Brazil

- No-fee checking account for lower income group since 2007, Brazilian central bank has allowed financial institutions/FinTechs to offer digital payment accounts, a simpler version of a checking account, with significantly lower regulatory demands

- Banks have requirements to direct 65% of savings deposits to mortgage and agricultural lending, to foster activity on those sectors, and reduce housing deficit

Colombia

- Ongoing discussions in Congress to adopt lower fees to bank for lower income population (although most of them have been dropped in the last revision of the draft law)

Egypt

- Lenders were ordered to increase lending to SMEs to 20% of their total loan portfolios by the end of 2020

- Central bank subsidized rates for SME lending at ultra-low levels: ranging from 5% for small businesses to 12% for working capital loans for mid-sized firms

India

- Jan Dhan Yojana — a no-frill savings bank account. Priority sector lending target for banks at 40% of adjusted net bank credit

- Central bank issued licenses for new small finance banks with priority sector lending target of 75% and requirement of opening at least 25% of its branches in unbanked rural centers

Indonesia

- KYC approval for new bank accounts without requiring face-to-face meeting (can be via mobile camera)

- Introduction of Branchless Banking (LAKU Pandai)

- Government supported loans for low-income borrowers that otherwise do not qualify for bank loans as Kredit Usaha Rakyat (KUR). In 2015, KUR was amended with government cutting lending rate to 12% (from 20%); Integrated Wallet/QR Code for State Owned Banks along with State Owned Telecom Companies

Mexico

- Government and bank associations recently agreed to launch a no-fee checking account for the lower income population

Pakistan

- Tax incentives were announced in the 2019 Budget for banks doing incremental lending to SMEs

- 1LINK launched Pakistan's first domestic payment scheme — PayPak in April, 2016, with an aim to provide efficient, low cost and robust payment solution.

Philippines

- National ID system to open bank accounts as until recently ID proofs were varied and unreliable and often rejected by established banks

- Branch-lite units allowed to service rural areas which are unbanked and underserved; Cash Agents authorized to onboard clients in low income areas

- Risk-based KYC: Reduced KYC requirements for low-risk customers and allowing technology to be used instead of face-to-face requirements

Kingdom of Saudi Arabia

- Kafala program — to boost SME sector lending — Mortgage is subsidized in several ways by the regulators to boost mortgage penetration in the Kingdom

- National payments switch, mada, promotes low-cost card-based payment

Thailand

- Thai government initiated a low fee payment system called PromptPay back in 2016. It gained some traction, but not much (around 30-40% signups)

- Groundbreaking development happened when one of the four largest banks (and the largest retail bank), Siam Commercial Bank, decided to double down by waiving all fees on digital channels in March 2018

Source: Citi Research

Unique Identity Forms Backbone of Several Initiatives

The lack of any identity documents, especially for the poor, has been a major reason for financial exclusion. And hence some regulators, governments, and bank associations (e.g., Nigeria) embarked on a journey to get every individual into a unique identity net, often biometrics based, and using these unique identities to further drive the cause of financial inclusion.

There are several advantages of unique identity systems — and it extends beyond the usual realm of any other identity systems (e.g., passports, driving license etc.). The table below highlights the key benefits of such unique identity systems.

Figure 30. Advantages of Unique Identity Systems

Replaces Multiple ID Documents	Forms the basic document for KYC for availing government/non-government services
Improves Government Process Efficiency	Plugs leakages in the traditional processes
Usage Extends Beyond Banking	Both financial & non-financial usage (e.g., generating driving license, passport etc.)
Supports Policy Development	Precise data on population helps governments frame better policies
Tax Compliance	Identity-based financial transactions support better tax compliance

Source: Citi Research

Amongst the several unique identity systems that have come up in the EM/FM regions under our analysis, the Aadhaar card system in India — that already covers 1.24 billion people (or ~99% India's population) — has been a major success. Other similar systems are present in Pakistan and Nigeria — but penetration of unique IDs is much lower in these cases. The Philippines recently started a new ID system and targets to cover its entire population by 2025.

Figure 31. Comparison of National ID Schemes in Key EMs/FMs

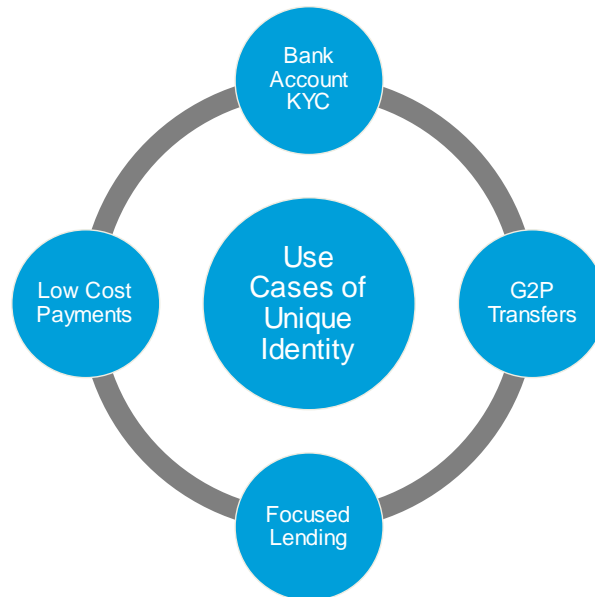
Country	Nigeria	India	Pakistan	Philippines
National ID Schemes	Bank Verification Number (BVN)	Aadhaar	Smart National Identity Card (SNIC)	Philippine Identification System ID (PhilSys ID)
Launch Date	February 14, 2014	January 28, 2009	January 10, 2012	September 1, 2019
People Enrolled	38.8mn (20%)	1.243bn (99%)	89.5mn by 2020 (45%)	26mn by 2020 (25%) 106mn by 2025 (100%)
Captures	Biometric details including fingerprint of all 10 fingers & facial image	Biometric details including fingerprint of all 10 fingers, iris scan & facial image	Biometric details including fingerprint of all 10 fingers & facial image	Biometric details including fingerprint of all 10 fingers, iris scan & facial image
Goals & Benefits	Serves the purpose of KYC, will ensure safe banking & prevent any fraudulent transactions or activities	Strategic policy tool for social & financial inclusion, public sector delivery reforms, can be used as a permanent Financial Address & facilitates financial inclusion of the underprivileged/weaker sections of the society & is therefore a tool of distributive justice and equality. The Aadhaar program is by far the largest biometrics based identification system in the world	De facto necessity for meaningful civic life in Pakistan: required for voting, opening & operating bank account, obtaining passport, driving license, SIM card, setting up business, carrying out major financial transaction etc.	Serves as single national identification card for easy Government Transfer Programs for the eligible citizens and permanent ID proof for general population.
Previous Versions	Overwrites Nigerian uniform bank account number system (NUBAN) launched in 2010. NUBAN identifies a customer within his or her own bank, while the BVN scheme will identify a customer across the entire banking industry.	N/A	Replaces Computerised National Identity Card (CNIC) launched in 2000.	N/A

Source: Citi Research, Government Disclosures

Multiple Use Cases in Financial Services

We focus on current and potential use cases for unique identity-based systems in terms of bridging the financial inclusion gap. While they primarily serve as an essential KYC function to gain access to banking services, when linked with bank accounts, they can also serve as a conduit to process G2P payments and access credit. In some cases, where the target population does not have a mobile phone, these unique identities can even form a means for digital payments.

Figure 32. Use Cases for Unique Identities in Financial Inclusion



Source: Citi Research

Key Use Case: Unique Identity as the KYC Document

Minimum balance requirements, costs of banking and related documentation together account for ~2/3rd of the concerns of people who remain unbanked

Minimum balance requirements, cost of opening and maintaining a bank account and related documentation together accounted for almost two-thirds of the concerns of people who remain unbanked. National identity-based systems directly or indirectly addresses several of these issues.

Most importantly, they form an important KYC document during the account opening process. In several cases, the regulators are pushing banking accounts with minimal KYC for people who have such national identities. Their usage in G2P payments (covered later as a separate use case) tries to address the other major concerns highlighted above — including lack of funds to maintain minimum balance requirements.

Several EM/FM regulators have been pushing banks to open bank accounts for those who remain unbanked. In several cases, the idea is extended to no-frill bank accounts. These no-frill accounts tend to have low or zero minimum balance requirements and also cost of annual maintenance is low to nil. KYC required to open such accounts is also relaxed in some cases. National identity can play a key role in addressing these issues around KYC.

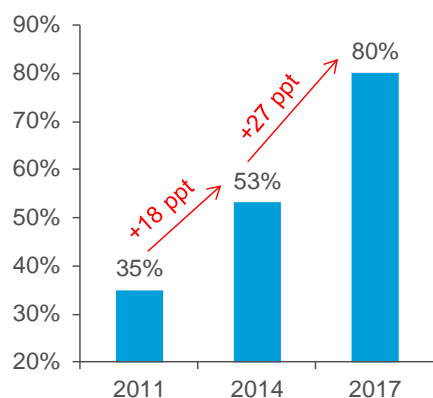
Below we compare three examples of similar non-frill accounts that have been pushed in the EM/FM markets:

Figure 33. Comparison of No-Frill Bank Accounts

	India	Brazil	Mexico
Name of the Scheme/Initiative	Jan Dhan Yojana	Financial Citizenship Program	Mexico Savings & Credit Consolidation & Financial Inclusion Project
Year Started	2005	2013	2012
Unbanked Population (at the time_	47%	32%	61%
Goals Achieved	80-82% adults with bank account	86.5% adults with bank account	1.3mn people included financially
Tiered/Relaxed KYC norms	Yes	Yes	Yes
Personal Presence to Open Account	Yes	Yes	No
Minimum Balance Requirement	None	Yes	None
Maximum Balance Permitted	Rs. 50,000/ US\$ 700		US\$ 370
Transaction Limit	Rs. 100,000 or US\$ 1400/year		US\$ 280/month
Withdrawal Limit	Rs. 10,000 or US\$ 150 /month		

Source: World Bank, Central Bank of Brazil, PATMIR, Citi Research

Figure 34. % of Adults in India that Own a Basic Transaction Account



Source: Citi Research

Case Study: Aadhaar Drives Financial Inclusion in India

The percent of people in India with bank accounts stood at a mere 53% in 2014, but jumped to 80% by 2017. This leap has largely been driven by the identity (Aadhaar) based government push of no-frill bank accounts over the past five years under the Jan Dhan Yojana (JDY) program.

JAM remains at the heart of the Indian regulator's effort towards financial inclusion. Over the past few years, the Indian government has been using the JAM framework (J – Jan Dhan no-frill bank accounts, A – Aadhaar National ID Card and M – mobile) to increase digitization and also push financial inclusion. While the unbanked population has been provided with Jan Dhan accounts, biometric-based national ID cards (called Aadhaar) have been issued at a phenomenal pace – and seeded with Jan Dhan accounts. To add to this, mobile connectivity and penetration has been successfully used to make sure the government initiatives towards digitization and financial inclusion reach all sections of the society.

Figure 35. India's Digital Framework — JAM

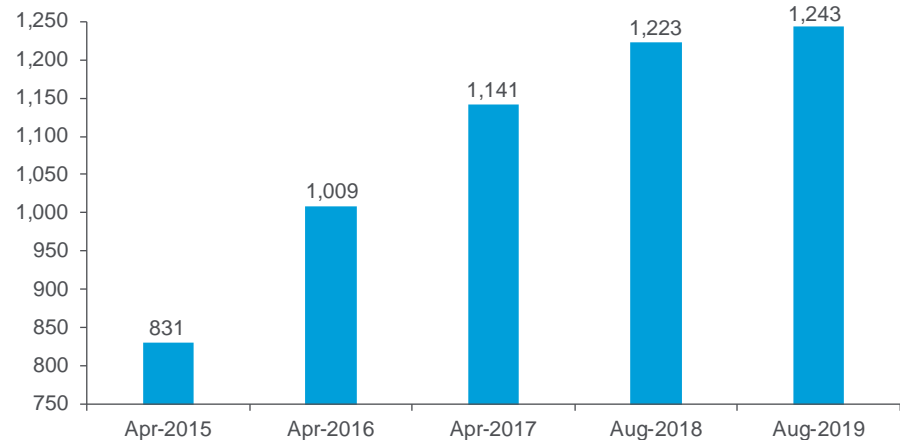
<ul style="list-style-type: none"> • Biometric identification • 1.23 billion enrollments 	<ul style="list-style-type: none"> • 361mn No-frill bank accounts opened • Close to INR 1 trillion in deposits 	<ul style="list-style-type: none"> • Overall mobile subscriber density of 90.05% (Apr-19) • Urban – 160.13%, Rural – 57.27% (Apr-19)
AADHAR	JAN DHAN YOJANA	MOBILE

Source: JAM, Citi Research

At the end of July 2019, there were 1.23 billion Aadhaar cards in India.

As already mentioned, the increased adoption of Aadhaar has formed the backbone of the government push towards financial inclusion in India. At the end of July 2019, there were 1.23 billion Aadhaar cards in India — covering almost the entire population. The percent of Jan Dhan accounts that are linked with Aadhaar have also increased over the years. Last reported, over 80% of JDY accounts were seeded with Aadhaar.

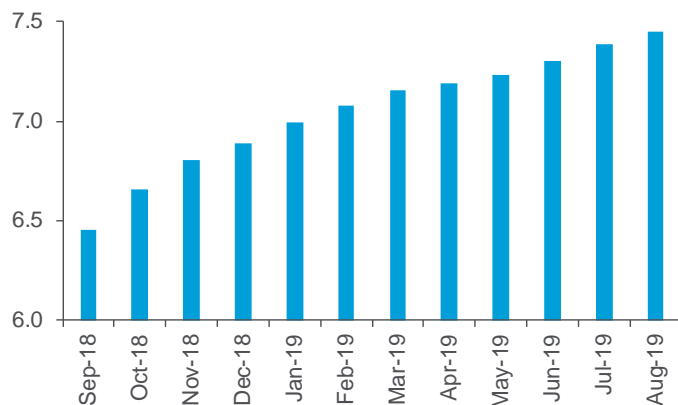
Figure 36. Number of Aadhaar Cards (in millions)



Source: UIDAI

One of the key usages of Aadhaar has been towards e-KYC (during financial transactions — e.g., opening a new bank account or starting a mutual fund), and authentication (in transactions like filing income tax returns, passport validation etc.). As we note from the available trends, both e-KYC and authentication of Aadhaar have grown rapidly in the recent past — signifying its increased usage.

Figure 37. e-KYC Trends of Aadhaar Card, (in billions)



Source: UIDAI, Citi Research

Figure 38. Authentication Trends of Aadhaar Card, (in billions)

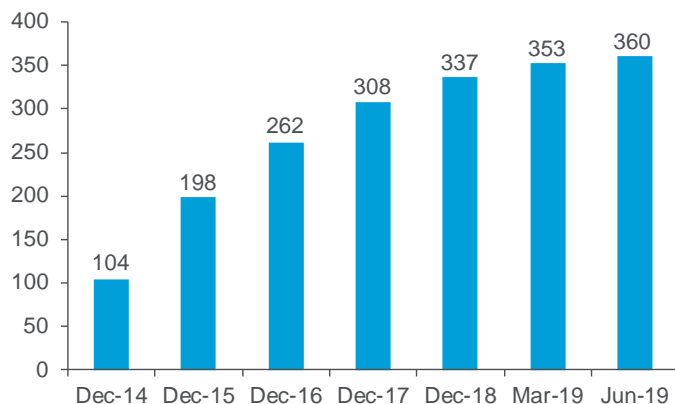


Source: UIDAI, Citi Research

Another important usage of Aadhaar has been to support the opening of low-frill Jan Dhan accounts. The Jan Dhan accounts were primarily targeted at the lower income population segments that were unbanked due to difficulty sourcing documentation or maintaining minimum balance requirements. Jan Dhan accounts are zero minimum balance accounts with simplified KYC requirements — opening these accounts only require the Aadhaar card. Within their first year of launch (2014) they quickly grew to around 100 million accounts, while by June 2019 there were over 350 million accounts.

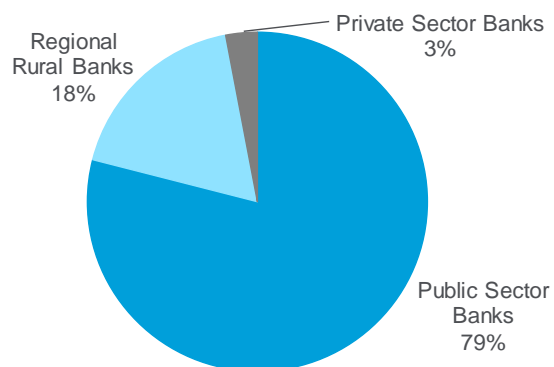
Not surprisingly, the majority (~80%) of such Jan Dhan accounts have been opened by government-owned public sector banks, and regional rural banks accounted for ~18% of the balance of Jan Dhan accounts at June 2019.

Figure 39. Number of Jan Dhan Accounts (in millions)



Source: Government of India (PMJDY)

Figure 40. Jan Dhan Account Split Amongst Bank (June 2019)

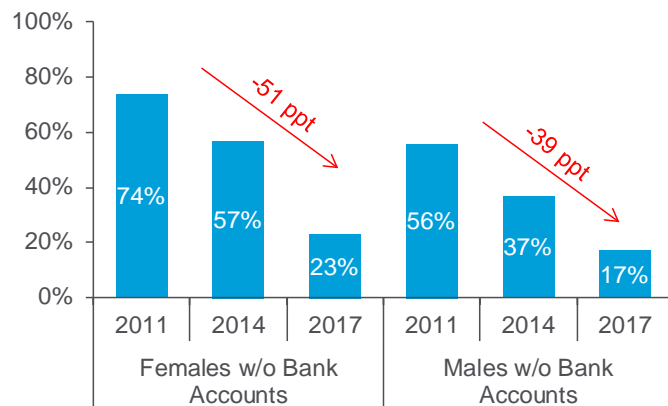


Source: Government of India (PMJDY)

The PMJDY has helped reduce unbanked female population to 23% in 2017 from 74% in 2011, and the gender gap in bank ownership to 5% (from 18%)

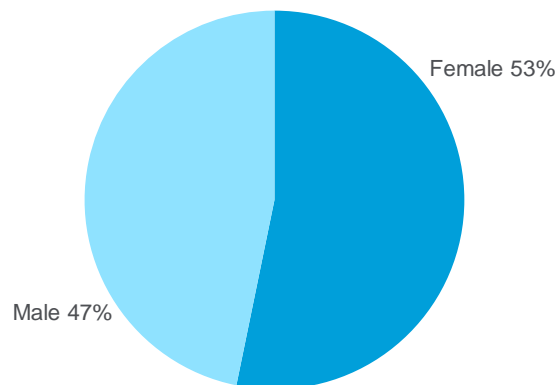
Jan Dhan is also narrowing the financial access gender gap. Only a decade ago, 74% of adult Indian women did not have an account with a formal financial institution. However, per World Bank data, this has dropped by 51ppt in the last seven years to only 23%, as rural and urban females have been brought into formal banking system thanks to the PMJDY. If we look at the July 2019 gender data of Jan Dhan accounts, 53% of the accounts are opened by females, and this has translated into the bank account ownership gender gap falling from 18% in 2011 to just 5% in 2017.

Figure 41. Adults Without a Bank Account, (Age 15+)



Source: World Bank, Citi Research

Figure 42. Gender Split – Jan Dhan Accounts



Source: Government of India (PMJDY)

The average balances in the JDY accounts have grown from \$7 in 2014 to \$39 by Jun 2019

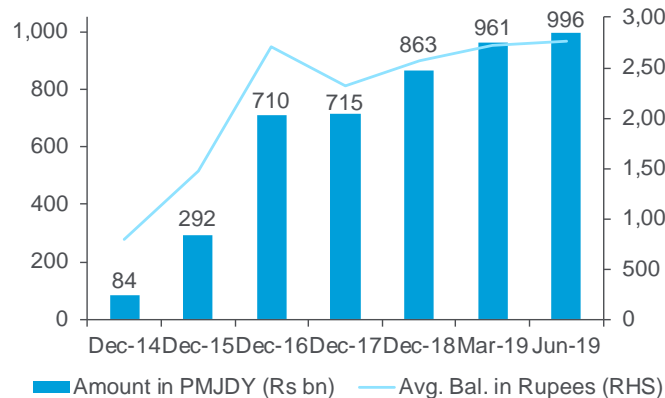
In addition to the basic no-frill account, the government has provided accident insurance coverage to people holding JDY accounts (initially Rs0.1m, later enhanced to Rs0.2m). The JDY accounts also provide an overdraft facility (up to Rs10k) — however take-up of such products remains at a nascent stage.

One of the main criticisms of the JDY accounts has been the dormant nature of a sizable portion of these accounts — with zero balances. The government has responded by pushing G2P payments (including social security transfers) into these accounts to increase usage levels.

The percent of empty JDY accounts have declined from 77% in Sep 2014 to <15% by Mar 2019

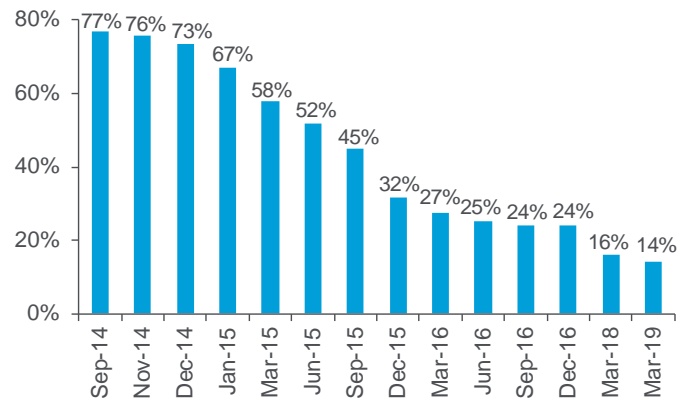
Clearly, this approach has yielded some success. The average balances in the JDY accounts has grown from ~Rs500 (\$7) in 2014 to ₹2,700 (\$39) by June 2019. Furthermore the percent of empty JDY accounts has declined from 77% in September 2014 to <15% by March 2019. Nonetheless, we do see areas where the government could push other banking products (e.g., credit) to the Jan Dhan account holders.

