

# innovations

TECHNOLOGY | GOVERNANCE | GLOBALIZATION

## Resilience in a Turbulent World

### *Lead Essays*

Peter Blom The Upside of the Downturn

Reginald Van Lee et al. Megacommunities

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### *Cases Authored by Innovators*

*Amazon Conservation Team: Changing the Landscape of Power*

Mark J. Plotkin

*commentary by* Norka Ruiz Bravo

Kiva at Four

Matt Flannery

*commentary by* Sam Daley-Harris

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### *Analytic and Policy Articles*

Ignacio Mas The Economics of Branchless Banking

Ignacio Mas and Olga Morawczynski Designing Mobile Transfer Services

Steven Horwitz Best Responders

Peter Dombrowski and Eugene Gholz Identifying Disruptive Innovation

Dane Stangler Creative Discovery

Erwann O. Michel-Kerjan and Debra K. Decker Insure to Assure

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## Organization of the Journal

Each issue of *Innovations* consists of four sections:

1. **Lead essay.** An authoritative figure addresses an issue relating to innovation, emphasizing interactions between technology and governance in a global context.
2. **Cases authored by innovators.** Case narratives of innovations are authored either by, or in collaboration with, the innovators themselves. Each includes discussion of motivations, challenges, strategies, outcomes, and unintended consequences. Following each case narrative, we present commentary by an academic discussant. The discussant highlights the aspects of the innovation that are analytically most interesting, have the most significant implications for policy, and/or best illustrate reciprocal relationships between technology and governance.
3. **Analysis.** Accessible, policy-relevant research articles emphasize links between practice and policy—alternately, micro and macro scales of analysis. The development of meaningful indicators of the impact of innovations is an area of editorial emphasis.
4. **Perspectives on policy.** Analyses of innovations by large scale public actors—national governments and transnational organizations—address both success and failure of policy, informed by both empirical evidence and the experience of policy innovators. The development of improved modes of governance to facilitate and support innovations is an area of editorial focus.

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## The Economics of Branchless Banking

If you are a smallholder with all your income concentrated in a particular season; if you are a day laborer who is not sure what employment opportunities there may be tomorrow; if you are a street hawker making \$2 a day and know you will have to come up with \$20 to send your children to school in September; if you are the family's breadwinner but have no medical insurance—can you afford not to engage in finance? Finance is essential to help people escape a hand-to-mouth existence, yet the reality today is that if you are poor or low income, your financial world is disconnected from the rest of the world. In all likelihood, you rely on informal solutions: stashing small amounts of cash in a jar; relying on friends and family members to help out with occasional loans or favors; belonging to an informal community savings group; or using the services of trusted money guards or moneylenders. Financial markets are quite simply failing to meet the needs of a vast swath of society—those who are poor, and especially the poor living in rural areas—in a way that is affordable, convenient, and safe.

It doesn't have to be this way. It is not that markets are inherently incapable of meeting this need; our current financial system simply has not organized itself to meet it. This paper offers a vision for how to construct a banking infrastructure that is (1) commercially viable, (2) safe and trusted, and (3) accessible to all. At the very least, this requires that each player in the value chain have a clear financial incentive to participate in and actively promote the service. Moreover, each transaction must be profitable on a stand-alone basis so that customer profitability can always be assumed, which makes a true mass-market approach possible, with no incentive for providers to deny service based on minimum balances or intensity of use. It is analogous to prepaid airtime for mobile operators: a card bought is profit booked, regardless of who bought the prepaid card. This suggests the central importance of keeping fixed per-customer costs extremely small and of reducing unit transaction costs, which will fully commoditize (and hence democratize) the banking product.

The starting point of building this system is to take banking transactions out of bank branches and into retail stores in every neighborhood and in every village.