Figure 43. Total Amount Deposited & Avg Balance in PMJDY



Source: Government of India (PMJDY), Citi Research

Figure 44. Empty Account as % of Total Accounts



Source: Government of India (PMJDY), Citi Research

Facilitating Other Financial Services/Access

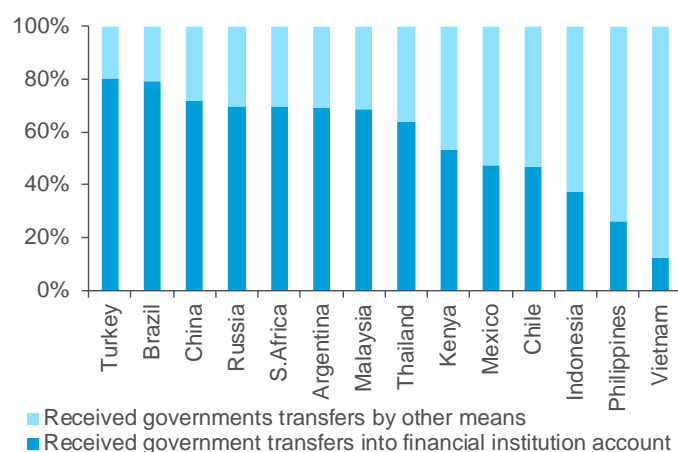
Unique Identity Serves as the Backbone for G2P Payments

Governments (and regulators) in several EMs/FMs have been working to ensure that the benefits of social policies — especially the ones that involve direct cash reimbursements to the weakest sections of the society — reach them without any leakages. This in turn helps overcome the funds gap that several people face when opening a bank account. In certain cases, governments are trying to ensure that money for the poor is credited directly into the bank accounts — that are in turn linked to unique IDs. Unique identities can play a vital role in making this process efficient.

Vietnam, Philippines, Indonesia, and Chile lead amongst markets that have a substantial part of government transfers still not being paid into bank accounts

Based on data by the World Bank (amongst the countries that disclose this information), most markets had 30% or more of government transfers now being paid directly into bank accounts. Vietnam, Philippines, Indonesia, and Chile lead amongst markets that have a substantial part of government transfers still not being paid into bank accounts. In some of these cases, e.g., Pakistan, there has been a push towards paying some of the government transfers into the mobile money accounts. The percent of people who received government payments in cash is led by Vietnam, Philippines, and Pakistan. Turkey and Malaysia report to have the lowest percentage of cash G2P payments.

Figure 45. Split of Gov't Transfer (% Transfer Recipients, Age 15+, 2017)



Source: World Bank

Figure 46. Received G2P in Cash (% Transfer Recipient, Age 15+, 2017)



Note: Estimates for India & Pakistan calculated as cash transfers as % of total social transfer

Source: World Bank

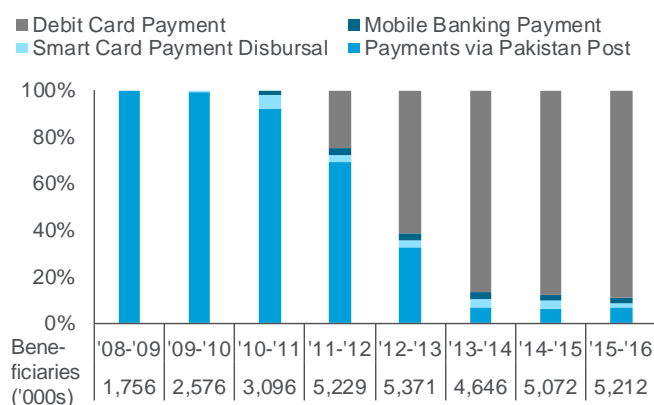
Case Study: Identity Helps Growth of BISP in Pakistan

The Benazir Income Support Programme (BISP) launched in July 2008 is Pakistan's unconditional cash transfer (UCT) program to reduce poverty. It is the largest social cash transfer program run in the country with nearly \$900 million transferred to almost 5.4 million beneficiaries in 2016. (Note: the latest data available on BISP is till 2016 only.)

BISP's aim was to target women, issuing UCT of PKR 1,000 per month and later raised the limit to PKR 1,500 per month to mitigate the effects of high inflation on the poor and very poor sections of the population. When the program first began, door-to-door delivery of cash was made by Pakistan post and delivery mechanisms have evolved since. But what remained common throughout the life of the program is how integral was it to have a national ID.

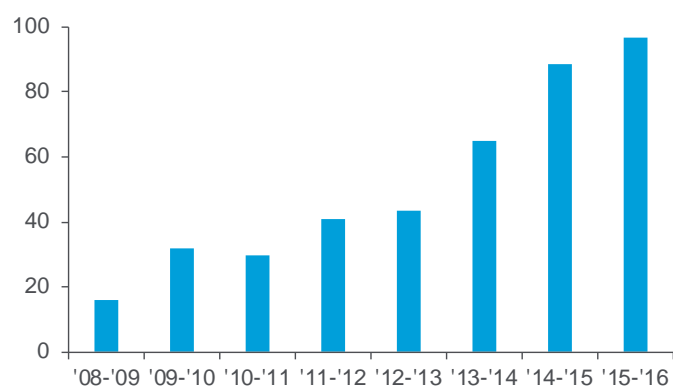
Any woman eligible to receive UCT under BISP, apart from being under a certain income earning level, has to have a Computerized National Identity Card (CNIC). Gradually when payment mechanism moved up from door-to-door physical delivery to Smart Card or Mobile Banking, the national ID or the CNIC became mandatory to collect cash.

Figure 47. Number of BISP Beneficiaries by Different Channels



Source: BISP, Citi Research

Figure 48. Amt Disbursed Under BISP by Different Channels (PKR bn)



Source: BISP, Citi Research

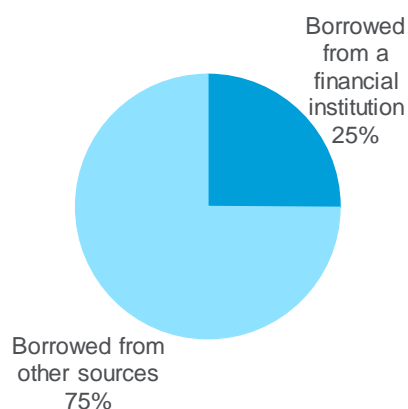
Unique Identity Coupled with Regulatory Push Can Help Channel Credit to the Underserved

The financial sector tends to underserve whole population segments and pass on socially beneficial projects because of information asymmetries, lack of collateral and higher transaction costs. For a bank/financial institution, the credit risk involved in such lending is usually higher and hence they may wish to limit exposures to such accounts. Banks may prefer larger clients as economies of scale decrease transaction costs and increase the risk adjusted return.

We believe that key sectors of the economy that would fall under these underserved criteria would include: agriculture, SMEs, women borrowers, and students. A key goal for regulators in several of these markets is to get such financially excluded borrowers into the formal financial value chain by pushing banks and financial institutions to increase lending to these markets.

State-directed priority sector lending is not a new phenomenon in emerging and frontier markets. The regulatory push in this direction can take one of several forms including: (1) outright lending quotas for banks; (2) cheaper central bank funding, tax relief, or lower capital requirements for loans to specific sectors; and (3) state guarantees on certain loans. Some examples are highlighted below:

Figure 49. Split of Borrowing (% of People, Age 15+)



Note: Aggregate based on 27 markets under study
Source: World Bank Findex Data 2017, Citi Research

Figure 50. Regulatory Examples to Push Credit to Specific Sectors of the Economy

Loan Quotas

Example: India

- 40% (of credit) Priority Sector Lending to specific industries (incl. focus on agriculture)

Deposit Quotas

Example: Brazil

- 65% of savings deposits to mortgage and agricultural lending

Interest Rate Caps

Example: Egypt

- Central bank provided cheap funding to banks to lend at below market levels ranging from 5% for SMEs to 12% for working capital loans for mid-sized firms

Tax Benefits

Example: Pakistan

- Tax incentives for banks doing incremental lending to SMEs

State Guarantee

Example: Saudi Arabia

- Guarantee to boost lending to SME sectors (special treatment to women entrepreneurs) under the Kafalah program

Source: Citi Research

Unique identity-based credit disbursement can make the process efficient, targeted to the underserved and at the same time lower the cost of credit for borrowers by providing a basis for making proper credit assessments. In addition to supporting financial inclusion, these steps also help encourage entrepreneurship culture in the economy and (in some cases) diversify the economy away from specific industries (as in Saudi Arabia by boosting SME lending).

Case Study: National Identity Helps Saudis Borrow under the Kafalah Program

Kafalah, the SME Financing Guarantee Program's main goal is to raise the GDP contribution of SMEs in KSA from 20% in 2016 to 35% by 2030

Kafalah Program can help support start-ups and women entrepreneurs

Saudi Arabia has been pursuing its Kafalah Program to boost the SME sector in the Kingdom. Through this program, Saudi banks offer credit facilities and simultaneously the government-supported Kafalah Program issues a guarantee to the bank. National identity card is amongst the key documents needed to ascertain the level of guarantee under the aforesaid program.

The basic objectives of the Kafalah Program include enabling SMEs to obtain the necessary funding in line with Shariah principles in order to develop and expand their activities and encourage banks to finance the business activities of small and medium-sized enterprises. Two specific areas where we feel the Kafalah Program can strongly support financial inclusion are:

- **Support for Start-Ups:** The program has a specialized product for start-ups — offering extended support to help meet their funding needs during early growth.
- **Support for Women Entrepreneurs/Female Employment:** The program offers preferential benefits to enterprises that are at least 50% owned by women. Note that as per the World Bank Findex data 2017, only 4% of women borrowed money for business/farm purposes vs. 22% males in Saudi Arabia.

Key features of the program are listed on the chart below:

Figure 51. Kafalah Program – Key Features

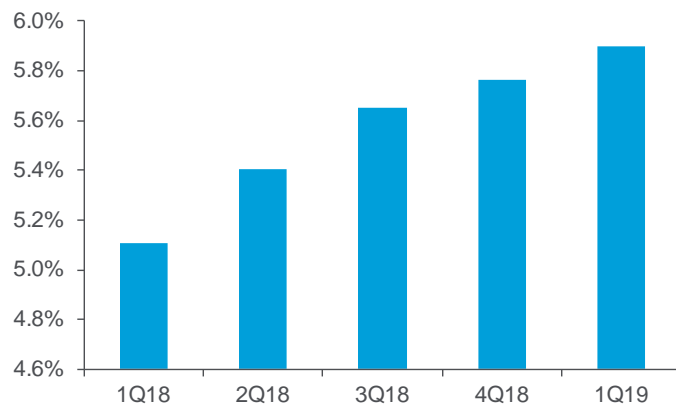
Topic	Details
Industries Supported	Activities that serve the agriculture sector Education Tourism & Leisure Constructions Commerce Transport & Communications Service Activity Medical Facilities Pharmacies
Funding Provided For	Purchasing fixed assets and/or funding the working capital
Kafalah Maximum Limit	Maximum amount of guarantee: The Kafalah Program offers guarantees of different limits according to the size of the entity guaranteed as follows: - SAR 2.5mn as max amount for each entity of small and micro-sized enterprises - SAR 15mn as max amount for medium-sized enterprises - SAR 8mn as max amount for group of entities of small and micro-sized enterprises
Kafalah Duration	The Kafalah is issued to be compatible with the funding duration and with a term up to 7 years (the term of Kafalah may be extended upon the request of the bank).

Source: Company Reports, Citi Research

SME sector lending balance by banks was about SAR100 billion by end 2018. Share of SMEs in the overall bank lending mix grew +1% to 6% in 2018

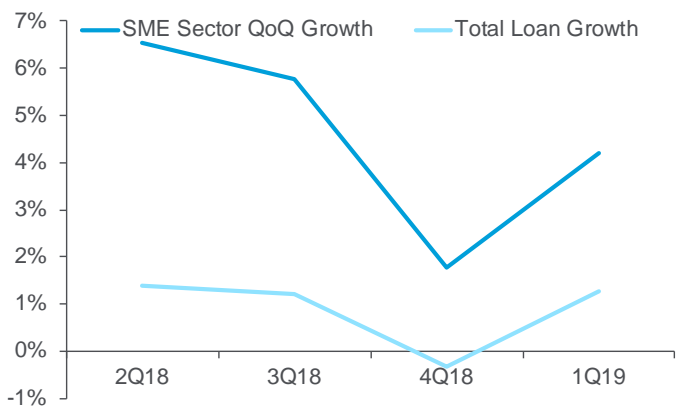
We have seen significant push by the banks to grow the SME book — on the back of the program. While historical data on this front is not available, SME sector lending balance by banks was about SAR100 billion by end 2018 — 4% of which went to micro enterprises, 22% to small entities and the remaining 74% to medium-sized companies. At the same time, the share of SMEs in the overall bank lending mix has grown from 5% at the start of 2018 to 6% by end 2018.

Figure 52. SME Sector Loans as % of Bank Credit Facilities



Note: SME includes on and off balance sheet facilities
Source: SAMA

Figure 53. SME vs. Total Sector Loan Growth (%)



Note: SME includes on and off balance sheet facilities
Source: SAMA

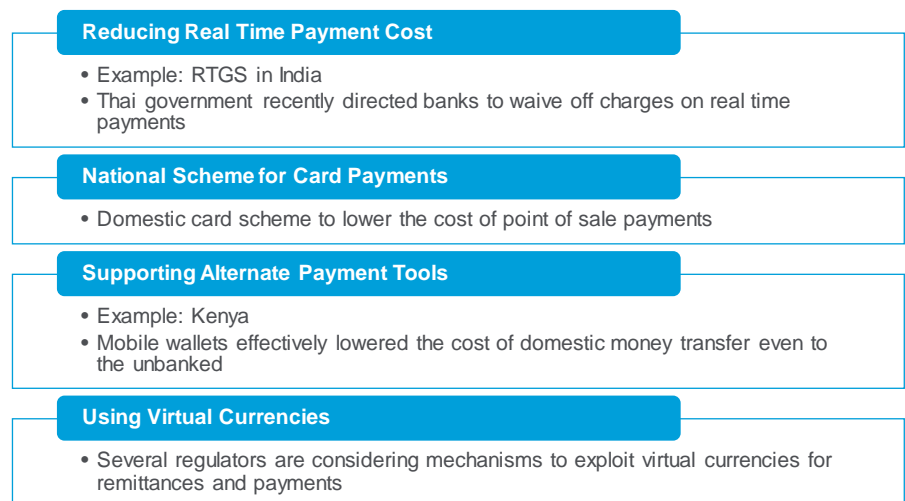
Regulators have focused to improve the domestic digital payments infrastructure as lowering the cost of digital payments does help to get under formal financial ecosystem

Unique Identity Can Facilitate Low-Cost Payments

One of the focus areas of global regulators in the recent past has been to improve the domestic digital payments infrastructure — and lower cost of domestic digital transfers, where possible. While one could argue this is not directly linked to financial inclusion, we believe that lowering the cost of digital payments does help convert cash-based economies into digital — and hence pushes people otherwise outside the formal banking structure (who prefer cash due to minimal money transfer cost using cash) to enter the formal financial ecosystem.

EM/FM regulators globally have taken several steps to address this issue. While part of the process of lowering the cost of digital payments has been through supporting alternate non-bank based money transfer mechanisms (e.g., mobile money covered in detail in the later section), a lot of focus recently has also been towards lowering the cost of digital payments within the banking ecosystem — especially for the sections of the society that even do not have a mobile phone.

Figure 54. Regulatory Support to Lower Cost of Digital Payments

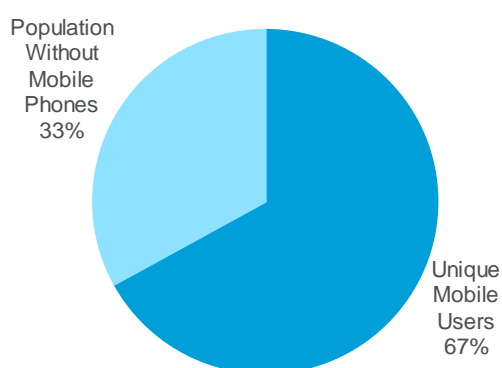


Source: Citi Research

About 33% of global population do not possess a mobile phone. Clearly, a large number of these people reside in EM/FM. Over 40% of India's population still does not have access to a mobile phone device. This ratio is in the 30-40% range for markets like Turkey, Indonesia, Philippines, and Egypt. Russia is the only market in our sample where <10% of people are without mobile phones.

Biometric-based unique identity can facilitate digital payments for even those who do not have a smartphone (to use QR codes for digital payments or applications) or a feature phone (for those who could make payments by using USSD codes). In several cases (example: Aadhaar), the unique identity is linked to the bank accounts and can help facilitate payments directly from the bank account of the user – using biometrics as the trigger.

Figure 55. World Mobile Penetration Levels



Source: GSMA

Figure 56. % of Population Without Mobile Phones



Source: GSMA

The use case of identity-based low-cost payments is relevant not only to those who do not possess mobile phones. As shown in the table below, merchant discount rates (MDRs) in the case of card-based transactions for most key EMs/FMs remain relatively high in the 1.5-2.5% range. The high merchant discount rate pushes merchants to ask for cash vs other digital form of payments. We see identity-based payment options that lower cost of payments to have a significant impact on digital acceptance at merchants — especially at smaller merchants in the rural areas.

Figure 57. Comparison of MDRs & Interchange Fee Across Key Markets

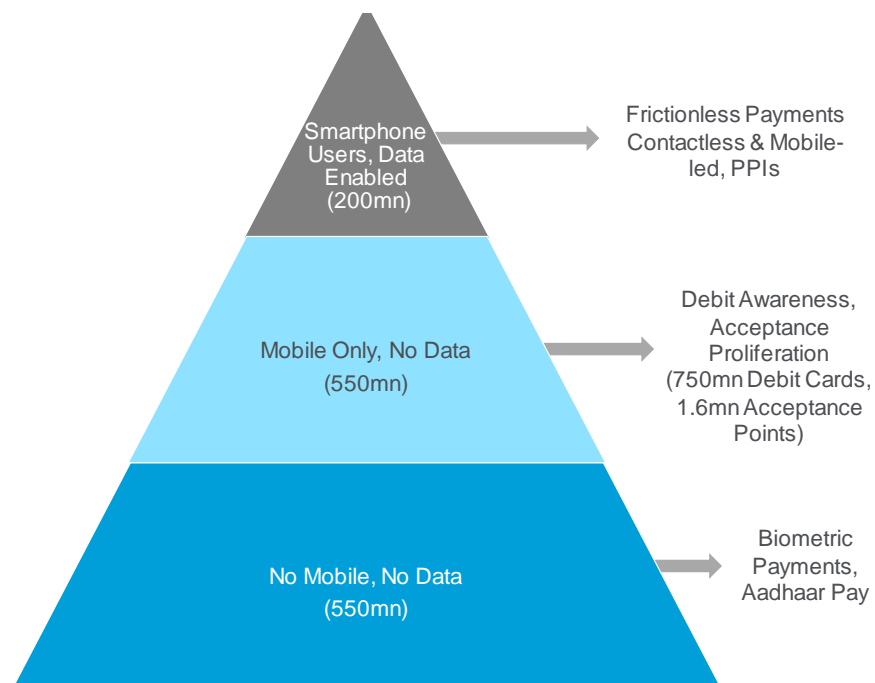
	Merchant Discount Rates (MDRs)	Interchange Fee
Bahrain	1-1.5%	
Brazil	Debit: 1.2%; Credit 2.1%	Debit: 50bps, Credit 160bps
China	50bps (debit); 60bps (credit)	11.75bps
Egypt		1.5-2.0% (Global payment cos); 40-50bps - domestic schemes
Europe	50-70bps	20-30bps
India	30-90bps (debit); 1.5-2.5% (credit)	
Indonesia	1-3% (1% if using the NPG)	
Russia	50-300bps	
Saudi Arabia	<1% (domestic debit)	40bps (domestic debit)
South Africa	Debit - 1.5%; Credit 2.65-2.7%	
Turkey	100-200bps	
UAE	2-2.5%	1.5-2.0%
U.S.	1.3-1.4% debit; 2.3-2.5% credit	

Source: Citi Research

Case Study: Aadhaar Pay Lowers Payment Cost for People without Phones in India

For a large part of the Indian population at the bottom of the pyramid (especially ones who do not even have a feature phone), biometrics-based payment methodologies (like Aadhaar Pay — that are linked to the national identity and bank accounts) have started playing a key role in digital payment adoption. Note that in the case of India, this population size (without mobile phone) is over 550 million or over 40% of the Indian population.

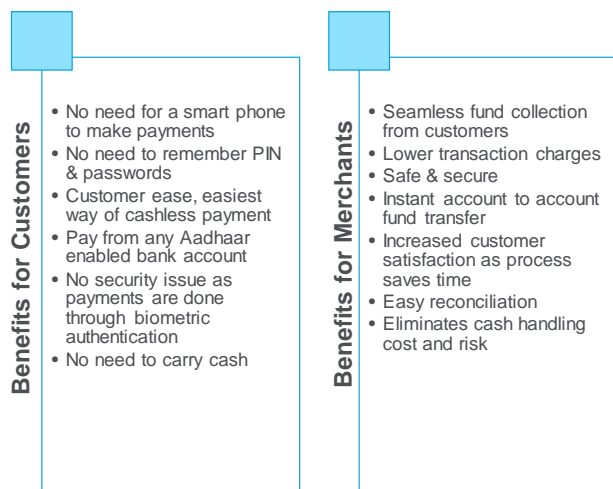
Figure 58. Potential Digital Landscape (Different Solutions for Different Segments)



Source: Visa India, Citi Research

In the case of Aadhaar Pay, while the options provided include payment by scanning a QR code through their application, the biggest push for low-cost payments and financial inclusion comes through fingerprint scanners that are used to make biometric payments.

Figure 59. Benefits of Aadhaar Pay



Source: Company Reports, Citi Research

Figure 60. Aadhaar Pay Transaction at Work



Source: Citi Research

The Aadhaar Pay app has to be downloaded by merchants on their phones and linked to an Aadhaar biometric reader. To use this service, the customer has to first link his/her bank account to the Aadhaar number. To make a payment, the consumer just has to select the bank's name and enter the Aadhaar number. The fingerprint is the password to authenticate the transaction. In most cases, nil or small MDR is charged to the merchant for this service.

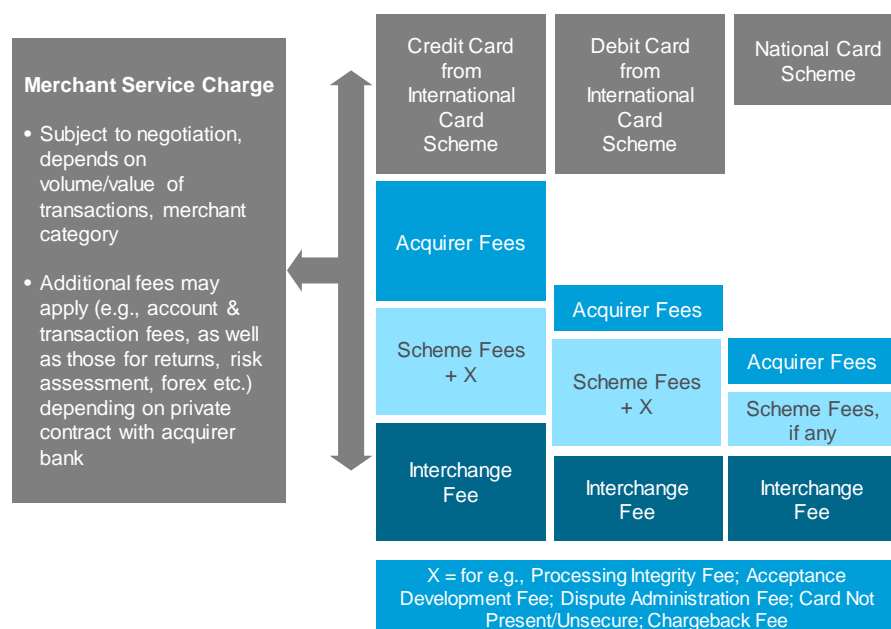
Regulators Use National Card Schemes to Lower Digital Payment Cost

While not directly linked to identity-based payment, we also flag national schemes that are being increasingly used by regulators to lower the cost of digital payments.

mada in Saudi Arabia has 40bps of interchange and that yields to <1% of MDR.

A locally-based national card scheme has the ability to lower the cost of transfers. Generally, some national schemes also have their own interchange and therefore they derive the MDR for merchants. For instance, in Saudi Arabia, the domestic debit mada has 40bps of interchange and MDR <1%.

Figure 61. Components of Merchant Service Charges



Source: ECB, Citi Research

The table below compares some of the key national card payment schemes being promoted and/or supported by the local regulators in these markets.

Figure 62. Comparison of National Payments Infrastructure/ Schemes

	India	Saudi Arabia	Egypt	Pakistan
Name of the Scheme/Initiative	RuPay	mada	Meeza	PayPaK
Year Started	2012	2015	2019	2016
Supporting Organization	RuPay is a product of NPCI, the umbrella organization that powers retail payments in the country.	mada is new identity Saudi Payment Network (SPAN)	National Bank of Egypt (NBE) and Banque Misr	1LINK
Reach/Achievements	1. 700+ RuPay Issuing Banks and 40+ RuPay Acquiring Banks 2. 500mn+ cards in force issued by 1,100 Issuing & acquiring banks 3. 1,200mn transactions in FY19	1. Accepted locally at over 16k ATMs and 160k POS terminals. 2. Accepted within GCC through GCCnet 3. Can be co-branded with other global payment schemes to use at ATMs and POS terminals outside Saudi Arabia.	Meeza is a prepaid card but provides same services as any other card scheme but to be used only locally	1. 33 member banks have signed and already issued more than 1.5mn PayPaK debit cards with a monthly usage of over PKR 4.5bn that are being processed and settled locally. 2. Introduced cobranded cards to service customers internationally

Source: Citi Research

Experiences in Financial Inclusion in Brazil

An Interview with Bianca Lopes, Founder & CEO of Talle



Bianca Lopes
CEO and Founder
Talle

Can you tell us a little about Talle?

Over the past five years, I fell in love with identity and identity is really close to financial inclusion. I was born and raised in Brazil and Talle is headquartered in Brazil. Our mission is to bring literacy to financial services. We work with large financial institutions and global brands to help them tell the story of innovation, not through jargon or just technology, but through interactive content and processes that bring innovation to action.

How would you define financial inclusion? What is the size of the population, income level etc. we are talking about? What is the opportunity for FinTechs in Brazil looking at the financial inclusion angle?

Brazil is undeniably one of the largest economies in the world. There are 210 million people that live there, and when you look at the population which is currently unbanked, by what I would call an organized oligopoly of banks, it is about 45 million.

The Brazilian Institute of Geography & Statistics (IBGE) estimated the underbanked population had an annual income of R\$ 665 billion (\$158bn), equivalent to the GDP of Chile at the time of the survey.

You are seeing a bit of hype around FinTech in Brazil today and you might have heard about digital banks. But the average ticket size of a FinTech does not even get close to the income of the unbanked population.

The average income in Brazil of social classes C and D (i.e., considered truly unbanked in Brazil) is about \$355 a month, whereas the FinTechs today are going after a minimum income salary, which is actually four times that value. So they are not even getting close to hitting the truly unbanked and there is massive market potential, just in that piece alone.

Are FinTechs just talking about inclusion but not getting anywhere close to it in your view?

To me, they are not even getting close to touching the actual unbanked population. Brazil has 350 municipalities, out of a total of 5,600, which do not even have a bank or anything comparable to a financial institution. A city in Piauí, called São João do Arraial, created its own bank and its own currency in 2007 since it was not in the interest of large banks to bring banking services to the region.

Historically, however, there has been access to credit in Brazil. There was actually a Harvard business case on Casas Bahia, which is a massive electronic retail store that was the first to give people credit, even if they did not have any documentation.

When you get to the core of why banks or most FinTechs today, cannot touch the truly unbanked, it all boils down to the cost of acquisition. Banks/FinTechs do not have any way of verifying some of their parameters, like address, credit history, employment history etc. There is a lot of informality in the unbanked world. People talk of it as if it is charity, but there is actually a ton of money moving in this unknown economy.

It makes business sense that banks and FinTechs have not gone to the base of the pyramid, as there are identity problems. How do the emerging trends today in FinTech/digital help us fix that?

There is an interesting case where one of the large slums in Brazil, created its own mobile customer-base, very similar to the same principles of M-Pesa. They used some basic blockchain infrastructure to actually build an entire financial system and registered QR codes in the community to exchange money.

Funnily enough, that doesn't sound like a lot, but they have already moved BRL2.5million (~\$600k) in less than 6 months, compared to a large bank which is making \$5 billion a year. Does not seem much.

Now that you mention profitability of the large banks, for those who do not know Brazil so well, can you tell us how many banks there are, is there a lots of competition? Is it a bit of an oligopoly?

It is totally an oligopoly. The recent lowering of spreads has not really affected the banks yet. They are generating the largest profits they've had for the seventh consecutive quarter. In June 2019, they made \$5 billion.

When you look at traditional banks, they are investing in technology to maintain their legacy systems, but they are not trying to change their credit parameters. Brazil is one of the three top countries with the largest credit spreads in the world, in absolute terms.

The centralization of banks also restrains microeconomic activities, perpetuating the concentration of services and, consequently, income. Poorer areas become more dependent on financial service players and pay more for fewer options.

Access to credit in Brazil is actually one of the first reasons why the Central Bank of Brazil opened up something similar to Open Banking. In September 2019, the Central Bank opened a new type of company called a Simple Credit Enterprises, or an ESC, which is a company for easy access to credit.

Regulators are also likely to establish a minimum entry level, below which they will remove some of the regulatory burden needed at the time of onboarding new customers. We are starting to see aspects such as the Financial Conduct Authority (FCA)-type environment in the U.K., occurring in Brazil. On the FinTech side, we have associations such as ABCD (Brazilian Association of Digital Credit).

What are the facilitators? Can we talk about some of the ways this is going to change? How important is the factor that Brazil is hyper-connected? Are there other factors, like legislation/regulation?

Let us talk about a facilitator. We started talking about regulatory regimes and the creation of the ESC. We are starting to see derivatives like soft payments and Open Banking. We've seen banks kick and scream to get to the actual implementation of Open Banking.

Another interesting aspect to know about Brazil when thinking about this is that Brazil has an identity system called CPF (Cadastro de Pessoas Físicas), which is a number that you are given when you register as a citizen. You are mandated to have one if you want to vote, work legally, or open a bank account.

This number is the equivalent of your social scoring, if I was to compare it to the closest thing I know, which is in China, and it's monitored by the government. It can actually freeze your bank account, freeze your assets, and freeze things like basic services and water if you owe just \$0.01.

If you owe any vendor up to \$0.01, they can "put you on the negative watch", and then your name is actually called "dirty". In Portuguese, you would say you would have a dirty name.

Interestingly, nine of ten people who have names that are "dirty" are actually in the bottom pyramid. When you look at the average income of that population, it is about \$355. The credit they would need to clear their name is around \$1,200, roughly equivalent to three months income.

Considering the high credit rates and spreads in Brazil, the opportunity is massive. You are talking about changing a person's ability to even enter the workforce or get a residence and these are mostly people living below the regular or legal means. It is not just the charity case.

When you look ahead at the next 2-3 years, or even now, we talked about the more famous FinTechs and banks that are not really tackling the problem. Are there new entrants today (either private or NGO types), addressing the bottom of the pyramid using digital strategies?

Yes. There is more community-based banking, which is something similar to what we have seen in India on the microcredit side. Brazil has a high concentration of unbanked population in the North and the Northeast of the country, geographically speaking. The state of Piauí has actually opened up their own bank, because no bank wanted to go there. That is one of the interesting things we have done, and we have seen happen.

There are two other companies. The first is a FinTech called Avante who raised \$68 million in three investment rounds and claim to have developed an artificial intelligence system that evaluates customer honesty.

One of the things I liked about what they are doing, which is also something we are working on at Talle, is that many people at the bottom of the pyramid are honest but they just do not get the opportunity. Avante has loaned about BRL 207 million (\$49m) to about 50,000 active users. To put that in context, there are 45 million unbanked adults in Brazil. And this is probably one of the most successful FinTechs we have seen just in 2019 alone.

I often ask, why haven't we seen more of this? Well, you need to look at how much money Brazil has invested in FinTech in general. Of the almost \$101 billion invested in FinTech globally, Brazil represents only 1.4% of the total. Even though it is really lagging, I think there is a massive opportunity with the regulatory change, to allow for that top-end.

How has the regulator been pushing financial inclusion? Are newer banks being allowed? How can new banks compete with the current big banks?

In 2014, the government created what translates to a "payment account", the simplest current account model, which does not require physical branch service and does not make loans but can offer cards and make transfers. Although the funds in this account are not guaranteed by the Credit Guarantee Fund (FGC), they are deposited with the Central Bank or in Treasury securities.

In 2019, the government authorized a simple credit company (an ESC) business model, which consists of lending operations carried out by and for ordinary citizens (P2P), with interest and without direct regulation by the Central Bank. This scheme aims to place money in the hands of entrepreneurs and provide access to credit. Combined with initiatives by FinTechs — startups linked to the financial system — and corporate credit, ESC's entry into the market has the potential to lower interest rates on microcredit.

Another step taken was the signing of a presidential decree empowering the Central Bank to authorize the entry of foreign-based financial agencies in an attempt to increase competition.

In addition, it facilitated the opening and closing of accounts, removing the minimum requirement for opening accounts and setting deadlines for institutions to close accounts. Several steps have been taken, but still little has been done to increase the opportunity for new banks to compete with the current big banks.

Mobile Money: Growing Fast & Doing Good

Mobile Money has grown at a rapid pace, and is fast becoming an alternative to bank accounts and payment services in several emerging and frontier markets

Mobile Money is the technology that allows people to receive, store, and spend money using a mobile phone device. Thanks to a combination of simplicity, convenience and safety, mobile money uptake has grown at a rapid pace globally, and is fast becoming an alternative to bank accounts and payment services in several emerging and frontier markets.

At the center of the payments transformation are Mobile Wallets (also known as digital wallets or E-wallets) that can hold a previously defined payment instrument (e.g., credit card details) or a digital equivalent of currency, and can be used to transfer money between two parties.

The beginnings of mobile money can be traced to the Philippines in the early 2000s. However it was not until 2007 in Kenya that the full potential of mobile money came to the fore.

Kenya has >70% adults having used mobile money in 2017 but only around 55% adults who hold traditional bank accounts

Kenya stands out today as the success story in mobile money penetration, with >70% of adults having used mobile money in 2017, a figure larger than those who hold traditional bank accounts (only about 55% of adults). As noted by economists Tavneet Suri and William Jack ("The long-run poverty and gender impacts of mobile money", Science Magazine, 9 Dec 2016): mobile money in Kenya has led to "changes in financial behavior — in particular increased financial resilience and savings" and also impacted "labor market outcomes, such as occupational choice, especially for women, who moved out of agro and into business". They conclude that the mobile money revolution has led to "a meaningful reduction of poverty in Kenya".

There are several other EMs/FMs where access to banking services continues to lag but where mobile money has successfully stepped in to fill the void. Mobile money platforms are now playing an important part globally in driving financial inclusion through convenient peer-to-peer (P2P) transfers for migrant workers, disbursement of benefits and aid to those in need, saving and lending products for the unbanked, and newer use cases like online/offline payments which offer the prospect of cashless transactions for all.

We believe that mobile money businesses can be a way to play growth / development at the bottom of the economic pyramid (e.g., India, Bangladesh, Pakistan, and Kenya).

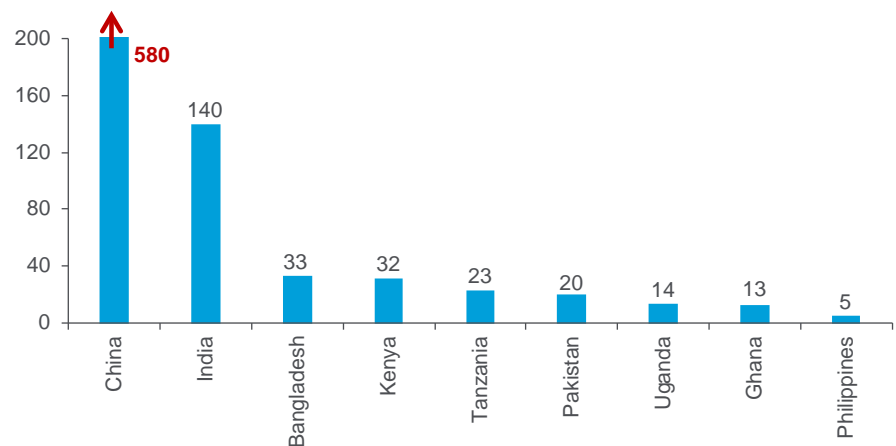
China Leads in Numbers, Kenya on Penetration

China with over 580m active mobile money accounts in 2018 easily outpaced India (140m), Bangladesh (33m), Kenya (32m) and Tanzania (23m)

The number of mobile money users is large and growing rapidly, especially in Asia and Africa. By our definition, we estimate that there are around 950 million active MM accounts at end 2018. The charts below highlight the largest mobile money markets globally based on estimated total number of active clients and transacted values.

By number of active mobile money accounts, China continues to dwarf other markets, with over 580 million active users in 2018, followed by fast-growing India with around ~140 million, while Bangladesh has now edged out Kenya for the third spot with 33 million (vs. 32 million for Kenya), and Tanzania rounds off the top five with 23 million.

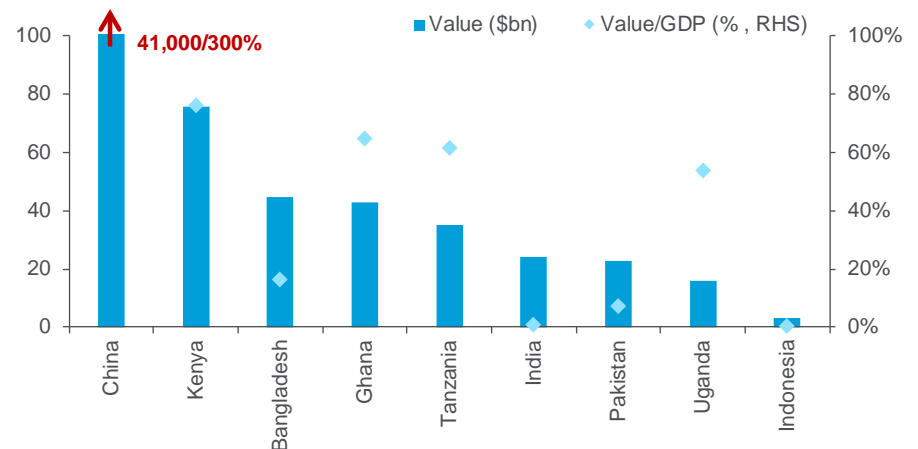
Figure 63. Active Mobile Wallet Users in Selected EM/FMs (in millions, 2018)



Note: India Citi Estimate used, Philippines excludes prepaid card accounts.
Source: Central Banks Data, Citi Research

By value of MM transactions as a percent of GDP, China also handily leads with \$41 trillion of transactions equivalent to ~300% of GDP in 2018, followed distantly by Kenya (\$75 billion or 80% of GDP) and Bangladesh (\$4.2 billion or 16% of GDP).

Figure 64. Mobile Wallet Transactions by Value in Select Ems (2018)



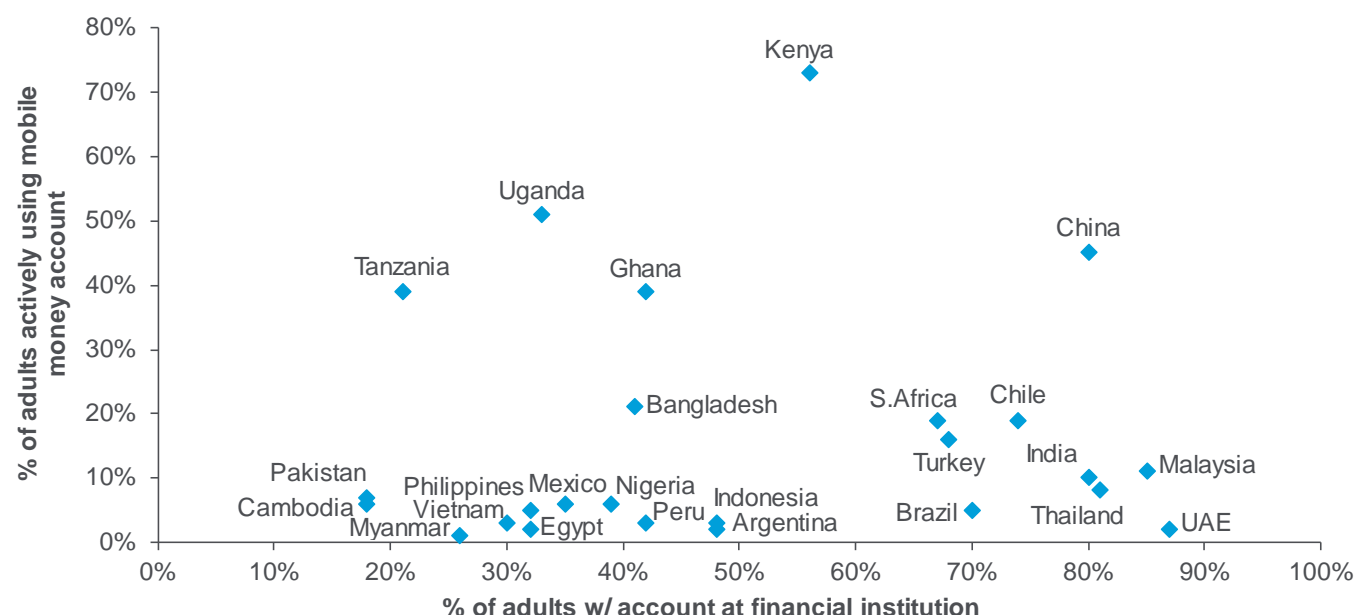
Source: Central Banks Data, Citi Research

Kenya is the standout on mobile money penetration though, with >70% of adults having used mobile money in 2017, a figure larger than those who held traditional bank accounts (only about 55% of adults).

Kenya, Tanzania, Uganda and Ghana have 40-50% population using mobile money. Outside Africa, only China comes close to such penetration levels

Other African countries, such as East African neighbors Tanzania and Uganda, and Ghana on the other side of the continent, also have 40-50% of their population using mobile money. Outside Africa, only China comes close to such penetration levels. In South Asia, the leader of the following pack of countries is Bangladesh with just over 20% of the adult population having used mobile money platforms.

Figure 65. % of People with Bank Accounts vs. Percent of People Using Mobile Money (2017)



Source: World Bank Findex 2017, Citi Research

The New Branches: From Corner Shops to Drivers

The rise of mobile money in many frontier markets has been aided by the growth in the number of mobile money agents, which permit customers in cash-centric economies to deposit and withdraw funds conveniently without the need to travel distances. Accessibility to mobile money agents creates a compelling reason for the wider population to take up the service instead of relying on banks' smaller and expensive branch-based model and more prohibitive account opening KYC and minimum balance requirements.

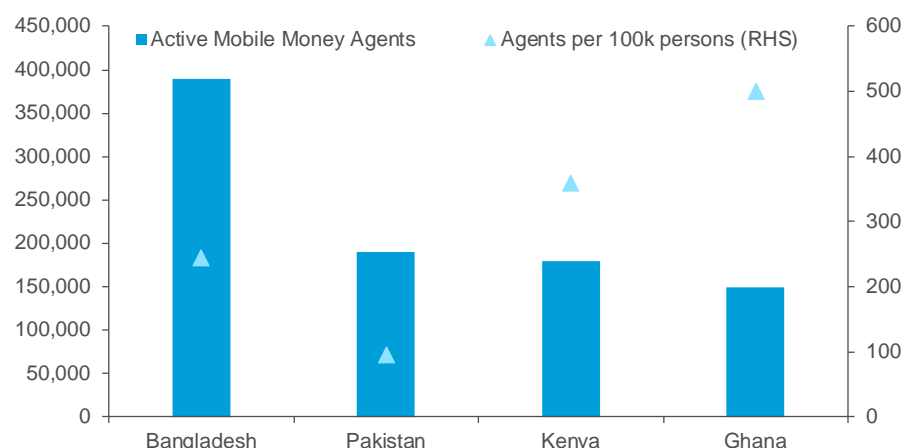
The agents also act to register/educate new customers and in many instances transact on their behalf (OTC transactions), no small matter in countries where illiteracy levels remain high and trust plays an important role.

Telco-owned mobile money operators have generally been at an advantage over financial institutions when rolling out their services given their existing networks of prepaid mobile top-up card agents, while certain financial institutions (e.g., in Bangladesh) initially relied on its SME/microfinance customers to act as agents before moving to wholesale distributors of fast-moving consumer goods and their retail networks.

In our sample of larger frontier markets where recent data was available, Bangladesh was in the lead globally in 2017 with 390k active mobile money agents, Pakistan second at 190k followed by Kenya with 180k and Ghana at 150k. In terms of penetration, Africa leads South Asia, Ghana registered over 500 active agents per 100k persons, followed by Kenya at 360, Bangladesh at 244, and Pakistan at 96.

These figures correspond to over 100 active mobile money agents for every bank branch in Kenya and Ghana, >40 in Bangladesh, and ~14 in Pakistan.

Figure 66. Active Mobile Money Agents (2017)



Source: Company Disclosures, Citi Research

In Nigeria and Egypt, two markets where mobile money uptake has lagged, digital payments platforms have stepped into the void, forsaking P2P transfers but offering a variety of digital bill payments services through their network of agents.

Banks have also not been left out of the fray, and in many cases are also leveraging the agent model to expand their own reach into rural and outlying urban areas at a lower cost, offering basic services like loan repayments, fund transfers and bill payments all while tapping into a larger retail deposit base.