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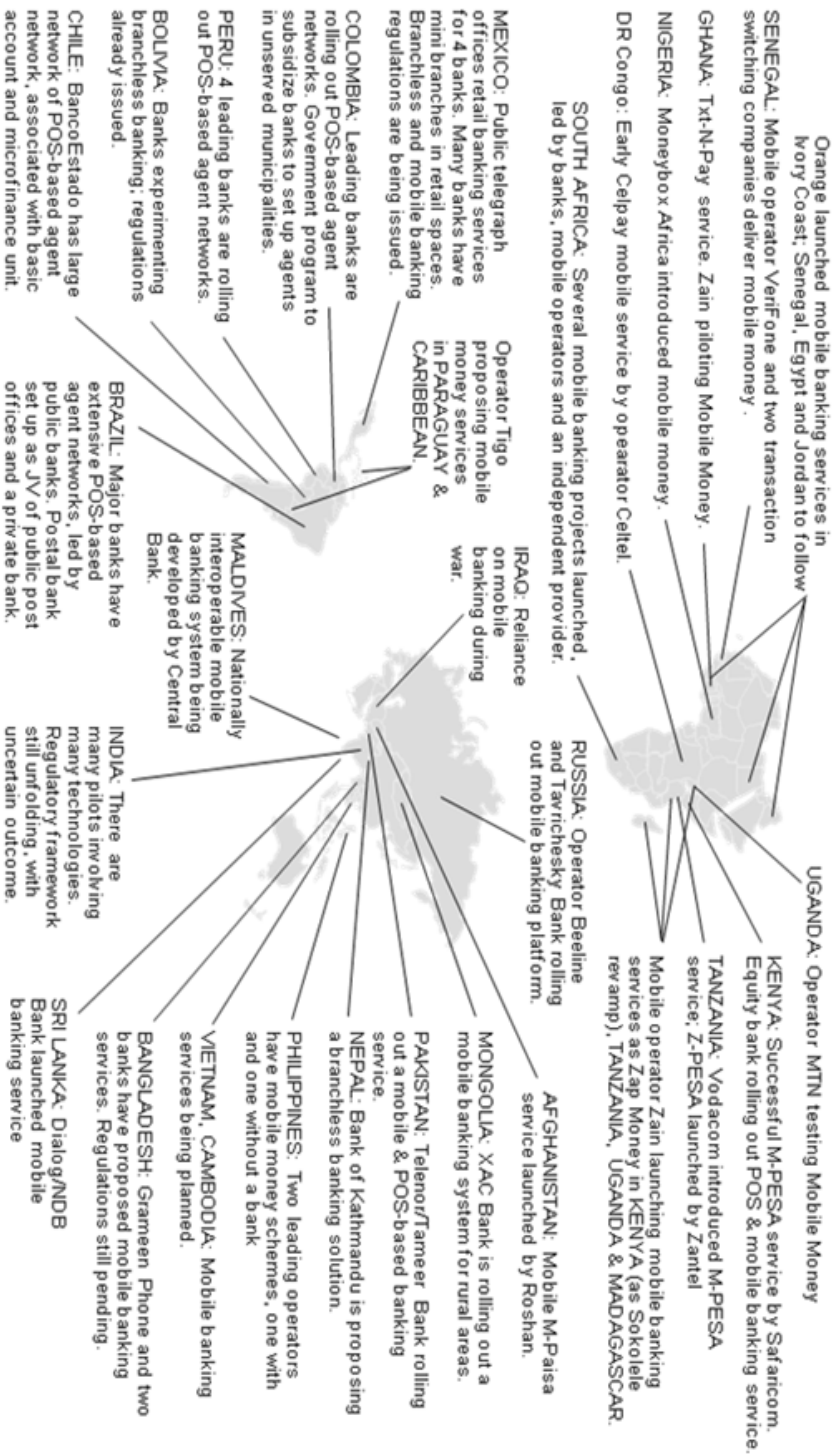


Figure 1. Global Experimentation with Branchless Banking.

This setup is called agent or branchless banking. Because finance is about exchanging the cash people need on a daily basis for promises of value, and vice versa, proximity is objective number one. And because those promises need to be maintained if people are going to find finance at all useful, trust becomes the second important objective. Enter technology: if customer, retail outlet, and bank are linked by a common secure technology platform, they can transact with sufficient certainty that they are dealing with whom they think they are, that transactions will be recorded, and that promises will be kept. Also enter regulation: the government will be looking over the bank's shoulder to ensure that it is doing right by the small depositor in the rural village.

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#### GROWING EXPERIMENTATION IN DEVELOPING COUNTRIES

The last few years have seen a significant increase in experimentation with branchless banking. Figure 1 lists a sample of such schemes that are currently operating or have been announced around the globe, and the Annex highlights the key differences in the business models in use today in terms of choice of technology platform. In Africa, mobile phone-based projects predominate, reflecting the low levels of banking penetration and the poor state of fixed communications infrastructures. In Latin America, on the other hand, bank-based projects, which rely on cards and point-of-sale (POS) terminals as the enabling infrastructure, are the dominant model.