The bank agency model has been more of a hub and spoke model, with agents reliant on the nearest bank branches to help manage daily liquidity, and hence serving as an extension of the existing brick and mortar branch networks rather than outright replacement.

Other markets globally where commercial banks have extensive agent footprints include India with a network of (>600k), Brazil (>170k), and Mexico (>50k).

Ride Hailing Platforms Offer Convenience

In some countries (especially Southeast Asia), a somewhat unique model of reaching clients has evolved. Ride-hailing platforms have leveraged on their network of vehicles to launch their own E-wallets, where users can top up while on the move by simply handing the funds to the drivers.

Mobile Money Model (MMM): All Eyes on Nigeria

While mobile money has become omnipresent in many countries, growth has lagged in quite a few emerging markets. For example in South Africa (vs. Sub-Saharan African peers) which we attribute to its higher bank account penetration and more developed banking and payments infrastructure, and in Egypt given the regulatory focus on security and political instability of the last decade.

Our Mobile Money Model (MMM) set out below is an attempt to forecast future mobile money growth based on key variables that we believe will determine the speed of adoption. We look at factors such as cash usage, alternative payment methods, banking penetration, demographic change (internal migration, age) and the regulatory and institutional environment. The inputs we use are:

- **Cash dependency:** Central banks data (monetary base-to-broad money ratio) and Visa and other sources on share of cash/cheques in retail transactions
- **Alternative payment options:** Percent of adults who own a credit card, cross-referenced with POS terminal penetration rates
- **Unbanked population:** Percent of people with bank accounts
- **Demographics (internal migration, youth population):** Change in urban population mix percentage — 2020 vs 2010; % of population in 15-24 age group
- **Regulatory and institutional support for mobile money adoption:** World Bank regulatory quality index, Citi analysts' views on local MM policy approach

Figure 67. Mobile Money Model

	Cash Dependency	Absence of Alternative Payment Options	Unbanked Population	Demographics*	Regulatory & Institutional Support	Mobile Money Future Potential
Argentina	High	Low	Medium	Medium	Medium	Medium
Bangladesh	High	High	High	High	Medium	High
Brazil	Medium	Low	Medium	Medium	Medium	Medium
Cambodia	High	High	High	High	High	High
Chile	Low	Medium	Low	Medium	High	Medium
China	Low	Low	Low	High	High	Low
Egypt	High	Medium	High	Medium	Medium	Medium / High
Ghana	High	High	High	High	High	High
India	High	High	Medium	High	High	High
Indonesia	High	Medium	Medium	High	Medium	Medium
Kenya	Medium	High	Medium	High	High	Medium
Malaysia	Low	Low	Low	High	High	Low
Mexico	High	High	High	High	High	High
Myanmar	High	High	High	Medium	High	High
Nigeria	High	High	High	High	Medium	High
Pakistan	High	High	High	Medium	High	High
Peru	Medium	Medium	High	Medium	High	Medium
Philippines	Medium	High	High	Medium	Medium	Medium
Poland	Medium	Medium	Low	Low	High	Medium
Russia	High	Low	Low	Low	Medium	Low
Saudi Arabia	Medium	Medium	Medium	High	Medium	Medium
S.Africa	Medium	High	Medium	High	Medium	Medium
Tanzania	High	High	High	High	Medium	High
Thailand	Low	High	Low	High	Medium	Medium
Turkey	Medium	Low	Medium	Medium	High	Medium
UAE	Medium	Low	Low	Medium	High	Medium
Uganda	High	High	High	High	Medium	High
Vietnam	Medium	High	High	High	Medium	Medium

* Internal Migration, Youth Population

Note: Markets with at least 4 input factors as "High" are classified as "High MMM future growth potential; Markets with at least three "Low" are classified as "Low" overall.

Source: Citi Research

Based on our MMM analysis, we conclude that the markets that offer high future potential for the growth of mobile money are: Bangladesh, Cambodia, Myanmar, and Pakistan (in Asia), Ghana, Tanzania, and Uganda (in Africa); Mexico (in Latin America). China, and Kenya have obviously led the way to date in MM but there may be less relative upside here. Countries that should grow fast but have faced policy roadblocks: Egypt and Nigeria, or presence of alternate payment mode that limits mobile money uptake: UPI in India.

We now flag Nigeria as the market most likely to see rapid growth in the short term as we foresee an industry transformation following regulatory changes that will allow telco-led MM models.

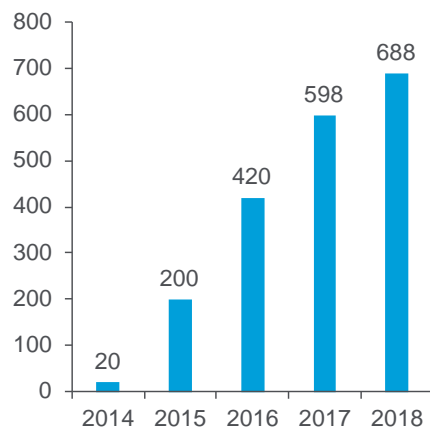
According to press reports (Africa News, 29 Aug 2019), multiple Nigerian telecom operators were planning to launch their mobile money services after receipt of its relevant licenses. Some of the players have already started providing some agent-to-agent cash transfer services as they await a Payment Service Banking license to allow expansion into deposits and savings, peer-to-peer transfers, and merchant payments.

These telecom providers have pledged to deepen financial inclusion in 30 months by collectively reaching 90 million Nigerians through the deployment of over one million airtime agents as MM agents.

We believe the shift from bank- to telco-led MM model could prove a game-changer in Nigeria, along the lines of neighboring Ghana, where a similar regulatory move took place in 2014 after which penetration grew exponentially and today numbers almost 14 million active wallets in country with a population of just 30 million.

One factor that could still prove a hindrance to MM adoption though is the fact that real-time account-to-account transfers between banks have existed since at least late 2000s in Nigeria (unlike Kenya), and payment platforms are already widely used. Hence the peer-to-peer funds transfer use case that drove early adoption may not prove as effective a draw to consumers. With that in mind, the unbanked adult Nigerian population is estimated to be 60-70 million strong, providing a sizable untapped addressable market.

Figure 68. Users Sending/ Receiving Red Packets on Chinese New Year's Eve (mn)



Source: Company Reports, China Channels

Mobile money channels helped disburse around \$600m to over 4 million BISP recipients in 2018, ~70% of total disbursed amounts through the program

Wide Variety of Mobile Money Use Cases

Mobile money is an important driver of financial inclusion, and below we list some of the major applicable use cases globally:

P2P Transfers in China

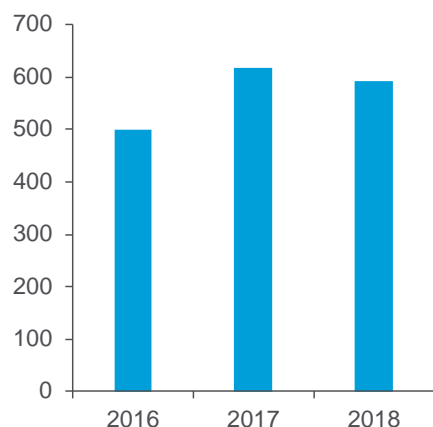
The initial growth of Mobile Money in many markets was driven by P2P services, which permitted lower-income migrant workers to send money to their families in rural areas securely and with ease, all while bringing these transfers into the open and under the regulatory eyes.

B2P/G2P Disbursal in Pakistan

Bulk transfers of funds are another fast-growing segment, and G2P transfers in particular are one to watch as governments move away from blanket subsidies towards targeted aid schemes. The disbursement of government aid (social benefits, pensions, etc.) through mobile money helps cut corruption and waste, cutting out rent-seeking intermediaries.

Mobile money platforms in Pakistan have developed a solution that overcomes geographical and cultural as well and logistical barriers by bringing financial services to local corner shop agents, therefore enabling women to register and get their disbursements without having to travel to a bank or even have access to a phone.

Figure 69. BISP Disbursal Through MM Channels (\$mn)



Source: State Bank of Pakistan

Monthly MM merchant sales in Bangladesh have tripled YoY to ~\$65m (3x card transactions) since the introduction of QR payments in 2018.

The technology is being used effectively to distribute funds under the government support program (BISP). BISP is a flagship poverty alleviation program of the Government of Pakistan, aimed at providing a minimum income support package to the country's most underprivileged families. The female recipients are provided with a monthly social welfare disbursement of about \$2 per day for their households.

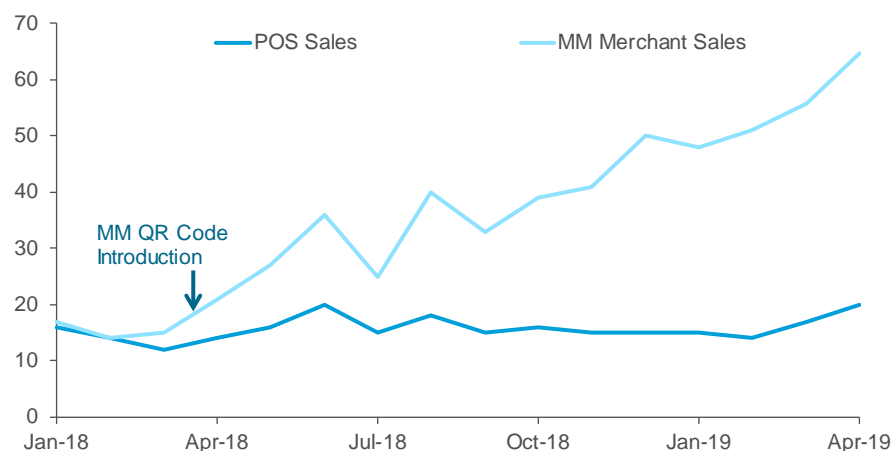
Cashless Transactions in Bangladesh

Many emerging markets today remain overwhelmingly cash driven, given low penetrations of bank accounts/cards and sizable black economies. Mobile money offers the prospect of digital payments for all segments of society, with a more cost-effective option for merchants (no requirement for costly legacy POS terminals or newer NFC devices) and a wider rural reach than traditional alternatives.

Bangladesh is one market in particular where mobile money merchant payments have been making strong inroads. Consumers in Bangladesh have the ability to pay utility bills directly, make online purchases, and pay at brick and mortar merchants free of charge, with access via either a basic feature phone (simply by entering a code and then a merchant ID) or a smartphone (by scanning a QR code).

The services are available free of charge to microenterprises (capped at \$188 of sales a day) or a reduced 1% charge to SMEs, and for many of these retailers it is their first time accepting digital payments.

Figure 70. Mobile Money Monthly Merchant Sales in Bangladesh (\$mn)



Source: Citi Research

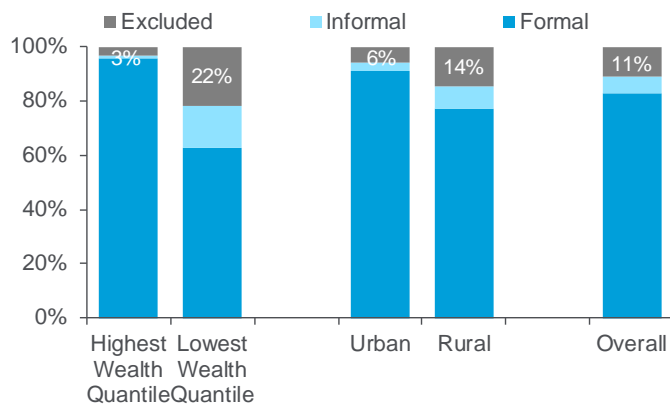
Case Study: Savings & Loan Products in Kenya

Kenya is well known to have become one of the most advanced mobile money markets globally, and this has led to the financial exclusion gap declining to 11% (from over 40% in 2006), with a notable drop in the disparities between rural and urban population, rich or poor. Furthermore mobile money has proven an important channel for private credit and savings growth for the commercial banks.

Penetration of loan/deposit accounts among the bottom 40% of population by wealth is estimated to have reached 17% vs average of 30% and less than 4% before the launch of mobile loans/deposits. Regulation has also been integral to the growth in mobile/agency banking in Kenya specifically.

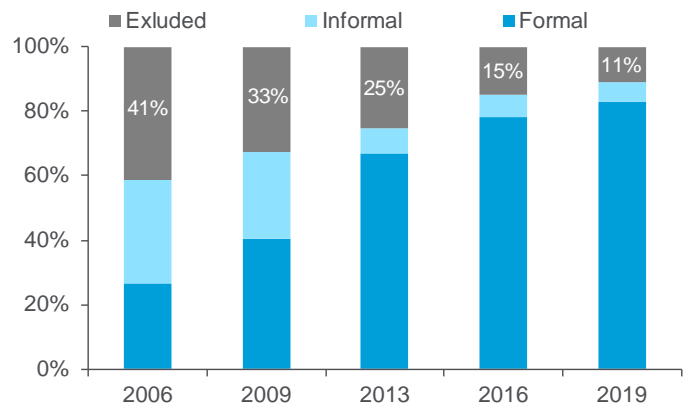
Growth in mobile money in Kenya helped shrink the financial exclusion gap to 11% recently from over 40% in 2006

Figure 71. Financial Exclusion Gap Narrowed



Note: Formal includes all regulated channels, banks, MFI, Mobile Money.
Source: FinAccess Kenya

Figure 72. Decline in Financial Exclusion in Kenya



Source: FinAccess Kenya

Penetration of mobile money has approached 80% of the adult population vs. 30% for traditional banking and 25% for mobile banking accounts

Benefits for financial institutions from using mobile money platforms:

- Access to broader customer base: 1,518 bank branches vs over 160,000 mobile money agents; penetration of mobile money approached 80% of adult population based on recent data (FinAccess 2019) vs. 30% for traditional banking and 25% for mobile banking;
- Credit scoring based on the history of a customer;
- Low cost of risk with non-performing loans (NPLs) well below average rates;
- Opportunity to boost earnings via growth in fee income; and
- Improvement in SRI profile via support of inclusion, addressing poverty by helping welfare etc.

While the benefits for mobile network operators in partnering with financial institutions include improved customer stickiness through the offering of more varied MM use cases, increased transactions velocity, risk sharing, and an SRI (socially responsible investment) factor.

Regulation Facilitated Growth in Credit/ Saving through E- wallets

In 2008 shortly after the launch of mobile money, Parliament adopted changes to the Banking Act to include regulation related to the Credit Reference Bureau (CRB), which became effective in 2009 with first CRB licenses issued in 2010. The regulation included mandatory provisions for all licensed financial institutions to share data (with CRBs licensed by the Central Bank of Kenya) on all borrowers in the country, as a way to lower the cost credit. Only negative data was shared until late 2014, when full credit information was rolled out by the Central Bank. The number of requests varied between 4-5 million per year, against 7.1 million of loan accounts as of 2017.

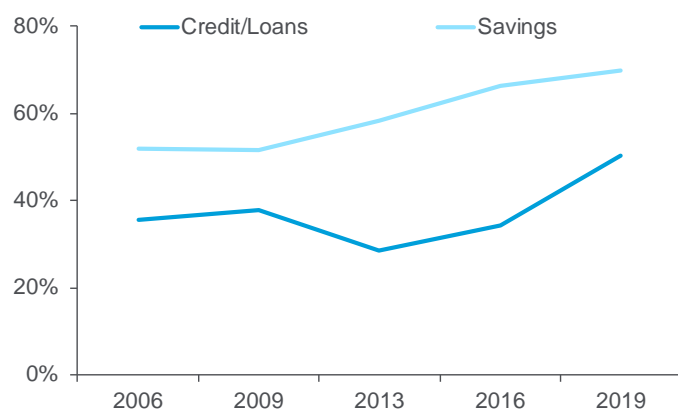
Other factors:

- Kenya is one of the few countries on the African continent with a robust National ID regulation, which requires all adults over 18 to have National ID.

The 2017 "Banking Act" which capped lending rates in Kenya boosted growth in mobile loan demand from credit starved individual/SMEs, as regulatory limits did not apply to the products

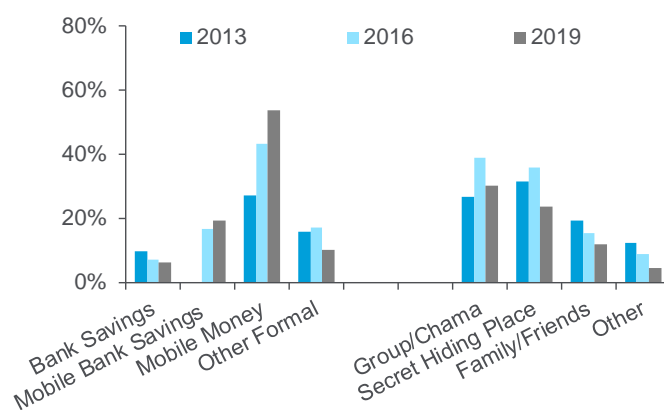
- The Banking Act 2016, which capped lending rates in Kenya, boosted growth in mobile loan demand from credit starved individual/SMEs, as regulatory limits did not apply the products.
- Active engagement of the Kenya government in boosting education of the population in financial literacy, promoting saving, and lowering barriers to entry.

Figure 73. Kenya Growth in Saving/ Loan Accounts Since Launch of Mobile Money-Based Accounts in 2012 (%)



Source: Central Bank of Kenya and Kenya National Bureau of Statistics

Figure 74. Preferred Method of Saving in Kenya (% of Mobile Phone Users)



Source: FinAccess

Mobile Money Poster Child from Bangladesh

Interview with Kamal Quadir, Founder & CEO of bKash



Kamal Quadir
CEO and Founder
bKash

What is the genesis of bKash?

I am an entrepreneur and I have been working in the technology space, mostly in Bangladesh for almost 20 years now. Earlier I founded a company called CellBazaar, which was a classified business. It was like Craigslist over mobile phone.

People were buying and selling using that digital marketplace, but all the transactions were happening offline because people just did not have any platform to do electronic payment. The whole country probably did not have more than a million cards at that time. I am talking about 2008-09. I realized there was a pain to address for payments in the country, as there were not many payment tools.

Secondly, when a person walked into a bank in Bangladesh, the average footfall cost of the bank was around \$1.50, whereas the ticket size of an average person in Bangladesh (e.g., rickshaw-puller, carpenter) was around \$10. With such a high service cost, it was challenging to provide that customer a regulated banking service using the conventional banking structure.

I wanted to solve these two problems with bKash. In 2008, I went to Africa and spent a lot of time watching M-Pesa from a distance, trying to learn the elements of it that we can apply to Bangladesh.

In 2010, Money in Motion and BRAC Bank formed the joint venture 'bKash' respectively with 49% and 51% ownership, and Money in Motion put the first seed capital of \$5 million to initiate the business. That's the genesis of the company.

When you look back 10-15 years at the financial system in Bangladesh, the level of financial inclusion back then was very low, and to some extent, it's still very low.

If you look at the banked customer level, people who own bank accounts and are getting banking service, under the jurisdiction of the central bank, the number was low. However, if you include microfinance into the definition of financial inclusion, then the number was not too bad for Bangladesh. Certainly, microfinance companies were not working towards payment solutions, which I mentioned earlier.

What we were addressing was basically an initiative of financial foundation building. We get asked a lot about why digital financial services are not in the space of credit or insurance yet. These are relatively complex products, that require other regulated financial institutions to get involved, but in a country where people are just getting used to digital financial practices, I think it's very important that they start with the basics first.

The basics is a payment financing system, which is under the jurisdiction of central bank, thus regulated. There is a KYC for each customer, the digital store value and cash-in/cash-out facilities, and you have the facility to make a payment. When you do that, people get habituated to it and can adapt more sophisticated financial solutions as they come.

In the past, the conventional bank did not have access to the common people because the infrastructure to reach them was not good and banks didn't find these customers bank-worthy due to their low-ticket size transaction needs. However, in the digital space, costs can be reduced dramatically and banking services can be delivered avoiding the physical barriers, hence the scenarios are dramatically changing now.

If you think about your earlier days when mobile money came from telecom industry. In Bangladesh, why do you think no telecom company thought about this and made it big?

Let's look at Kenya as an example where telecom contributed in financial inclusion via M-Pesa. M-Pesa's parent company Safaricom had more than an 85% market share of the telecom industry for many years, which was a unique situation. Such was not the arrangement in Bangladesh.

Whereas for Bangladesh, I think it was completely an entrepreneurial story. We worked with a large non-governmental organization (NGO) called BRAC, which was like-minded in its social uplifting agenda, and BRAC also had a bank, which was placed well to ensure the central bank's rules and regulations were properly implemented in bKash.

Another powerful thing that happened in Bangladesh is that the government itself wanted inclusive financial arrangements to scale up and wanted to adopt digital platforms quickly.

It's a combination of all those things. I would say one, regulatory clarity with the government's support to make sure customer's interest are protected; and two, entrepreneurial efforts with a technology background so we had the actual understanding of telecom's process and technologies and how they reach people fast and the knowledge of working with telecoms. Third was, we very quickly gathered a meaningful investment and risk capital to start with.

A few other things which helped propel our growth were — 99% of the country was geographically covered with mobile network infrastructure, we got support from the Gates foundation even before launching the services, hardworking colleagues, like-minded investors etc.

At what stage did you start layering in new products to start augmenting the basic payment product into more sophisticated products like merchant-payments etc.?

Well, because we were a telco-agnostic company and we did not have the telco product readily available in our hands, we were solving people's 'send money home' problem first.

From 2014, we started offering airtime to people, and quickly all the operators started selling airtime to us. Then we moved to merchant products and utility bill payments.

If I look at my own household examples, initially our house helps did not have accounts. They were going outside the house and using bKash agent on the streets, saying, "Hey, can I use your account to send my money to my village?"

However, gradually through our communication and awareness campaign, and regulatory efforts, they figured out they can open their own accounts themselves with their national ID cards. Now they are receiving their salaries straight in their bKash accounts. Today, we have around 38 million registered customer and all KYCs are verified with the national database.

It has been only for last one year or so that we have opened up linking customers' bank account with bKash. If you have a bank account today, you can send money from bKash to bank. What we saw initially was that 96% of the people who were signing up for bKash did not hold bank accounts. Therefore, initially, there was no demand by the customer, but that changed later. Many of our recent customers were banked customers, so that's when we started building linkages to banks.

What does bKash 2025 look like? I know it's hard to forecast or predict; let's just get an idea of directionality.

Today half a million employees get their salaries through bKash straight from their employers' payroll. We see this kind of service increasing rapidly and by 2025 a large portion of the blue collar population should be receiving salaries through bKash and similar services.

Currently users can send and receive money between their banks and bKash accounts. We plan to develop more such bank partnerships so our common customers can access bank's various products. Banks may lend small loans to their customers using us as their channel of delivering loans and collecting payments. We have tied up with the two large credit networks so you can top up your bKash wallet using cards.

The entire chain of sending money home, you go to an agent point to top-up and send money home, is evolving. We are seeing people exploring digital payments instead of just seeking cash-out services. Even in the rural parts, small merchants are now accepting digital payment, and over 115,000 merchants across the country accept payment through bKash.

I do not expect that we will remain a platform focused on cash-in and cash-out in 2025. What we did eight years ago was look at money as a consumer product and capitalized on the agent network we had built to allow common people to get digital funds into their wallets.

In coming years, whether it is providing connectivity to bank accounts or payroll solutions, we will venture into more streams to offer our customers more options to fund the wallet and continuously build use cases where such funds can be utilized conveniently and efficiently.

Simplifying Mobile Money Uptake in Tanzania and Uganda

An Interview with Benjamin Fernandes, Founder & CEO of NALA



Benjamin Fernandes
Founder & CEO
NALA

Can you talk a little about yourself and NALA, before we get into the broader discussions on NALA and financial inclusion?

My name is Benjamin Fernandes and I am from Tanzania, East Africa. It was during my two year business school program that I got more involved in payments and trying to understand what difference I could personally make in the space and then I started working for the Bill and Melinda Gates Foundation in Seattle in the digital innovations team.

We came to build NALA based on a user research. I spent about 2.5-3 months in the field, in Dar-E-Salaam and Mwanza. For a bit of background on Tanzania, we have 60 million people and our GDP is around \$50 billion, but over \$60 billion is transacted through mobile money annually. There's a ton of money that moves over the payment rails in the market.

Right now mobile money is run on a text-based interface, and it's called the USSD (unstructured supplementary service data). It's basically unstructured text where you dial in digits and code into your phone just to make a payment. For example, the use case today is I'm trying to send Ronit money, I would dial in between 39–46 digits just to make a single payment. That's how people transact today, though it's 2019.

During our research, we interviewed 656 people and 95% of them could not tell us how much money they spent the previous week because there is no centralized hub where they can see and understand their payments and access them.

We started working on NALA and so for me NALA is a three-phase journey. The first phase is enabling an interface. What NALA is today is a mobile money application that enables you to make payments, pay friends, and make purchases without any Internet, across all your accounts.

How does NALA differ from other mobile money products that we are familiar with, from markets like Kenya, or South Asia? Can you walk us through how specifically NALA works?

On the continent today, you have 135 different mobile money services. These are tied to your SIM card, so a consumer in that market goes to a local shop, hands them \$10 and that person at the shop sends a text message to your SIM card and says, 'Hey Ronit, you've just topped up \$10,' and that's what mobile money is today in the market. That's how M-Pesa and other MM players work across the whole continent. That's the primary form factor of how people are transacting.

According to GSMA, in 2018 alone, just on mobile money in Africa, \$321 billion was transacted. This excludes mobile banking and is just mobile money. We, as a team, figured that MM has been growing significantly because of accessibility and the way MM survives is through agent networks. You need to have agent networks in different areas of the city for people to withdraw and cash-in money.

We realized the pain point is that the way people transact today is very inconvenient. Imagine having to dial in a 46-digit code every single time you want to send money to your friend. That's the reality for over 100 million people.

How does your solution work? How does it reduce this pain point?

We realized the current system was time-consuming and error-prone. You make one mistake and you have to start all over again, or if you send money to the wrong person, it takes you two weeks to get your money back. Hence, there are issues using USSD manually.

Instead, we run the phone dialer for them in the background of their phone and they never see this. We make the same call session that they would do manually themselves but we are doing it for them as one script, which is why it is much faster. All you have to do is select the main inputs you need, who you are sending money to, the amount of money, and the PIN for verification. The transaction is completed in seven seconds.

That is how NALA works without data, because all it requires is the GSM connection. That is how mobile money works and then we do the same payment for the consumer in the back end of their phone.

Is NALA sitting on top of existing mobile payment rails in Tanzania and other markets or have you built your own rails?

No, we sit on top.

How does NALA help in terms of the economics? How does it help reduce high fees made by the poor for making payments?

That's where it's gets a little bit trickier for us. Right now we're an enabler providing people with access, which means you can access all your SIM cards on NALA. You have one centralized application where you can truly see your spends across all your accounts.

Many people use NALA because it does not require data consumption and allows them to see all their accounts in one application, which only a third-party platform can do. Even if the telecom operators were to make their applications work without data, it would still be difficult for them to aggregate multiple accounts because of the many legal/competitive implications.

We believe that as we build more trust, consumers will be willing to save money with us, and if we were to launch an E-wallet, they would be willing to store that value with us and so that's the next step for us.

For us, in order to reduce fees, instead of getting a banking license, we can just work with a bank and offer free P2P for consumers because all they would have to do is cash-in from their bank account to the mobile money account and then it's an internal debit and credit for us when they're moving money around.

The cost benefit of offering the service for free is sizable enough for consumers to use the service, and we've been polling people and interest is high. We're currently negotiating with different banks to see which bank we should work with and the decision factors come down to a few things: the quality of their tech team, willingness to understand the service, and genuine level of interest. That's where we are at right now.

If we look at broadening the formal client base in financial services, be it is in Tanzania or more broadly Sub-Saharan Africa, what are some of the numbers we should be thinking about? Who are the players?

If we talk about East Africa, Tanzania has a population of about 60 million people. They say 10% of the adult population have a bank account but active users are only about 5%, and we do see this in practice.

However, when we ask our users what they do with their bank accounts, the number one use case they cite is 'to save money'. The second is 'to move money from bank account to mobile money account'. Finally, the third use case is 'to withdraw cash'.

Most folks in Tanzania have bank accounts because they get their cash salaries paid to the bank account — most of these are formal employees. Some university students also have bank accounts. Their number-one use case is 'to move money from bank account to mobile money account', as they get their school loan dispersed to them via a bank account.

However, with a mobile money account it is slicker, faster, and easier to do transactions with lesser fees. Notably, there are no monthly fees for a mobile money account, whereas in a bank account, you pay about \$12 at minimum for monthly fees. People in Africa are very price sensitive.

I think banks took too long to play catch up. It is only now that banks are building agent networks. It has been 12 years; they should have done these eight years ago. It is also only now that banks have a USSD channel to access SIM banking. They should have done those 12 years ago.

Of course, banks will still dominate with corporate clients, with the amount of money they are storing there, but for consumers, banks have a lot of work to do.

There are few markets where telecoms will always dominate, for example Kenya. There Safaricom has 80-90% market share and you do not see many competitors pop up, possibly dissuaded by the government's shareholding in Safaricom. Over there, it is going to take a lot for banks to play catch up.

In Nigeria, banks are dominant, but in most of Sub-Saharan Africa, it is mobile and mobile telecom-led. East Africa (i.e., Tanzania, Kenya, and Uganda) is all mobile telecom led. My hope is banks start to see opportunities and not try dominate everything; instead, they should start working with organizations that can help them.

Whether it is going to be commerce, I do not know. I think commerce is very hard to do on the continent, mainly because of being able to scale delivery; that has been the most difficult thing so far. I think commerce is going to take a while.

There are organizations such as Flutterwave or Paystack that are trying to build the payments infrastructure in Africa. It is going to be a massive business in the future but if you do not have any services to help it take-off, it becomes difficult. You can build amazing rails, but what if, they do not get used to full extent in the next five years? You still have to keep them up and the overheads are very high.

My expectation is that each market across the continent will evolve differently. For example, Nigeria is very bank-led, Ghana is telco-led and they are right next to each other. I think it will evolve, but the role of payments will start to decline, whereas additional services will start to grow.

Arguably, the payments aspect is huge, but companies will ask 'what else'? Can you do salary advances? Can you do other products and services for consumers? Can you do insurance (which most people do not believe in on the continent)? What does that look like?

Telenor Drives Mobile Money Transactions in Pakistan

An Interview with Khurram Malik, Head of Branchless Banking (Easypaisa) at Telenor Microfinance Bank



Khurram Malik

Head of Branchless Banking (Easypaisa)
Telenor Microfinance Bank

Pakistan suffers from some of the lowest levels of Financial Inclusion globally (only 1/5 adults have bank accounts): why is that?

In Pakistan, the unbanked population is estimated at 100 million adults, mostly women. According to State Bank of Pakistan's Access to Finance Survey (2015), the formally banked individuals (those having transaction accounts, either conventional or mobile money accounts) were 23 percent of the adult population. More recently, the World Bank's Findex database estimated the financially-included population at 21 percent of Pakistani adults, for 2017.

Women comprise half of the adult population in Pakistan and the socio-cultural environment especially in rural areas (~60 of Pakistan's population resides in rural areas) inhibits bringing women into the financial fold. This is substantiated by the staggeringly low financial inclusion number for women, which stands at less than 5% whereas the regional average is 37%.

There is a general lack of financial literacy knowledge and skills on financial matters in the country. The population lacks the confidence to take effective and responsible decisions and to make appropriate use of financial resources, and cash dependency is amongst the highest in the world.

What role has Telenor bank played towards Financial Inclusion in Pakistan?

The Bank's key strategic initiatives are majorly directed towards increasing the number of Mobile Account (MA) users across the country, offering various use cases like money transfers, bill payment facilities, air-time top up, and payment solutions. Such products allow us to cater to a large market segment that is otherwise geographically confined and unable to access formal financial services. With the country's largest BVS (Biometric Verification System)-enabled retail network of over 130,000 retailers, Telenor Microfinance Bank (TMB) has been able to provide financial services to over 25 million customers.

The Bank achieved a major milestone via the commercial launch of QR code in 2018, and by the end of December 2018, QR code-enabled locations rose to greater than 17,000 merchants throughout Pakistan. This has been a major component helping to facilitate the payments business — one of the fastest growing services in Pakistan. With almost 85% of online payment transactions taking place through cash-on-delivery (COD), QR code will become one of the best mechanisms for digitizing cash based payments and reducing the high cash flow costs associated with COD payments methods.

Digital lending launched by TMB's mobile account platform Easypaisa has also gained significant traction, seeing an exponential growth of over 2,000% since its launch, having disbursed over 1 million loans by September 2019. The first-of-its-kind service in the South Asian region, Easypaisa digital nano loans provide small, unsecured short-term loans to micro SMEs who do not have a formal financial record using cost-effective digital processes. Loans are approved within five minutes and disbursed to applicant's mobile account. Easypaisa has also recently launched the 'Retailer Cash Advance' product whereby it offers lending solutions to retailers facilitating their business needs and allowing them a chance to grow their business.

TMB has many industry-first initiatives, the latest and most significant being the market's first blockchain-based cross-border remittance service. Launched in partnership with Valyou, the Easypaisa counterpart in Malaysia, the service is powered by industry-leading blockchain technology developed by Alipay, the online payment platform operated by the Ant Financial. Through this service, a beneficiary in Pakistan receives the remittance directly in their Easypaisa mobile account within seconds through real-time response via blockchain technology. Along with the element of cost optimizations and security, the blockchain wallet has been designed to facilitate the overall user journey; customers receive the remitted amount in their mobile accounts, and these customers can withdraw these funds easily from a network of over 70,000 retailers spread all across Pakistan.

To bring the unbanked and the underbanked into the fold of financial services as envisaged by the National Financial Inclusion Strategy (NFIS) and the Financial Inclusion Program (FIP), Easypaisa is closely working with Pakistan Microfinance Network (PMN). The collaboration is aimed at digitizing Pakistan's microfinance industry through a Digital Services Platform (DSP) that would increase accessibility for clients and bring efficiency through available distribution channels. The project is expected to help the microfinance sector achieve its goal of reaching out to 10 million borrowers, 50 million deposit accounts, and 11 million insurance clients by 2020, massively helping increase the outreach of financial services to the underbanked population in Pakistan.

Identity verification issues are often a major roadblock towards Financial Inclusion. How have you overcome this challenge?

The bank has a seamless registration process, which only requires users to have a valid mobile number linked to their national identity card; there is no need for any physical verification or visiting an outlet to operate an MA. Easypaisa has an expansive BVS enabling the retailer network to cater to the rigorous KYC requirement set forth by Central Bank, and various operational measures in place to reduce the chance of fraud.

Mobile phone based financial inclusion has been at the forefront of banking the unbanked in several African markets. How has your experience in this field been? Do you foresee further upside to mobile-based accounts (e.g. mobile money) in Pakistan? What are the roadblocks to growth in mobile money?

Recent Findex stats find that ownership of financial accounts in Pakistan — including those with commercial banks, microfinance institutions, and mobile money accounts — has risen to 21% of the adult population, compared to 10% in 2011. Albeit slow, the rise in account uptake is a cause for hope for Pakistan and has largely been enabled by leveraging technology to build advanced and inclusive financial solutions.

Not many years ago, Pakistan's financial services sector was in a morbid state with over 100 million Pakistani adults — accounting for 5% of the world's unbanked population — lacking a formal bank account. The underprivileged segment of the population was the worst hit as opening an account in a conventional bank was complicated and full of hassles. Tedious paperwork and distance to the nearest financial institution remained top barriers to opening a formal financial account.

Branchless banking services like Easypaisa, resolved these issues by enabling account opening, and sending and receiving money simply through a basic mobile phone. The product leverages Pakistan's healthy teledensity, which stands at a promising 76% today, to deliver financial services straight to users' mobile phones. In a very short span of time, a network of Easypaisa retailers and franchises mushroomed across the country, serving millions of customers each day.

While the regulatory environment has been largely supportive in the country, certain laws passed by the governing bodies have previously affected growth, including prohibitive requirements for the verification of the customer national ID that details caused friction in the customer journey and the requirement of biometric verification (BVS) before performing the first transaction. Telenor Microfinance Bank has taken active measures to address these issues through product improvements and constant engagement with the regulators, and with marketing campaigns that have been designed to enhance people's confidence in mobile money products.

Historically the mobile money industry has focused on bottom of the pyramid customers, more recently though there has been recently a paradigm shift of sorts with promotion of mobile money payments related use cases to a younger crowd. Pakistan has a huge youth bulge with about 64% of the population under the age of 30; by catering to these segment also known as early adopters through cashback marketing strategies and others, institutions like Telenor Microfinance Bank are contributing towards enhancing mobile-based accounts usage in the country.

How supportive is the regulatory regime in other efforts towards financial inclusion?

The State Bank of Pakistan (SBP) — the Central Bank — is the regulator exercising oversight over all bank based financial institutions. SBP understands the problem at hand and has taken several steps to increase financial inclusion.

Branchless banking regulations were introduced in 2008 by SBP as part of Pakistan's Financial Inclusion Program. The idea was to provide an entry point in the financial system to tens of millions who had a cellular subscription but did not have a bank account. Moreover, scaling mobile financial services was cost-effective for increasing outreach as compared to brick and mortar investments in the form of bank branches. In 2015, a detailed policy blueprint emerged in the form of the National Financial Inclusion Strategy (NFIS). The strategy envisaged a target of having 50% adults having transaction accounts by 2020, besides raising share of women with transaction accounts to 25%. The current government has taken the baton and revised the strategy in 2018 and termed it as 'enhanced' NFIS. Unlike the 2015 NFIS, the latest version explicitly states the target of having 65 million digital accounts by 2023.

Some recent measures taken by SBP for enhancing financial inclusion include expanding mobile money licensing outside of financials (Players like Careem — the leading ride-hailing service — are now offering wallets), and the launch of the Asaan Mobile Account (AMA) Scheme which allows anyone with a basic mobile phone to open a digital transaction account swiftly through a USSD code or string from anywhere at any time.

You have been a trailblazer in the digital disbursal of government benefits: tell us about this effort. What are your next plans to expand into disbursing salaries (example of textile workers as seen in Bangladesh)?

The Federal Government's BISP benefits initiative has been designed to financially empower women with approximately 6 million beneficiaries with an annual disbursement of PKR 130 billion (\$84m).

Initially the grant amount was disbursed via Pakistan Post, and cash envelopes were physically handed over to the beneficiaries. This resulted in embezzlement and cash handling issues; it also raised security concerns for the distributing agents. Later this mechanism was transformed to card based payments which were being utilized at ATMs across Pakistan. The challenge however still remained; there was no way of assuring whether the grant money was reaching its rightful recipient.

In order to address the problem of ensuring that the rightful owner of the grant receives the amount, BISP on-boarded Mobile Banking Operators for Bio-Metric Based Verification System (BVS), based cash withdrawal solution. Implementation of BVS system has made payments much more secure and has substantially reduced the number of complaints lodged in the past from conventional cash out and distribution methods. Total recipients served today via Telenor Microfinance Bank/Easypaisa channel are approximately 1.2 million.

TMB's future aspirations are focused on MA uptake and the employee base in Pakistan which totals to 40 million, 60% of which is focused in metropolitan cities, offers a massive potential for MA adoption and growth. TMB will target salary disbursements by approaching employers and also onboarding customers through the regular marketing strategy.

How does the partnership with ANT Financial help you? What has changed since working with them?

The strategic partnership between Telenor Group and Ant Financial combines TMB's knowledge and local market presence with more than 25 million customers, and Ant's technology in Alipay, the world's largest digital payment platform, and other financial services, to bring mobile payment and inclusive financial services to individuals as well as small and micro businesses in Pakistan.

With the arrival of Ant Financial (Ant) as a shareholder, TMB has the opportunity to learn from the successful payment ecosystem development model Ant has built in China and other countries. Ant's equity injection, knowledge and technology transfer has driven growth in TMB's mobile account transaction active base in 2018 and 2019.

Going forward, Ant's advanced technology will be used to support growth in the user base and serve the customer better through improved customer journey and the introduction of beneficial use cases that increase activity rates.

Mobile Money Lending and Saving Products Experience from Nigeria

An Interview with Chijioke Dozie, Founder & CEO of OneFi and Odunayo Eweniy, Founder & COO of PiggyVest



Chijioke Dozie
Founder & CEO
OneFi



Odunayo Eweniy
Founder & COO
PiggyVest

Can you talk about the company OneFi and the brand Carbon? What was the problem you were trying to solve in Nigeria?

Chijioke: We started OneFi in 2012 and our thesis was, and still remains, that banking in a large part of Africa is broken because of high legacy costs.

Banks typically focus on physical infrastructure. They have expensive and inflexible tech platforms. There is a significant customer misalignment as banks have been used to investing in treasury bills and not actually fulfilling their traditional function of extending credit to their customers.

We saw there was a huge gap. At the time in Nigeria, retail lending to GDP was only 6% compared to South Africa (72%) and Kenya (30%) where it was much higher. Hence, there was a huge underserved market for credit in Nigeria, and that's why we decided to take the plunge.

We started off as an offline lender and we then moved into digital lending.

Odun, tell us a little bit about the genesis, the origin story of PiggyVest?

Odunayo: Well, I suppose, similar to Chijioke, the gap we saw was between Millennial habits and the existing banking infrastructure. Our story is very simple.

We saw that young people in Nigeria were using actual wooden boxes to supplement savings as opposed to using their bank accounts, although each of them had on average at least two bank accounts. We realized that there was a savings gap that people were filling with unsustainable means, like actual wooden boxes placed in their homes. That's why we created PiggyVest, earlier called Piggybank.

We created it to help young people who find their bank account inadequate for saving, an accessible, affordable and sustainable means of much disciplined savings, so they can meet their responsibilities.

Since Nigeria's credit infrastructure is so lax, which is what Carbon is essentially trying to fix, most people have to save for almost all of their responsibilities, like rent or buying a car. All of that is done in cash, in bulk, and upfront. That means people need to save up and their bank accounts are not solving that problem. That's why we started Piggybank.

Chijioke you said you started offline, then you went online, so talk us through that history? How the distribution works? Is it a mobile distributed product primarily today? Anything else you can tell us about your typical client?

Chijioke: Sure. When we started in 2012, we had an offline model where we utilized agents. We had agents going to offices and homes, selling loans on a daily basis. All we had was a simple application form that required just where they lived, where they worked, and how much they wanted. We typically only focused on salaried employees and we had a 72-hour turnaround time.

The challenge with that model was it wasn't very scalable. We were still competing with banks who had deeper pockets, a wider distribution and they had a wider customer reach. In 2016, we transitioned to a digital app, so customers then had to download a smartphone app on an Android phone.

Due to changes in identity laws in Nigeria, everyone who has a bank account needed a bank verification number — probably similar to the social security unique identifier. Everyone needed to have that and we had access to that database, so we were able to verify people remotely. Hence, we were able to verify customers 24/7.

Customers could basically download the app, apply for any amount from \$1 to \$3,000 and we would check their Credit Bureau history and check their identity. With customers' permission, we also have access to things like, their financial transactions on their phone, information about their contacts, their call habits, and their location data. We would take all that information and plug that into our algorithm and, within five minutes, come up with a decision as well as disperse a loan into their account.

When we started, we were doing about 50 loans a day. We now process about 9,000 to 10,000 loan applications on a daily basis. We have dispersed 5,000 active loans to customers. We do about \$9 million in monthly disbursements. Our average loan is about \$80 and average tenure is three months.

I think our sweet spot are customers 22-40 years old. Seventy percent of our clients are male, something we're trying to fix, 15% of our loans are in Lagos and 50% of the loans are for business. The average income of our customers is about NGN 100,000 a month (\$275).

Odun, can you give us a little bit more detail about the key products at PiggyVest? How it works? How you distribute them? What the average client looks like and flesh out as many KPIs as possible?

Odunayo: We started Piggybank in 2016 and it's now called PiggyVest. When we started, we knew we were going to be targeting young people. Our core market is anywhere between the ages of 18 to 35. In fact, that demographic makes up about 65% of the platform, but we also have people from other demographics using the platform.

More importantly, the service that we offer is savings and micro-investments. We started with savings and we realized that if people were putting money daily, weekly, or monthly into a wooden box, then a digital platform should provide much of the same purpose and be as uncomplicated as possible.

Initially we started with helping people save daily or monthly. About five months later, we had users telling us not everyone is salaried and not everyone's income is regular. Hence, we added a feature for SMEs and business owners whose incomes are irregular. We added another feature that allows people to control their savings, so you could just log into your app and deposit an amount that you wanted to.

Moving forward from that, we created our own take on a treasury deal or like fixed deposit account. If you have been with the Piggybank ecosystem, you can also invest. We go for as low as 10 days and you can invest as low as NGN 1,000, which is about \$3.50 and you get your own interest upfront, much like a T-bill, except that T-bills are a bit prohibitive because the minimum will be about NGN 100,000 if you were to approach a bank or the average asset manager.

We have gone from just those two savings wallets and investments to having dollar savings for our users, to protect against the devaluation of the naira.

On the numbers side, we have about 575,000 registered users on the platform right now and about 290,000 of those are active users. Since we started in 2016, we have saved through the platform about \$90 million and we operate an asset management model. So, we currently are managing assets of about \$23 million and the average yield on the platform has been 10% which is I think for growing organically; we're very proud of that, but we hope to be able to accelerate the growth moving forward.