The two countries where technology-enabled agent models have propagated most successfully are Brazil and Kenya. The Brazilian model is driven by the larger banks, such as Caixa Federal, Bradesco, and Banco Popular, and it uses more traditional card/POS terminals. Brazil now has 39,000 agents covering every municipality in the country, with whom customers can deposit, withdraw, and electronically transfer money from their accounts. The Kenyan model is driven by mobile operator Safaricom. It uses a menu-driven application on their customers' mobile phones (in their SIM cards, more specifically) to authenticate and facilitate transactions by both customers and agents. Only two years after its launch, Safaricom's M-PESA service now has over six million registered customers who can transact at almost eight thousand retail agents nationwide.

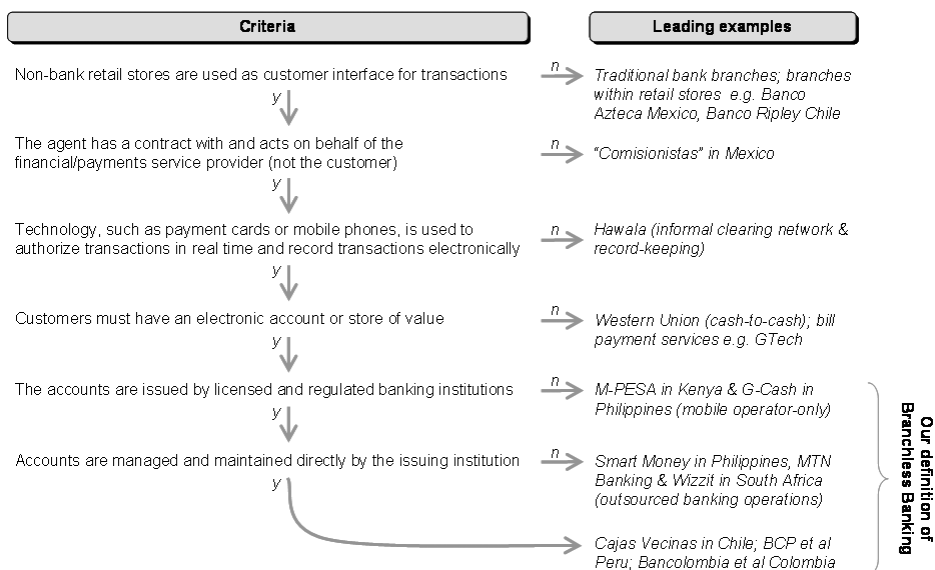


Figure 2. Classifying Branchless Banking Projects by Relationships Between Players.

### DEFINING BRANCHLESS BANKING

Figure 2 classifies branchless banking projects according to the relationships between the users and the various players in the service-delivery chain. For the purposes of this discussion, the minimum criteria for what constitutes branchless banking are:

1. Non-bank retail outlets are used as customer touch-points, at least for cashing in or out of the accounts
2. Technology, such as payment cards or mobile phones, is used to identify customers and authorize transactions electronically and, in some cases, to allow customers to initiate transactions on their own
3. Transactions can be processed against an electronic store of value (although cash-based services for non-customers may also be offered in addition)
4. Accounts are issued by institutions recognized and explicitly or implicitly authorized by the banking regulator, although they may not be formally licensed and regulated

This represents a fairly expansive definition of branchless banking, since it may involve three types of “outsourcing” of activities typically conducted by banks to non-bank players: the customer interface, where customers at the very least cash in and cash out from their electronic accounts; the operation of the accounts; and the issuance of the accounts and the investment of the float.