Can we talk a bit about Nigeria in general terms: how do you assess where we are in terms of development when you look at the overall financial market today? Do you expect to see a material increase in banking penetration over the next few years? Are existing big banks going to drive it?

Chijioke: Given the chance, I think you will definitely see an increase in activity, i.e., more provision of bank services to customers, as the likes of Carbon, PiggyVest, and others will actually grow.

I think one of the challenges/risks we all face is the regulator. We all have to be very cognizant of what the regulator does. Although banks make a lot of noise on serving more customers, given their structure, I think they are highly inflexible.

If you look at the people running the banks, most of them have a corporate background. However to increase financial inclusion, you need a retail background and people who have the experience of going to the masses. That is where the telcos and FinTech players come in. We do not have the banking bias.

When you look at Nigeria, it is very different market from Kenya or even Ghana where mobile money is more active. Therefore, I believe it boils down to what the regulator allows.

I do not think there is any shortage of FinTech players or telcos that want to make a serious impact on the Nigerian financial space. You will definitely see more activity.

How significant do you think telcos will be in payments or financial services? What about new Internet-based financial services companies such as yourselves? What is the realistic upside on a two- to three-year view, specifically looking at increase in client numbers or volumes?

Chijioke: If I look back at 2015, and asked where you could get a loan from, they would perhaps tell you 'a bank', but you probably would not get one.

However, if you ask in 2019, they will list down a few banks, but probably more FinTech players. Therefore, I think things are changing. Millennials are waking up and saying, "Well, actually, I am not going to save in the bank. I want to save with PiggyVest, Carbon or another wealth manager".

However, it also depends on funding, as banks still have access to cheap deposits and capital. FinTech players and telcos have the skills and reach using technology or offline agents. Some of the large telcos have 50-60,000 agents that sell airtime and also have the capability to partner with FinTech players. There are some examples in the market already where you see telcos partnering with FinTech's (e.g., credit-scoring algorithms).

In the next three years, I think it is very probable that individuals will use apps or other non-banks as their primary accounts or wallet. I think that is inevitable.

I'm going to read out a post from Jack Dorsey, and you've probably seen it Chijioke. He says, and I quote "Sad to be leaving the continent...for now. Africa will define the future (especially the bitcoin one!). Not sure where yet, but I'll be living here for 3-6 months mid-2020. Grateful I was able to experience a small part." Obviously Jack was in Nigeria. What is he so excited about?

Chijioke: I think my view with Africa is there are so many possibilities. When I think about the West, I think of America or the U.K., with Africa it's a very young population. I think we're open to trying new things. Everything is yet to be done.

When people talk about disruption for instance, there's not much to disrupt in Africa compared to in the West. It's about building things right. It's not about disruption. If you're a builder and you want to try new things that you want to create new realities, I think Africa is an amazing place to be.

I think what Jack Dorsey has done is bought into that vibe. I mean it's not without its own challenges, but I think there's so many possibilities and I don't think that I would have been able to do what I'm doing now in many other countries with the little we had when we started. Hence, I think that's the great thing about this continent.

Odun you get the final word on the same quote I read out to Chijioke from Jack Dorsey. What do you think it means?

Odunayo: Well, yeah. We're like 70% young people. We tell our employees to adopt technology faster than others. I am using the word adopt because a lot of people in the West are already familiar with these technologies. So we are having to catch-up here and the young people are falling in love with the technology for the ease that it brings to their lives.

Nigeria is one of the biggest countries for bitcoin in the world. This speaks back to a lot about our policies, regulation, and the economic challenges, but that's why we are here. People love bitcoin because it's a store of value that actually is better than the naira currently. That reason for so many industries are gravitating towards this solution.

We have a big bitcoin presence, a big FinTech presence, and a big building infrastructure present. Any CEO from a Western country will be able figure out that Nigeria or Africa as a whole is probably the most fertile ground for the next use of their technology. Since, we're young and able to accept this technology and are simply hungry for the future, are very hungry for better. I think that's what Jack saw and what everyone else will eventually see.

A digital currency ecosystem comprises the miners (who mine new units of the currency), wallets (that store these cryptocurrencies) and the exchanges (where these cryptocurrencies are traded)

According to BIS study, financial services is only 11% of BigTech's revenue and it is largely focused on providing basic financial services at the moment to their large user base

BIS suggested that to ensure soundness of the financial system and broader public interest, regulators need to subject BigTechs engaging in banking activities to the same regulations that apply to banks

Digital Currencies: The Next Frontier

Over the past few years, there has been a rise in interest in the field of digital currencies (also known as cryptocurrencies). While this was initially led by the popularity of bitcoins, the advent of newer and modified digital currencies has led to a further increase in curiosity in this field. Although not all digital currencies can be thought of as addressing the issue of financial inclusion, there are avenues where such currencies could play a meaningful role towards bridging the financial inclusion gap. In Appendix II of this note we address some basics around blockchain and digital currencies.

BigTech Drive Financial Inclusion: Payments to Stablecoins

Over the past few years, large technology firms have grown exponentially, and in many cases (partly boosted by strong mobile penetration — especially in Emerging and Frontier Markets) now have a larger presence vs the legacy financial infrastructure of banks and their branches.

These BigTechs have made great inroads into payments, especially where mobile penetration is high, and have the potential to rapidly establish a dominant position by leveraging their large user base and network effects. Remittances and cross-border retail payments are other activities ripe for entry. BigTech's move into finance has been most extensive in China, with players offering money market funds, insurance products, and doing consumer lending.

Thus far, these BigTechs have largely focused on providing basic financial services to their large user-base, acting as distributed channels for third-party providers. Notably, according to a recent BIS study ([BigTech in Finance: Opportunities and Risks](#)), financial services accounts for 11% of BigTech revenues and players are seen expanding in Southeast Asia, East Africa, and Latin America. Clearly, BigTech's entry into finance can help lower barriers to financial access by the use of Big Data/AI and can reduce transaction costs. They can be instrumental in bridging the financial inclusion gap in emerging and frontier markets.

The BIS paper highlighted that despite the upside, the entry of BigTech firms into the area of finance poses new risks. The biggest concern potentially is that of anti-competitive use of data given the massive scale of data BigTechs often tend to collect, which could lead to price discrimination. Other anti-competitive practices could include product bundling and cross-subsidizing activities.

BIS notes that the formulation of policy for BigTech's activity in finance may be challenging as they warrant a more comprehensive approach encompassing not only financial regulation but also competition and data privacy objectives. However, the goal for regulators should be to leverage from gains presented by the entry of BigTech, while limiting risks. BIS suggests in order to ensure soundness of the financial system and broader public interest, regulators need to subject BigTech engaging in banking activities to the same regulations that apply to banks.

We believe that while BigTech in finance does offer opportunities for financial inclusion, their entry into the cryptocurrency space could potentially have far wider impact towards financial inclusion goals.

Stablecoins at Work: Addressing the Financial Trust Deficit

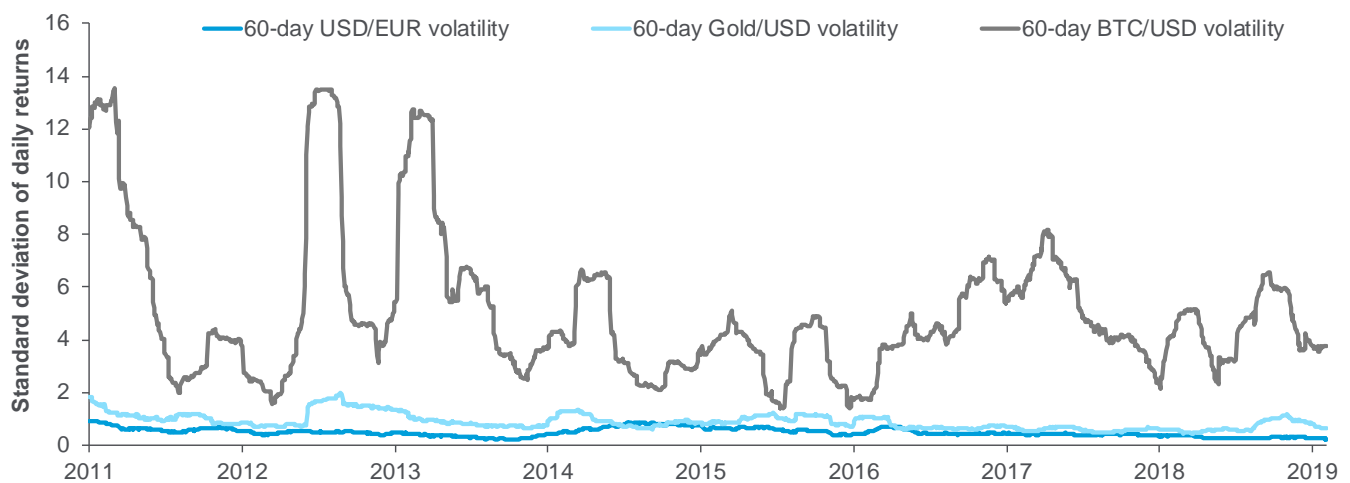
The Volatility Cushion

Stablecoins are blockchain-based digital currencies that are collateralized to the value of an underlying asset, hence, are not subject to extreme price volatility

One of the key criticisms of the legacy digital currencies has been the extremely volatile nature of these assets. This limits the real-world usage of these digital currencies.

Stablecoins are blockchain-based digital currencies that are collateralized to the value of an underlying asset. Owing to their peg, stablecoins are not subject to extreme price volatility, which has otherwise prevented mainstream adoption of applications built on top of cryptocurrency protocols.

Figure 75. Volatility of Bitcoin vs. Gold vs. Fiat Currency



Source: Buy Bitcoin Worldwide, Coin Desk

Stablecoins also differ from decentralized cryptocurrencies, where in the latter, no single central party has the authority or power to control the operation or outcome of the process. A decentralized network relies on a host of computers to complete the process. On the contrary, stablecoins tend to be backed by a single base, and work more in a centralized pattern.

Stablecoins are centralized cryptos. Decentralized cryptos don't have a central repository which could wipe out all the holdings in case of a server crash or if the user misplaces his private key

Further, decentralized cryptos do not have a central repository which could wipe out all the holdings in case of a server crash or if the user misplaces their private key. This is not the case with collateralized stablecoins which has equal or more asset base to rely on.

There are broadly four different approaches to developing stablecoins – as highlighted below:

Stablecoins could be fiat-collateralized, asset-collateralized, crypto-collateralized or algorithm-managed

The most commonly collateralized stablecoins are the ones linked to fiat currencies such as the U.S. dollar, euro, or U.K. pound. These stablecoins are created when fiat is held by a centralized issuer and destroyed when fiat asset is received. This promises to make transactions safe, fast and secure and can be utilized on a daily basis.

Asset-backed stablecoins are digital currencies pegged against price of physical assets/commodity. Crypto-collateralized stablecoins use crypto-assets as collateral to smooth out price volatility. Non-collateralized stablecoins use an algorithmically-governed approach to control stablecoin supply to ensure its value remains stable.

Figure 76. Pros and Cons of Fiat Collateralized Stablecoins

Pros	Cons
Stable pricing	Centralized operation and issuance, albeit less than traditional money
Offers cryptographic security	Scalability problems like other crypto, if it is to be used as a daily payment system
Fast transactions at low cost globally	Need a trusted custodian to store the fiat
Protects against local currency crashes	Need for an independent third-party for regular audits
	Fiat currencies lose purchasing power through inflation and volatility in exchange rates

Source: Citi Research

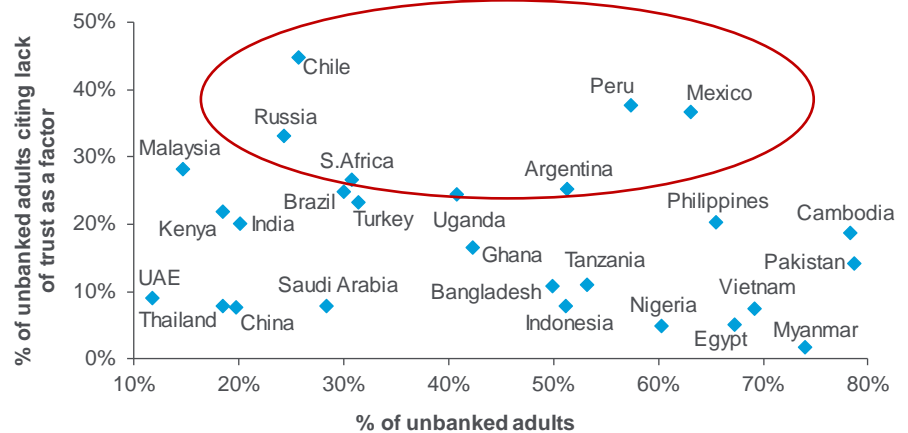
Use Cases for Stablecoins – The Financial Inclusion Angle

Unbanked adults in markets with high inflation and FX fluctuations cite lack of trust in financial institutions to hold their hard earned savings. See Figure 77

As highlighted earlier, trust in the banking system continues to remain one of the key reasons why people chose to remain unbanked. At a global level, about 10% of the unbanked population cited “trust” as a key missing factor to park their hard-earned savings within the banking system.

Closely looking at Figure 77 below, we see that markets that lead on this trust deficit include LatAm markets (Chile, Peru, Argentina, and Mexico) and Russia. Clearly, in most of these markets, high inflation and/or recent currency fluctuations have been the catalysts for this trust deficit. A stablecoin’s value is generally pegged to an underlying asset — mostly DM currencies or gold/similar, which makes it more “stable” compared to local currencies in some of these markets.

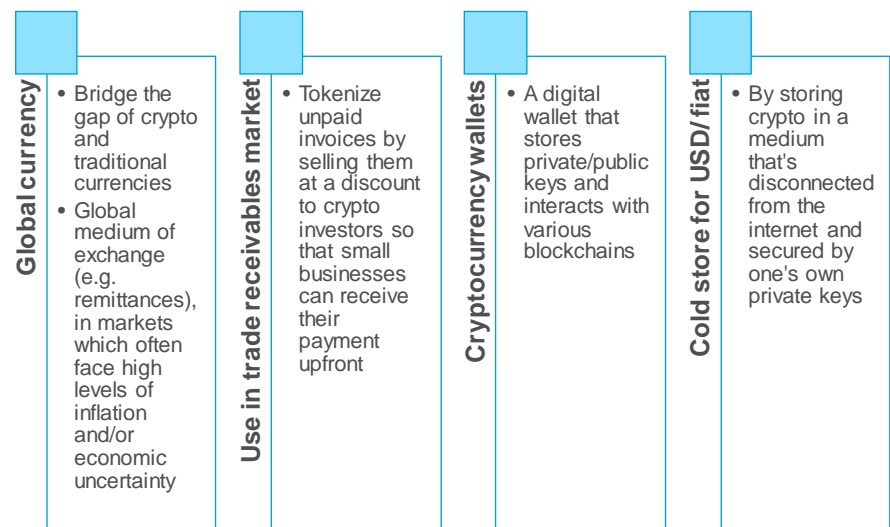
Figure 77. % of Unbanked Adults vs. % of Unbanked Adults Citing Lack of Trust in Banks



Source: World Bank, Citi Research

While stablecoins and their usage continue to evolve, at this point, we see other use cases for stablecoins in the below broad areas

Figure 78. Stablecoins - Use Cases



Source: Citi Research

Can BigTechs Use their Reach to Address Financial Inclusion?

Interviews on Facebook and Libra Digital Payment System

Interview #1: Facebook, Libra, and Stablecoins

Following the announcement of the Libra project in June 2019 we hosted a discussion on the, at the time, nascent project. Speakers included: Henri Arslanian (FinTech & Crypto Leader, Asia, PwC Hong Kong), Ramani Ramachandran (Co-Founder and CEO of ZPX) and Simon Taylor (Co-Founder and Blockchain Lead at 11:FS).

Below are some of the key excerpts from the Q&A session relevant to the debate around financial inclusion.

What are the meaningful problems with digital payments today that Libra could help solve?

Henri: I believe Libra is tackling the development of digital payments, not only for elements like financial inclusion, but also democratizing payments. I prefer to look at this in three parts — short-term, medium-term, and the long-term problem.

In the short-term, there is remittance and payments. At a national level, looking at markets like Australia or the U.S. on its own (internally), payments is not a big problem. It is obviously a cross-border issue. According to The Economist, on an average cross-border transaction, fees eat up about 5% of a typical transaction. Obviously, the problem gets worse as you go into more emerging markets.

Average remittance costs in South Sub-Saharan Africa can be as high as 19%, which in 2019 is frankly a bit ridiculous

In fact, according to World Bank's Migration and Remittance Factbook, average remittance costs in South Sub-Saharan Africa can be as high as 19%, which in 2019 is frankly a bit ridiculous. The good thing is that platforms like Libra have the opportunity to address this issue, and potentially help those paying the highest fees, especially when these are the people who can afford it the least.

What are the various use cases that can develop over time?

Ram: The remittances use case that Henri talked about earlier is actually compelling from a macro perspective. Average cost globally is anything between 5-9% just to move money from point A to point B. That is a compelling proposition. India especially is the leading corridor for remittances both from the U.S. and from the Middle East with roughly \$90 billion annually. Therefore, remittances might be some distance away for Libra to take head on. I believe the way for Libra to play there is to have its Calibra act as a wallet, on top of which the traditional money transfer companies can then build solutions.

Libra could replace using credit card overseas which attracts fat FX mark ups.

The more interesting opportunity or low-hanging fruit is for travelers moving between geographies. For example if I have a credit card in the U.S. and try to use it in Asia or Europe, I am charged a ton of fees. This is needless friction just due to the old card acquirer interbank model. This could be a low-hanging fruit.

For Facebook to become largest digital wallet provider by customer base in the US, it just needs to convert 2% of its monthly active user base (2.4b)

Within the U.S. itself, P2P payments are roughly \$12 trillion as per Forrester Research. Venmo and Square Cash currently have around 40 million users. To give you the 40 million number, Facebook just needs to convert 2% of its installed base to become the largest digital wallet provider in the U.S.

An important element for financial services is mobile banking, and it could layer on a fair number of the whole FinTech playbook there. It is actually implemented on top of that. Now, you have an active user base of 170 million people, 5% penetration could put Calibra as the seventh largest active digital user.

If you look at the global numbers, with 2.4 billion monthly active users, a 5% on that gets you to pretty close to Apple Pay's 130 million. This becomes even more attractive when you look at the partner's network that could help multiply this number. For example, Uber could offer discounts on payments made with Libra; or Spotify could offer Libra credits for downloads.

Libra could expand and offer whole suite of financial services such as lending, portfolio management, and insurance

Once you are able to get the right model, you can easily expand — e.g., Libra could expand to offer a whole suite of financial services such as lending, portfolio mgmt. and insurance. That is a great combination of data and network access.

Other applications of Libra could be in countries like Venezuela and Argentina. Venezuela has 12 million Facebook users, who can access Libra, provided the Venezuelan government does not censor Libra access. Arguably, Libra is likely to be a more stable store of value than the Bolivar.

What about the financial inclusion angle, i.e., assisting the unbanked or underbanked? Why do we need a stable coin? If Facebook or other big platform companies want to do this, why not a fiat currency? Why crypto?

Approximately 85% of Facebook's user base has smartphones, which is far more than the number of people that have direct access to banking accounts

Ram: If you look at Facebook's user base, approximately 85% of them currently have smartphones, which is far more than the number of people that have access to banking accounts. To answer your question, why Facebook or other big platform company should look at this specific method and not use existing setup. A lot of incremental evolution is happening in terms of financial institutions. Financial inclusion initiatives are also being driven by the governments themselves in places like India or Africa or Southeast Asia, engagement from organizations like the Bill & Melinda Gates Foundation and so on. They are all fundamentally incremental.

Something like the Libra coin, which spans borders and has access to a level of data that it has, is very fundamentally different. The other important thing is that Facebook has access to a lot of user information including financial behavior. In fact one of the big comebacks governments have against many of these efforts is related to how they can track the movement of money. How do they get to know everything about somebody who's actually using this network? That's what gives governments a lot of control whether it's financial inclusion, or direct transfer.

Interview #2: Will Libra be Good or Bad for Emerging Markets?

In late August, we hosted a conference call with Jorge Ruiz, Founder and CEO of FinConnecta and Michael Kimani, Blockchain and Crypto Analyst to further discuss dynamics around Libra and Stablecoins. In this call, we focused on whether they believed Libra would be good or bad for emerging markets.

Below are some of the key excerpts from the Q&A session relevant to the debate around financial inclusion.

How do you see regulators or policymakers reacting to the Libra announcement? We know some of the reactions from the U.S. What is the reaction in Kenya or other major African markets?

Michael: Based on what I have seen, it has not been as intense as in the U.S. There have only been couple of central banks who commented on the Libra project.

However, it was not any different from the reaction cryptocurrencies like bitcoin have received in the past.

For example, in Kenya and Nigeria, we already have companies using cryptocurrency and related technology to explore possible use cases (e.g., BitPesa). The ecosystem has actually grown a lot since 2014. Hence, I think Libra coin has not been a shock. We have already had the cryptocurrency products.

One of the big use cases that Facebook and/or the Libra Association is pushing is financial inclusion. Jorge, how do you see the upside on financial inclusion from a Latin American perspective?

Jorge: Yeah, I mean, from a Latin American and worldwide perspective, there is one-fourth of the world's population today that does not have access to financial products, right? Why is that important? Because, for any of the 28 members of the association and the new ones to come, that translates into clients that cannot buy the products, that they cannot sell their products, and depending on the industry that they will be in, the unbanked are not present in the economy.

It is important, not just because of the individuals who do not have access to proper financial services, but also because the economy is not benefiting from one fourth of the population. The more we can include into the financial system, the greater the global economy is likely to benefit. This is one of the reason why Facebook and the other 27 members of the association are pushing for financial inclusion.

Of course, this is good as it is everyone's right to have access to the same type of services. At the same time, it also helps companies and economies grow and become more efficient.

Michael, do you think this is bit of Western PR (be it Swiss-based foundation or an American company) coming to save emerging markets/Africa? Is there a genuine use case here?

Michael: We have seen that line being used many times by the likes of Safaricom and M-Pesa, which is one of the largest here, and it has worked. I am not surprised Facebook has also used it. The question is whether they can actually do this. Is there a use case for reaching the unbanked?

If you look at the members of the Libra Association, you can see some organizations that kind of have been already working on such projects in some of these markets. I think they could achieve financial inclusion through their partners because we have over 11 million WhatsApp users and some of these people are probably in the agricultural center, while some of them are boda boda (a bike hailing service) riders. There could be emergence of some interesting use-cases, if you look at the partners Facebook is looking at in each market.

For example, Tala, a digital lender has already been talking about possibly working with Facebook to use some of their social media profiles of Kenyans to lend and use it for their credit rating. I think Facebook could achieve some of this growth if they work with the right partners and are strategic about the partners they pick.

There is a whole market in the Sub-Saharan Africa right now. Kenya and East Africa are leaders in digital and smartphone adoption. However, new markets are coming up, like in DR Congo and others countries in Central Africa, which will have a population of young people coming into the digital economy through \$20 smartphones like the KaiOS. Facebook could be the first digital lender in a market

like Democratic Republic of Congo. There's a lot of potential; but I'd look at how they actually bring that potential to implementation.

Interview #3: Libra – If? When? How?

In October we hosted a conference call with Simon Taylor (Co-Founder and Blockchain Lead at 11:FS) and Ajit Tripathi (Founder at Asango.io) to discuss the dynamics around Libra, such as – will Libra launch and in what form? How can the world of financial services, internet and public policy be changed? Below are some of the key excerpts from the Q&A session relevant to the debate.

The Libra Foundation has got a bit smaller than we had expected it to be a few months ago. What is going on? Is Libra going to happen?

Simon: I think that is the killer question on everybody's mind. Facebook (rather than the Libra Association), still states that Libra will launch in mid-2020, but there is a lot of ambiguity today. When Libra initially launched on June 18, 2019, a number of high-profile organization really stood out.

Some (e.g., Visa, Stripe, eBay, PayPal) have now declined to join the Libra Association, which we know is a not-for-profit registered in Geneva. However, it does leave some very interesting companies still in the Libra Association. You have Vodafone, Spotify, Uber; all of which are big companies with lots of users. I think Libra will launch, but I do not know if it will in 2020.

I am reminded of the classic quote "people tend to overstate the pace of change and understate the impact." The impact of Libra would be phenomenal, but Libra has been changing shape – What they announced three months ago is changing.

Ajit: I think Libra will at least have a technical launch at some point. If you look at the engineering behind Libra, it is very robust. However, I think it will not launch in the form that Libra originally intended, which was this global reserve currency and stablecoin that can be used for payments, both retail and wholesale by individuals and institutions. I think there was a very lofty vision behind that.

Now that BIS has come out and spoken at length about potential macroeconomic impacts of launching such a currency, it does throw a spanner in the works. While I agree with Simon that there are still many substantial large firms in the consortium, I do not see anyone who actually knows much about operating financial services. There might be a few counter examples to that, but everyone who actually mattered in global payments / infrastructure seems to have left.

Now, can they come back? Potentially yes. However, I foresee a much smaller launch. There will still be some level of Libra appealing to different countries, central banks and governments. To the extent Libra manages to successfully appeal to them, they might launch in those countries/regions.

If it were another large platform company (not Facebook) helping Libra come to life, how different would the reaction from regulators have been?

Secondly, if it were not a large platform company, but another company, how would the Libra project be approached? What would be the policy response?

Ajit: I think the reaction would have been a lot less violent. Generally, global regulators/policymakers have played a very benevolent role when it comes to cryptocurrency. They have allowed digital currency projects to make a few mistakes and evolve. For example, the U.K. regulators have a very benevolent view on

crypto, albeit, some concerns on systemic risk and exposure to the banking system remain.

In fact, bitcoin has been around for 11 years, and we have not seen this type of violent reaction. We have also had hundreds of cryptocurrency launches and none of them has seen such a violent reaction. I think if it was just companies like PayPal and Visa creating a payments network, regulators may have seen this as a payments problem and a payment solution. However, with Facebook coming into payments coupled with all of the concerns around identity, privacy and politics, I think there has been this perception / need to move fast and break things.

There are many unbanked people in emerging markets and Libra's use cases is obvious. However, why do we need a new "currency or payment" option in developed markets? Could you elaborate please?

Simon: Why do you need an iPhone or a car? One could argue against the real need for it. This holds true for few of the best products in the world. As human beings, we are very bad predictors of things we will buy in the future.

However, if we look at it from a different perspective — What social impact could be gained? The Gates Foundation has done a lot of study that suggests if you are able to give people simple access to savings and access to owning their own property, you improve outcomes across nearly every spectrum.

People are able to build their own sanitation; sort out clean water etc. Financial independence and inclusion is arguably one of the most important things we can do to dramatically improve outcomes for people in developing economies.

In developed economies, you still find a lot of friction. Overwhelmingly, payments are not real-time behind the scenes. This creates an awful lot of administrative headaches, and a lot of paperwork.

For instance, let us say you are Spotify and you run a corporate treasury, receiving consumer payments. Then those consumers would expect payments to go through immediately and cover an immediate refund. The supply chain or Spotify demands its payments in near real-time. Everybody expects the corporate treasurer to be delivering real time payment, but large credit card companies like Visa will pay you in three days. As a result, there are cash gaps that people in finance have to deal with.

The other aspect is interchange, which is arguably one of the biggest costs for any business. Much of the payments infrastructure we use even today, was built in the 1960's and 70's. Further, the format we use today has come with the microstrip in the 1980's and followed by the chip cards. This moves in 20-year increments.

If you turn to Asia and look at the explosion of super apps, this kind of change can only occur if you have truly digitally native payments with significantly lower costs. When you successfully take friction out of the economy, you increase GDP, and reduce reliance on cash. There are many ancillary benefits along with it.

Microcredit: Small Amounts, Big Impact

The origins of modern day microfinance can be traced back to 1976, as a research project by an economics professor who was studying ways to lend to lower-income rural Bangladeshis, especially women.

While present day microfinance institutions (MFIs) have introduced diverse product offerings spanning individual loans, savings, insurance, and payments, at their core many of them retain the element of group lending. The practice helped overcome some of the main hurdles lower-income customers face when seeking credit, which include the cost to serve, lack of documentation, collateral, formal employment or credit history, and in some cases limited literacy or numeracy. Access to credit for these customers could enable them to make investments in their enterprises or smooth spending and consumption.

The industry is comprised of NGOs, non-bank financial institution, deposit-taking microfinance banks, and increasingly downscaled commercial banks, which are allocating a portion of their loans to the underserved segment. Standalone MFIs can be funded through a combination of client deposits (where MFIs are allowed to take deposits) and wholesale borrowing from banks, specialized lenders, or development and multilateral agencies. Regulations can vary widely, from restrictions on the type of deposits collected and strict caps on margins and loan yields in India, to the less stringent approach of many African countries. In most markets we cover, MFIs have proven highly successful, outpacing conventional banks on growth and returns.

The Financial Inclusion Impact of Savings Groups

A March 2017 report published by the Proceedings of the National Academy of Sciences ([link here](#)), tried to establish the impact of savings groups on the lives of the lower-income and underserved people.

Savings-led microfinance programs operate in underserved rural communities in developing countries to establish groups that save and then lend out the accumulated savings to each other. Nonprofit organizations train villagers to create and lead these groups.

The study conducted a large randomized evaluation of a savings-led microfinance program across three countries (Ghana, Malawi, and Uganda). The evaluation provided important evidence on the impact of a popular development intervention on the lives of lower-income households in rural communities by looking at its effects on usage of financial services, microenterprise activity, income, female empowerment, consumption, and the ability to absorb shocks.

The study found that the promotion of these community-based microfinance groups leads to an improvement in household business outcomes and women's empowerment. However, they did not find evidence of impacts on average consumption or other livelihoods.

Going forward, MFIs face new challenges, as an increase in attention and capital invested (including from the global SRI minded investment community) has meant greater competition, while the vast FinTech advances in many frontier and emerging markets has exposed the sector to disruption from mobile money lenders and other digital platforms. And as governments seek to reduce over-indebtedness, the risk remains of populist regulatory actions — an example being the recent introduction of lending caps in Sri Lanka, and the temporary pause in issuance of new branch licenses in Myanmar.

We estimate, that within our sample of 12 of the largest MFI markets globally, addressable market size is over 280 million (2x existing client base).

We think the role of MFIs in the disbursement of credit and other financials products to underserved individuals will continue to grow rapidly. We estimate the addressable market size at the lower end to be 280 million today across our sample of 12 of the largest markets globally — double that of their existing microfinance client base, without taking into account other or new markets.

The If and How of Microfinance

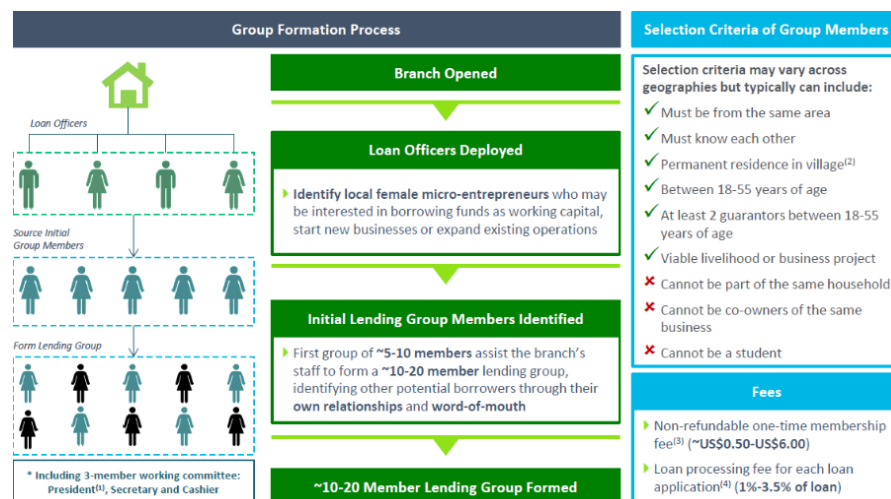
A summary of a typical Microfinance “group lending” process is set out in the Infographics below:

- The core of most Microlending operations are the “lending groups”, typically consisting of female entrepreneurs; one of the first primary jobs of a Loan Officer of a newly established MFI branch is to identify, establish, and then maintain these groups of customers.

Primary jobs of a Loan Officer within a Lending Group of a MFI branch is to identify establish and then maintain these groups of customers

The groups act to filter prospective new customers, and monitor and supervise the borrowing of accepted members through the application of social pressure or additionally through joint liability for default. Groups can range between 5 and 50 members depending on the MFI. The larger groups will have prescribed individual roles like a treasurer or chairperson who are responsible for running the groups and tallying and collecting funds. A loan officer can be responsible for hundreds of borrowers in these groups.

Figure 79. Typical Group Formation Process



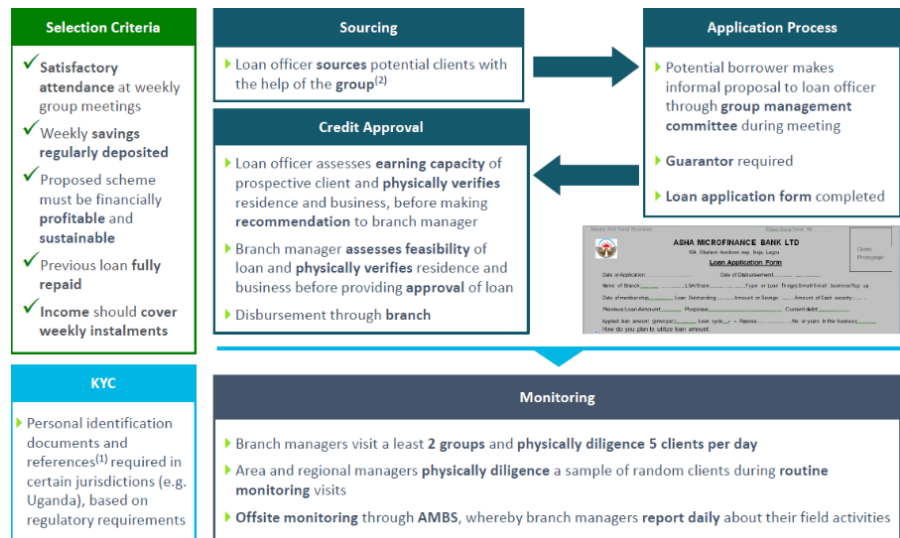
Source: Company Reports, Citi Research

Some micro lenders will limit themselves to working capital loans while others will also do consumption advances for the purchase of basic household goods like stoves or bicycles or typical lumpy expenses including school fees.

Despite the group lending structure, borrower creditworthiness is assessed based on their ability and willingness to repay. Loans are still underwritten and issued based on the characteristics of an individual and their businesses. The absence of consumer credit bureaus in many markets (and sometimes the prohibitive expense of using them for small sum loans) means that the credit assessment tools of the MFI, loan officer judgment and adherence to group rules are important to acceptance of the loan request rather than traditional banking metrics. Credit reference bureaus are emerging, for example in India the credit bureaus that focus on the micro lending segment.

Some MFIs will require no collateral but may ask for cash deposit. Paperwork tends to be much less burdensome than traditional banks.

Figure 80. Typical Customer Appraisal



Source: Company Reports, Citi Research

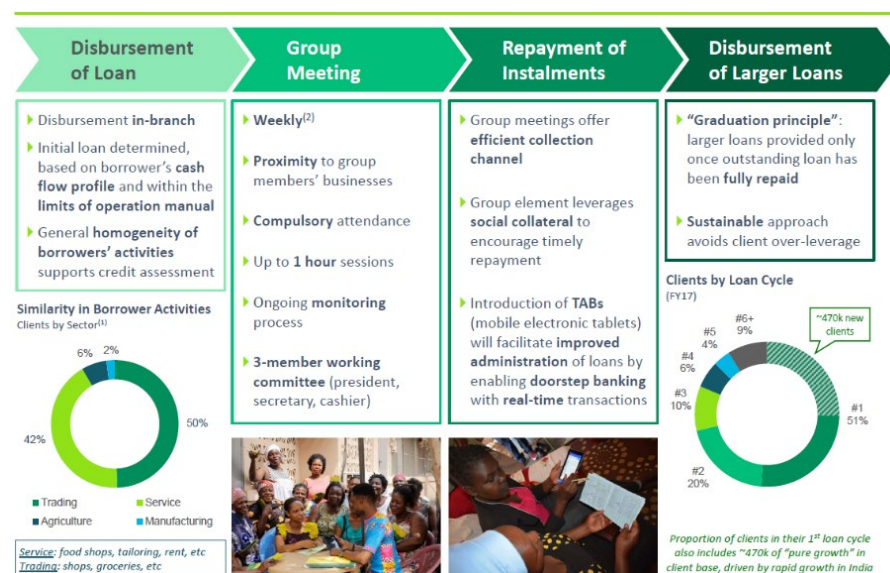
- Meetings tend to take place a set time at one of the workplaces or homes of the members, and attendance is obligatory. The frequency can range between weekly in most African markets and more commonly fortnightly or more in Asia.

3-12mo duration loans with successful repayments during meetings will entail higher limits in the next round & borrowers can graduate to individual SME lending products with some MFIs

Loans will usually have short duration (6-18m) with frequent repayments during these meetings. Successful repayments will entail higher limits the next round, and borrowers can graduate to individual SME lending products with some MFIs.

Disbursal of new loans is done through a variety of means, through mobile money channels in East African markets, transferred to the “Jan-Dhan” no frills bank accounts in India or simply by handing out cash in places like Mexico.

Figure 81. Typical Loan Disbursement and Collection



Source: Company Reports, Citi Research

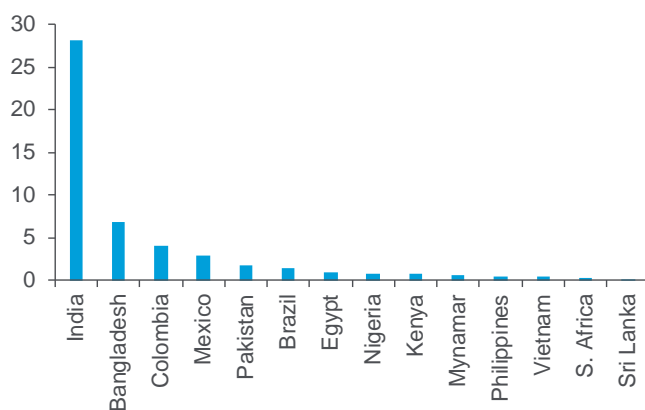
Global Reach with South Asia in the Lead

India leads our sample with total loans of over \$28 billion followed by Bangladesh (\$6.9bn), Colombia (\$4bn), Mexico (\$2.9bn), and Pakistan (\$1.8bn)

South Asia is the largest market globally for organized microfinance alongside LatAm according to data from local microfinance associations and central banks, with India in the lead in our sample of markets with total outstanding loans of over \$28 billion in 2018, followed by Bangladesh with \$6.9 billion, and then Colombia at \$4 billion, Mexico at \$2.9 billion, and Pakistan rounding up the top five with around \$1.8 billion.

When we look at penetration (loans /GDP) a more diverse picture emerges; the top spot goes to Bangladesh with outstanding microcredit coming in at 2.5% of GDP, followed by Colombia at 1.3%, India at 1.08%, Kenya at 1%, and Myanmar at 0.8%.

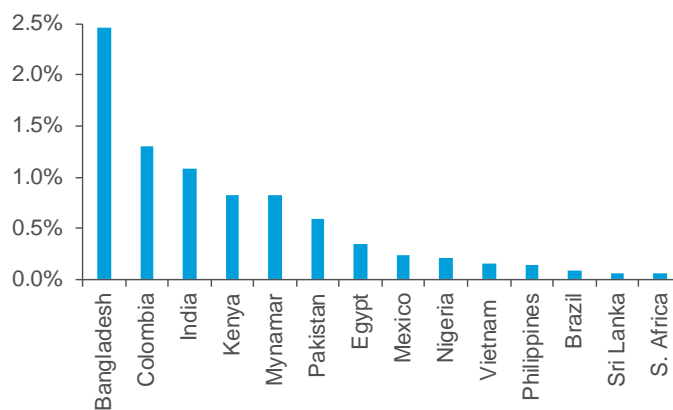
Figure 82. Micro Loans (\$bn, 2018)



Note: Only loans by MFIs are included in Vietnam

Source: Citi Research Estimates, Respective Micro Lending Association of each market, Central Banks data.

Figure 83. Micro Loans/GDP (% , 2018)



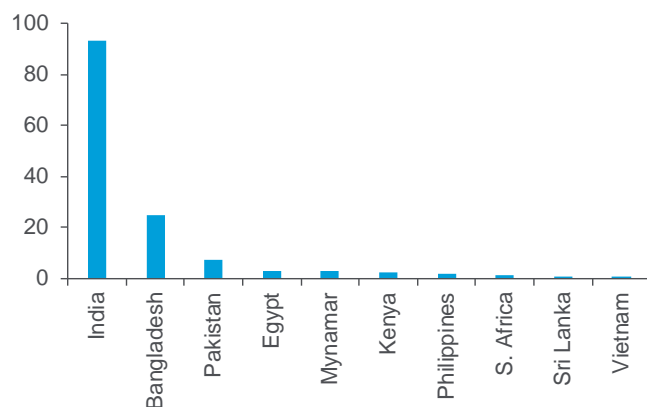
Note: Only loans by MFIs are included in Vietnam

Source: Citi Research Estimates, Respective Micro Lending Association of each market, Central Banks data.

South Asia also leads in number of borrowers where data was available, with India topping the globe with 93 million, followed by Bangladesh's 25 million, and Pakistan at 7 million.

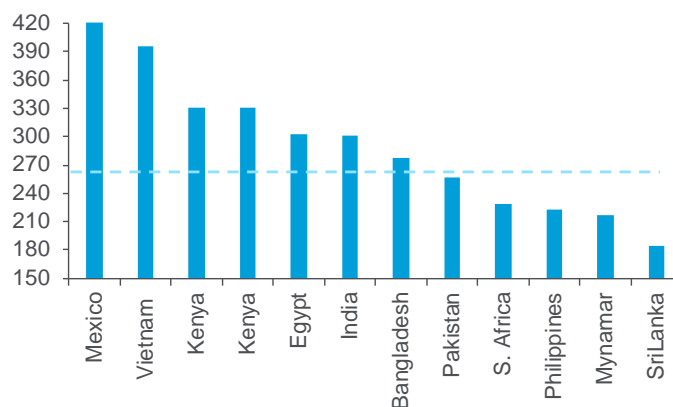
Average ticket sizes ranged between \$180 and \$330 in our sample markets with a mean of \$265, Kenya had the largest outstanding micro loans per customer at \$330, followed by Egypt at \$302 and India at \$301, while Myanmar and Sri Lanka came in last.

Figure 84. Number of Borrowers (in millions, 2018)



Source: Respective Micro Lending Associations of each Market, Central Banks data

Figure 85. Average Loan per Borrower (\$, 2018)



Source: Respective Micro Lending Associations of each Market, Central Banks data

Regulatory Environment a Challenge for Some

MFIs operate under a variety of licenses globally including NBFCs (in India), microfinance banks (Ex. Kenya), lending companies (Ex. Pakistan), NGOs (Ex. Bangladesh), and traditional commercial banks (ex. Mexico).

Almost half of our sample markets have regulatory caps on MFI lending rates in one way or the other. See Figure 86

Almost half our sample of 12 markets have regulations capping microfinance lending rates, with India being the most stringent (23%, in addition to caps on net interest margins and fees and a ban on accepting deposits), followed by Bangladesh (27%), Myanmar (30%), and Sri Lanka (35%), while Colombia links the ceiling to average bank lending rates. Meanwhile Nigeria enforces a 1% limit on loan related fees.

The legislation has seemingly not limited penetration of MFI products in India or Bangladesh, although in India the rate caps coupled with competition from banks entering the space has pushed many MFIs to acquire banking licenses or merge with banks. Another approach has been to work with banks under capital light "business correspondent" arrangements, lending using the balance sheets of partner banks and charging a fee, benefiting from lower funding costs while allowing the banks to achieve their regulatory mandated priority sector lending targets.

In Myanmar the lending caps coupled with a floor on deposit rates (15%) and a ceiling on wholesale funding of MFIs of 10% (vs risk free rate of ~8%) has meant the industry is largely reliant on equity financing and grants, holding back the sector's growth.

The most lenient limits are found in Colombia, where MFI lending rates are capped at 1.5x the average rate that traditional banks are charging for micro loans, which translates into a ~55% effective yield today.

Kenya on the other hand excluded MFIs (and mobile lenders) from the “Banking Act” legislation of 2017 that capped lending rates, and hence the sector has been benefiting from an influx of SME demand after traditional banks pulled back from lending to higher risk segments.

Figure 86. Sample of Markets that Cap MFI Lending & Deposit Rates

Market	Comment
India	Lending rates are capped at 23%, Fees at 1%, and net interest margins (NIMs) at 10%. No deposit collection allowed.
Bangladesh	Lending rates are capped at 27%
Myanmar	Lending rates are capped at 30%, Deposits must pay a minimum 15% rate, wholesale loans to MFI capped at 10%.
Sri Lanka	Lending rates are capped at 35%
Colombia	Lending rates are capped at 1.5x the average rate that traditional banks are charging for microfinance products. ~55% as of July of 2019.
Nigeria	Maximum limit on loan application fees of 1%

Source: Citi Research

Political pressure can also take the form of Govt. mandated debt waivers which encourage willful delinquency by clients

Political pressure can also play a part outside of regulating rates, for example Government mandated debt waivers, which encourage delinquency by clients who might otherwise be able to service loans. Loan waiver campaigns by politicians in the Indian state of Andhra Pradesh over the years and similarly in Sri Lanka after last year's drought (where the authorities paid back the principal and the MFIs waived the interest) have resulted in losses for the MFIs as many borrowers stopped servicing loans in anticipation of debt forgiveness.