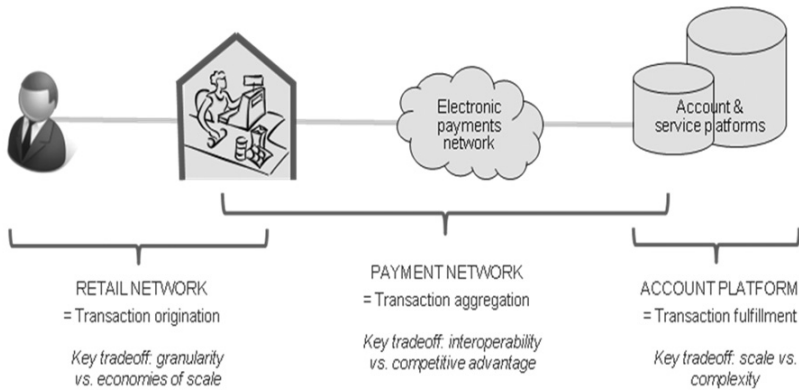


Figure 3. Key Components of a Branchless Banking System.

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## ECONOMIC DRIVERS OF BRANCHLESS BANKING

A branchless banking platform is made up of three key elements:

- The retail network, composed of the collection of retail outlets where transactions are originated
- The payment network, which aggregates the transactions from the collection of retail outlets and routes them to the appropriate issuer
- The account platform, which manages the service logic by authorizing individual transactions and maintaining the value of accounts

Each of these elements has very different economics, and each presents key tradeoffs that providers need to face. An understanding of the economic drivers helps establish the roles of the value chain and the types of partnerships that are most likely to achieve the necessary scale, and ensures that the service can be delivered at an end-to-end transaction cost that poor customers can afford.

### Economics of the Retail Network

We need to consider two components of transaction costs at the retail level:

1. The cost to the provider of originating and processing the transaction
2. The cost to the user of accessing the service (traveling and queuing up for services)

There is inherent tension between these two. Minimizing the providers' cost may be achieved through economies of scale; that is, concentrating transactions at specific locations so they can invest in the necessary fixed costs to handle a larger volume of transactions. This is the traditional approach banks take: build branches. But this strategy works only where customers are densely packed or where they are sufficiently affluent to justify the fixed costs. For poor people, and especially those living in rural areas, this strategy results in a shifting of costs from the provider to the user, as the user must travel to distant branches and spend time queuing up to use bank services. These extra costs make it prohibitive for the majority of poor people in developing countries to even contemplate using formal



financial services. They rely instead on informal services, which, although often less safe and more expensive, have the advantage of being delivered locally.

Branchless banking is premised on shifting the emphasis at the retail level from concentration to “granularity”—that is, distributing retail outlets more evenly across the territory. Bringing the retail interface closer to the customer dramatically reduces the second cost listed above: the cost to the user of accessing banking services. But this granularity comes at a cost: by getting closer to customers, the provider is jettisoning economies of scale based on aggregating customers.

In smaller-scale operations, fixed costs are the enemy. Branchless banking platforms minimize fixed costs. By leveraging existing retail outlets and stores, financial service providers do not need to invest in their own physical infrastructure. By using mobile phones rather than point-of-sale terminals as the technology platform, financial service providers do not even have to incur equipment costs for each new retail outlet opened. And, by remunerating the outlet with a commission per transaction rather than paying salaries to tellers, service costs are incurred only if there is business.

Such a variable cost structure makes the agent’s economics very simple: the agent will need a minimum daily revenue contribution to make the agency business meaningful to him, which will be calculated as follows:

$$\begin{aligned} & (\text{Agent revenue per day}) = \\ & (\# \text{ of transactions per day}) \times (\text{commission per transaction}) \end{aligned}$$

Let’s say the threshold revenue contribution for the agent is \$5 per day: \$3 to pay an employee, \$1 to pay for the daily trip to/from the branch to balance the cash, and \$1 to cover the costs of extra liquidity and security. This can be achieved through higher commissions (e.g., 10 transactions at 50 cents each) or through higher volume (e.g., 100 transactions at 5 cents each). As we demonstrate below, higher volume is the approach most likely to lead to financial inclusion. Higher commissions will act as a barrier for low-income clients, whereas higher volume can be achieved through the following:

- **Economies of density.** You need to be better at fishing if you are fishing in a smaller pond with fewer fish. In other words, given the smaller addressable market per outlet, it is important that there be a mechanism to acquire as many customers as possible around the area served by each outlet. Service providers can drive successful customer acquisition in a number of ways: (1) by using the agent channel itself to drive customer take-up (e.g., M-PESA remunerated agents up front for each customer acquired); (2) by partnering with grassroots microfinance institutions that have the customer contact (a model pioneered by ICICI Bank in India); or (3) developing a parallel sales channel (e.g., Bancolombia’s outbound sales teams, which support agents within their territory, or WIZZIT’s use of unemployed youths to sign up customers in South Africa).
- **Economies of scope.** Given that the agents will serve fewer customers, it will also be important to conduct as many transactions per customer as possible:

savings, credit disbursements and repayments, bill payment, collecting salaries and welfare payments, remittances, etc. This is why a branchless banking service based on storage of value alone is not likely to work—it just does not generate sufficient business for agents.