Addressable Market Indicates Further Scope for Growth

To better quantify the addressable market size for micro lending in our different sample markets, we focus on three World Bank 2018 Findex data points, taking into account the bias towards lending to women in the industry (Female borrowers constitute 90%-100% of borrowers at prominent listed MFIs).

We take the female working age population in each market as our base, and then break it down to the sub segments that had borrowed from an informal source (and hence require funds and could switch to formal lending), hold no bank account (thus have no access to formal lending), or borrowed no funds in the last year (and could be convinced to borrow). We believe that informal borrowers are the lowest hanging fruit and our main point of reference, but that a portion of the unbanked or unlevered could also become microfinance clients. We rate markets with the lowest % of working age females to have already borrowed from MFIs and with the largest remaining pool borrowing from informal sources to be the most promising.

25m or 40% of the adult Bangladeshi women and 93m or 20% of the adult Indian women have currently taken out a micro loan

In Bangladesh for example 25 million or 40% of the adult Bangladeshi women have currently taken out a micro loan (more than the 13 million who resorted to informal sources), seemingly making it the most saturated of our markets.

In neighboring India, 93 million or 20% of the adult Indian women have currently taken out a micro loan (vs. the 152 million who resorted to informal sources), indicating strong potential for growth in absolute terms and in terms of penetration.

Myanmar has 3m borrowers or 16% of adult Burmese women currently holding a micro loan

Meanwhile in Myanmar with 3 million borrowers or 16% of adult Burmese women currently holding a micro loan but only 4m have resorted to informal sources, presenting a more mixed picture for growth.

The Philippines on the other hand scores well, with 2 million borrowers or 6% of adult females currently holding a micro loan, trumped by the 15 million who have resorted to informal sources.

Figure 87. Addressable Market (in millions, female, age 15+)

	Working Age Population	Borrowed from an Informal Source	Hold No Financial Institution Account	Borrowed No Funds in the Past Year	Currently Hold a Micro Loan
India	435	152	100	265	93
Pakistan	59	19	54	40	7
Bangladesh	60	13	41	40	25
Egypt	33	15	24	18	3
Nigeria	50	17	36	30	
Kenya	14	10	7	5	2
Vietnam	43	15	31	23	-
Philippines	33	15	21	13	2
Myanmar	18	4	13	10	3
Mexico	48	8	33	34	-
Brazil	83	7	27	54	-
Colombia	18	4	11	11	-
Total	891	280	398	544	135

Note: Data on client number unavailable for Vietnam, Mexico, Brazil, Colombia. For Vietnam we exclude small tickets by the larger stage banks.

Source: World Bank Findex, Central Banks, MFI Societies. Citi Research

We estimate the addressable market size at the lower end to be 280 million today across our sample of 12 of the largest markets globally, around double that of their existing microfinance client base, without taking into account other or new markets.

Of course other factors also play a role; restrictions on the participation of foreign NGOs in markets like Vietnam can limit growth, while the before mentioned caps on lending spreads in India or Myanmar make those markets less financially rewarding.

Shape of the Global Micro Finance Industry

An Interview with ASA International

We interviewed the management team behind ASA International to get their views on the MFI industry globally, the challenges digital shifts present, and what changes we can expect:

Please give us a brief introduction to the history and geographic coverage of ASA International:

ASA International is one of the world's largest international microfinance institutions providing small, socially responsible working capital loans to low-income entrepreneurs, predominantly women, across emerging and frontier markets in Asia and Africa. A wide client base in 13 markets protects us against risks in any one market. The company was founded in 2007, rolling out internationally the ASA Model, a cost-effective model of microfinance, developed by ASA NGO, the largest and most successful microfinance institution in Bangladesh. Since its establishment, the company's focus is on financial inclusion in order to enhance socioeconomic progress. As of the end of June 2019, we service 2.3 million clients via 1,812 branches, have \$419.5 million loans outstanding and are growing double digit year-over-year sustainably.

What role do you think has ASA played in driving financial inclusion, especially amongst women who are your core clients (>95% of customers)?

Our loans have a direct impact on our clients' lives. Our principal target market is financially underserved female micro entrepreneurs, who earn around \$3.20 per day and who typically have little to no access to formalized credit. In our experience, women show a positive behavior regarding loan repayment. They are generally more risk averse, more cooperative in a group context to repay their loans. Our loans are primarily intended to provide incremental working capital to support our client's business activities, including amongst others to purchase materials, or to expand their product offerings and operations, thereby increasing their income and generally providing them with substantial incremental earning power. Our clients' average weekly income is considerably higher than their weekly interest cost. These increased profits are an important factor on the low default rate on our loans. Since inception, we have disbursed more than \$3.3 billion loans of which only about 0.3% has been written off (until end-2018).

What characteristics do you look for in new markets, and how important is the regulatory environment and the availability of national ID schemes?

In the initial phase, we identify and assess countries of interest via detailed in-the-field studies, including amongst others market centers in urban, sub-urban and rural communities and competitor activity. We gather first-hand information about the community's income levels, market activity, social cohesion, proximity to banks and infrastructure. Outside of India, where a credit bureau exists, our client's businesses are informal and individual customer appraisals are necessary to assess business and earning capacity. National ID's help us to avoid that.

Can you fill us in on the digital endeavors ASA is working on?

We are accelerating developments of our proprietary ASA Microfinance Banking System (AMBS) so that we can quickly and cost-effectively introduce digital financial services to our clients. All of our microfinance institutions make use of this system and we are in the process of rolling-out real-time connectivity and transaction reporting. To this end we have doubled our in-house IT development team. All our loan officers already have 3G-enabled mobile tablets which facilitate improved administration of loans and doorstep banking with real-time transactions. In some East African markets like Kenya, where all of our clients have a mobile phone, branches operate fully cashless. Loan disbursements are done through M-Pesa into the client's mobile phone account and client's weekly loan instalments are deposited at the nearest M-Pesa payment platform or a bank agent, from where one electronic transfer is made to the ASA Kenya branch account.

How have you adapted to the widespread use of mobile money in many of your markets? And do you see mobile lending as a competitive threat?

We expect India to be the first to build the required infrastructure and introduce digital financial services at minimal cost. ASA International India will be there to benefit from this and gradually we will introduce these services in our other countries. We think we are well positioned for the introduction of digital financial services and in addition we see that mobile lenders are offering other type of loans, mainly for emergencies or consumption, with shorter duration and higher interest rates. This might have an impact on the amount of loans our clients have and it's part of our responsible model to protect clients from overleveraging. As in every business, new entrants will continue to enter the market and we have three valuable assets which will help defend our market position: firstly a credit history of each of our clients and a comprehensive credit scoring of a wide variety of business activities. Secondly a valuable, long-term relationship with each of our clients and a first-hand understanding of the communities in which they work and live. Thirdly, our responsible ASA Model protects clients from overleveraging, from paying extreme interest rates and from being treated badly.

How do you see the industry changing? For example in markets like India you currently collaborate with banks to disburse loans, is that a model that will be gaining more prominence?

Today, our clients still trade in cash but I expect major developments over the next five to ten years in the field of low-cost highly efficient digital financial services for our clients. We expect this transition will happen gradually and are investing heavily in digital finance to future-proof the business, ready to introduce digital finance services in markets as soon as they are ready to introduce electronic transactions in small market transactions to replace cash. When this happens, we expect this will accelerate the expansion of our services, which in turn expands financial inclusion.

Before our clients are able to fully embrace digital money as a proper substitute for cash, some issues need to be resolved. Payment platforms are still too expensive for small transactions. Due to the relatively high costs, smart phone ownership is still low amongst our clients and outside bigger cities the mobile network coverage is generally not (widely) available. It's in their interest that governments and central banks play a role in solving some of these issues, since once our clients start to use payment platforms for their transactions, this will provide the opportunity to formalize this client group and broaden a country's tax base. We engage in dialogue with regulators so that our clients can benefit.

In India, we will continue to work to reach out to more clients while reducing the credit risk of this loan portfolio. We will continue to do this alongside serving our own clients. For now, we see this only in India due to the specific market circumstances in this country.

Can Technology Drive Micro Finance?

An Interview with Sofie Blakstad, Founder and CEO of hiveonline



Sofie Blakstad
Founder and CEO
hiveonline

Could you start by telling us a little about why you set up hiveonline? What was the genesis behind it?

As we are all very well aware, African nations have some of the lowest levels of financial inclusion despite significant improvements in Kenya and other countries thanks to the use of Mobile Money. Lack of education, technological skills, and physical access are some of the reasons a large number of people don't have access to financial institutions. As well as logistics, the biggest barrier to formal financial services is the challenge of proving who you are if you don't have a formal financial history or government ID.

In Niger, 80% of the population is rural, with 14 people per square kilometer and very few roads, making it impossible for lenders to reach them, so lenders can't see them. Nearly all businesses are unregistered microbusiness in rural areas. Village savings groups have provided a community alternative to banking, which enables mostly women-led unbanked businesses to weather economic shocks, but doesn't build a financial history. CARE formalized these savings groups in 1991, creating a financial backbone, but all based on cash.

This backdrop poses a severe logistical and financial challenge for African companies that need to reach out to the masses, educate them about financial products, bring in financial literacy, develop infrastructure etc. but at the same it presents a strong opportunity that players like ourselves can fill in.

Which countries do you work in? Can you share some of initiatives taken?

hiveonline is currently rolling out with CARE in Niger, which is one of the least-banked economies in the world with very poor infrastructure. Mobile money providers in the country have limited reach, while other formal financial systems are immature; CARE's savings groups are the largest block of financial customers in the country — larger than the whole banking system — but absolute amounts saved are very low — group savings vary from \$70-\$1,000 over a year.

Lenders know that community savings and lending groups have really low default rates — less than 2% in Niger — however, without digital records, KYC is expensive. hiveonline has digitized the Village Savings & Loan Association (VSLA) model, to build secure, transparent records of behaviors including both transactions and meeting other commitments such as social group commitments and commercial activity, which can be used as a proxy for a credit score. Our digital behavior history helps them demonstrate they are genuine community members and provides lenders with the opportunity to lend to groups, aggregating individual risks.

With this digital history, we open up the channels for lenders to lend to groups or to individual women. We then bring in merchants and commercial banks. We aim to solve the disconnection of production and distribution/communication as the network grows, including the commercial ecosystem to keep middlemen honest. One of our key innovations is this broad-based reputation system that enables reliable businesses to demonstrate their creditworthiness based on commercial and behavioral activity.

We are in the middle of the second phase in Niger integrating lenders, which should be completed this year. We use blockchain-based stablecoin and other tokens to maintain the integrity of the system and eventually decouple the dependency on expensive services such as mobile money. Shorter term, it allows us to offer digital lending in partnership with local microfinance institutions and banks. Since connectivity is one of the big problems in rural Africa, our other key innovation is an offline that can handle local transactions with communities as we expand into more remote areas.

Meanwhile, we're building projects in a number of other African countries in partnership with other NGOs and Microfinance Institutions.

Can you explain how the entire model works? How does community-based lending work?

The objective of hiveonline and other institutions in Niger is to empower women in the community so they can make longer-term decisions such as educating their children, growing small businesses etc. There are around 800,000 members in Niger, mostly women, each looking after 5-15 people. Money is often lent to the community group, which is headed by 2-3 key persons and controls how the money is distributed across members.

Lenders want to help these women grow their businesses but it is difficult without digital records. Moving money in fragile countries with bad roads is expensive. hiveonline gives the lenders access to the groups, so the women can grow their businesses and reach new markets.

There are primarily two types of lending that occurs: (1) Women borrow small sums of money to build their own commercial activities and; (2) Lending for a social fund, which can be considered as a safety fund for items such as emergency medical costs etc. Typically, there tends to be more tolerance on repayment terms for these loans, although borrowers do pay these back as well.

How does blockchain feed into what you are doing?

At hiveonline, we use the Stellar blockchain network, both permission-based and permission-less, commonly known as the public and private networks. We use blockchain for a variety of activities carried out on our platform such as contract-work and speedy payments (both inside and outside the system).

We have created a stablecoin on the private blockchain network and have escrowed it against the fiat currency. When members put their savings in the fund, they are essentially buying a 'share token', which is a representation of the money they have saved in the fund. Likewise, we also have a 'debt token', which is used for lending transaction. The blockchain token system is essential here since community members are constantly using the fund for purchasing items or borrowing money, due to which the value of the fund constantly keeps changing.

Hive has built the full stack of blockchain technology, which is used by the community head to create digital records for borrowings by community members. It also enables third party lenders to transfer money digitally and helps address the issue of double spending when we eventually move offline.

Appendix I

Financial Inclusion in Developed Markets

For major developed markets, percent of unbanked population is low — <7% in almost all cases

While access to banking and credit remains an issue mainly for the emerging and frontier markets, we do provide a quick snapshot of developed markets in this section to understand where they stand on this topic. For major developed markets, the percent of unbanked population is low — <7% in almost all cases. Developed markets that still have a sizable unbanked population include Ireland and the U.K. Scandinavian markets appear at the other end of the spectrum with almost universal banking access.

Figure 88. Percent of Adults Unbanked in Developed Countries (2017)



Source: World Bank

Given the relatively high banking penetration, developed markets have seen branch number decline over the years — boosted by greater adoption of technology and non-branch banking. Contrary to this, the focus in EMs/FMs has been around growing branches to achieve universal banking access — despite the technological advancements that support non-branch banking.

Figure 89. Number of Bank Branches per 100k Adults: DM



Source: World Bank, Citi Research

Figure 90. Number of Bank Branches per 100k Adults: EM



Source: World Bank, Citi Research

Payments and financial services are in the process of rapid change. We have written extensively about this topic in our Citi GPS series (latest edition: [BANK X - The New New Bank](#)).

Over the recent past, the focus in DMs has been more towards financial innovation and making banking simpler rather than financial inclusion. Post the GFC, legacy banks turned their focus to cost and capital optimization to help drive profitability amid a backdrop of slowing revenue growth. New regulations and changing business practices meant that technology investment was diverted towards regulatory and compliance challenges. While this was happening, smaller ‘challenger banks’ began to emerge driven by FinTech start-ups.

These challenger banks were designed around the digital revolution and were able to leverage data insights via agile technology stacks. With these insights, they offered a customer personalization in their financial services and a fully digital banking experience.

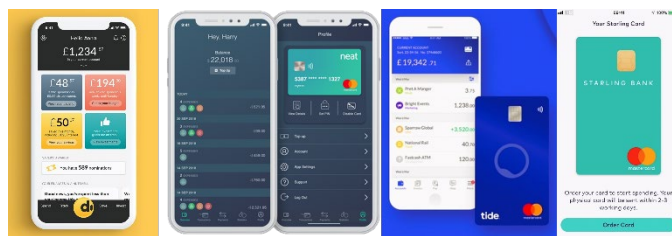
Legacy banks often have data that is stuck in multiple silos supported by core banking technology that was literally built in the age of black and white television. Manual intervention is high, which slows down operating speed, reduces flexibility, increases costs, and ultimately degrades efficiency and experience. Because a lot of digital technology isn’t part of core banking technology, challenger banks tend to be quicker at incorporating new products and processes onto their platforms and help to easily connect with third party products — offering more choices to the end user.

Figure 91. Bank IT Architecture Consists of Intricately Interwoven Applications



Source: Avoka – Rabobank mapped out its IT infrastructure with Lego and string

Figure 92. New Bank Applications — Difficulty



Source: Company Reports, Citi Research

As legacy banks recognize the threat that new entrants bring into banking, they will continue to reinvent. Clearly, financial innovation (rather than financial inclusion) is going to be the key mantra for DM banks.

Appendix II

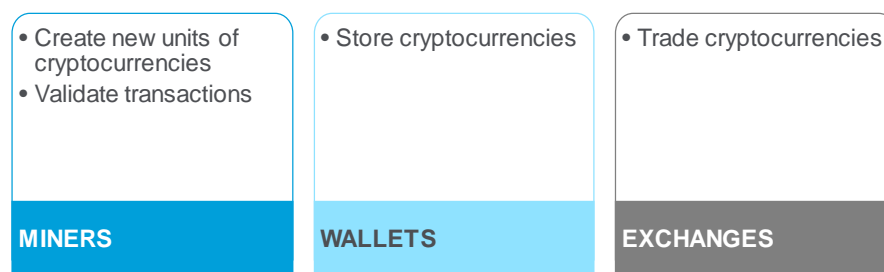
The Basics of Blockchain and the Digital Currencies

Number of cryptocurrencies have risen from 67 in 2013 to 2321 in 2019 and the market cap of listed cryptocurrencies has also changed drastically

There has been a steep rise in the number of digital currencies in the recent past. Starting from a modest 67 cryptocurrencies in 2013, the number now stands close to 2.3k. Over the same period, the market cap of listed cryptocurrencies has changed drastically.

In a simplified representation, the digital currency ecosystem is comprised of the miners (who mine new units of the currency), wallets that store these cryptocurrencies, and the exchanges (where these cryptocurrencies are traded).

Figure 93. The Cryptocurrency Ecosystem



Source: Citi Research

Quick Basics of Blockchain

Blockchain combines existing technologies – notably the internet and cryptography – to change how information is recorded and stored. At its core, blockchain is a database shared across multiple users in a network – the data is stored in “blocks” which are then linked in a “chain.” All of the network’s users store a copy of the database locally and thus have simultaneous access to the data. Access can be entirely public – the original vision for blockchain – or limited to select users by a central authority. Public blockchains allow an unrestricted number of users. Some cryptocurrencies utilize permissioned blockchains.

Blockchain allows one party to transfer ownership of a digital asset to another party via the internet in a secure and safe manner without a third party (bank, government entity, etc.) guaranteeing the transaction. After a transaction has taken place, it is effectively immutable. Enabling a permanent and trusted digital record without a central authority is what differentiates blockchain the most from other types of databases.

Since data on a blockchain is registered and stored in a distributed manner (i.e. across a network of computers) as opposed to the more traditional centralized database, no one person or entity owns the system. For example, roughly 200,000 computers are said to comprise the bitcoin network. Because no one entity controls the data or access to it, the risk of centralized corruption, failure or censorship of the data is minimal. Each blockchain is governed by a protocol. A protocol specifies the rules governing how transactions take place and communications across a particular blockchain network.

Regulatory Approach towards Digital Currencies/Stablecoins

As with any other new technology, there has not been a uniform reaction from global regulators on the topic of cryptocurrencies. In most cases, the approach has been more towards being cautious. Below we list out examples from some of the major global regulators on this topic.

There has not been a uniform reaction from global regulators on the topic of cryptocurrencies. In most cases, the approach has been more towards being cautious to even outright rejections.

- **China:** Regulations prohibit cryptocurrency trading and fundraising via virtual currencies (initial coin offerings) ([link](#)). It is also seeking to eliminate bitcoin mining in the country ([link](#)). However, there are no explicit norms for stablecoins.
- **Europe:** ECB in its latest [paper](#) cites some stablecoins, to the extent they have an identified issuer, are not crypto-assets and might qualify as e-money under some national legislation.
- **India:** Reserve Bank of India (RBI) has barred all regulated entities, including banks, to stop dealing in virtual currencies ([link](#)). Further, it has also shelved plans to launch its own digital currency ([link](#)).
- **Indonesia:** Cryptocurrencies are regarded as trading commodities under Bappebti Regulations ([link](#)). However, cryptos remain banned as payment instruments or currency in Indonesia ([link](#)).
- **Japan:** FSA states coins pegged by legal currencies are not virtual currencies. Instead, they can be perceived as a means of payment and traders must be registered as issuer of prepaid payment instruments or funds transfer service providers.
- **Singapore:** Stablecoins pegged to fiat currencies are likely to be regarded as providing e-money issuance services and stablecoin issuers will need to be licensed under the new Payment Services Bill.
- **UAE:** Treats stablecoins fully backed by fiat as digital money. Activity licensed and regulated as providing money services ([link](#)).
- **U.K.:** FCA cites stablecoins which seek to peg their value to a fiat currency could potentially meet definition of e-money and anyone intermediating their sale is likely to need authorisation. In certain cases where stablecoin is structured as a fund unit or a derivative, it could amount to a security ([link](#)).
- **U.S.:** Stablecoins that purport to control price through some pricing mechanism, whether tied to issuance, creation or redemption of another digital asset, or whether controlled through supply/demand, may fall under SEC purview ([link](#)).

Central Banks Exploring Payments using Distributed Ledger Technology (Blockchain)

On May 2, 2019 the Bank of Canada and the Monetary Authority of Singapore (MAS) came out with a joint [statement](#) stating that they have sent each other digital currencies using blockchain technology, marking the first such successful trial between two central banks. The pair have been collaborating on the use of distributed ledger technology and central bank digital currencies to make the cross-border payments process cheaper, faster and safer.

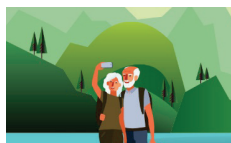
MAS' experimental domestic payment network, Project Ubin, was linked up with its Canadian counterpart's Project Jasper, as part of the test done in partnership with Accenture and JPMorgan. The central banks have jointly published a report that proposes different design options for cross-border settlement systems, highlighting possible limitations and challenges.

While this could be just a start, we see global central banks to increasingly look at blockchain and cryptocurrencies as a possible avenue for fast, safe and cheaper money transfer mechanism.

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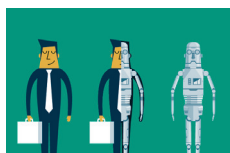
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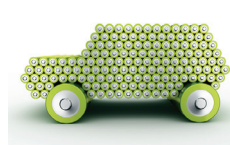
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Notes:

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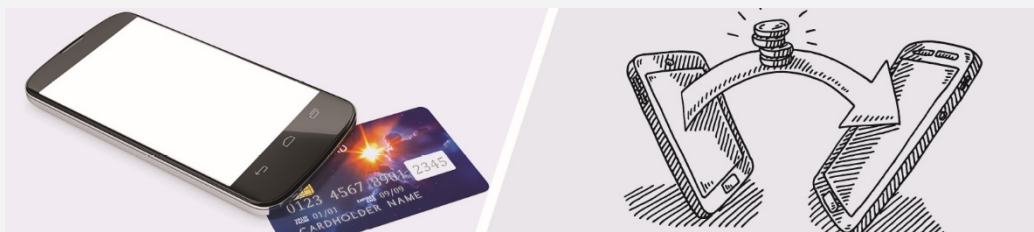
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