### **Economics of the Payment Network**

The payment network is about aggregating and routing transactions. Once transactions are captured electronically, they can be sent around through an appropriate messaging infrastructure. The payment network is fundamentally a communications function, and as such it is subject to the effects of network scale in two ways:

- On the supply side, payment networks require large fixed costs to build and operate. Driving volume through these networks therefore dramatically reduces the unit cost per transaction.
- On the demand side, the value to an individual of being part of a network increases as the number of network end-points increases, as it can be used to transact with more parties or to access the financial services of more providers. Therefore, size drives usefulness, and hence customers' willingness to pay per transaction.

Payment-service providers face a key trade-off between interoperability (leveraging volume generated by others) and competitive advantage (appropriating the value from your proprietary network). This remains one of the thorniest issues to grapple with. Early movers find little advantage in sharing their platforms with laggards who currently have less volume, but then they run the risk of not being able to achieve a sustainable scale in a fragmented market.

### **Economics of the Account Platform**

The account or customer management platform has multiple economic drivers. On the one hand, the software aspect of the service makes it suited to economies of scale. There are significant fixed costs that, if amortized over a larger number of customers, result in low incremental costs per customer. On the other hand, there are also strong economies of scope, as a single account management platform can be used to offer multiple and evolving services in order to maximize customer relevance and value.

There is inherent tension between these two drivers. Achieving scale requires “one-size-fits-all” solutions, while achieving scope requires increased specialization, as not all customers will want the same products and level of service. Core banking systems typically aim for both, resulting in complexity—and cost.

There are three factors that further increase the complexity and cost of banking platforms:

- The need for increasingly sophisticated fraud-detection systems (a sort of “arms race”)

- The need for detailed exception handling procedures, given the central importance of maintaining public trust
- Regulation, which creates an extra burden in terms of reporting suspicious transactions, maintaining records, data protection, etc.

Having to manage this level of complexity undermines the benefits of economies of scale. In a pure economies-of-scale environment, the unit cost per customer falls rapidly with the increasing number of customers. But, if customer needs become more diverse during this process of growth, the complexity will rise with the number of customers, at least partially offsetting the benefits of scale.

This situation will be particularly stark for banks thinking of going down-market (i.e., addressing poorer population segments). The core banking platform will naturally be designed and maintained to cater to the more complex needs of the higher-value customers. It is possible that putting the lower-value customers in a separate, simpler, and more scalable platform will be more cost effective. Even if that is not the case, there may be good reasons to segment the platforms if the bank uses simple cost allocation rules that result in an artificial minimum customer profitability threshold (based on total platform costs divided by total number of customers), which makes lower-value customers appear unprofitable.

Therefore, providers of account management services face a key trade-off to leverage scalable customer platforms or to specialize them around customer segments based on their narrower needs and ability to pay.

Beyond volume, the other important consideration is velocity, or the speed with which transactions are cleared and settled through the system. Settling transactions quickly reduces credit risk among the banking counterparties and the cost of float (money tied up in unsettled transactions).

### **Summarizing the Key Economic Drivers**

We have seen that the three key elements of the service-delivery chain face different key trade-offs:

- The retail network involves trade-offs between scale and granularity
- The payment network involves trade-offs between interoperability and competitive advantage
- The account platform involves trade-offs between scale and complexity

A key implication of this analysis is that it is unlikely any player can meet the diverse economics of each element of the delivery chain. Branchless banking services will have to be delivered through partnerships that span multiple industries (banking, telecoms, retail). Microfinance cannot be sustained on vertically integrated, soup-to-nuts, subscale grassroots institutions acting alone. Our core challenge is to build a new value chain model.

Another key implication is the central importance of achieving volume at every step along the way. The difference between the three elements is how the volume is achieved (pure economies of scale versus economies of scope). This is the topic we turn to next.

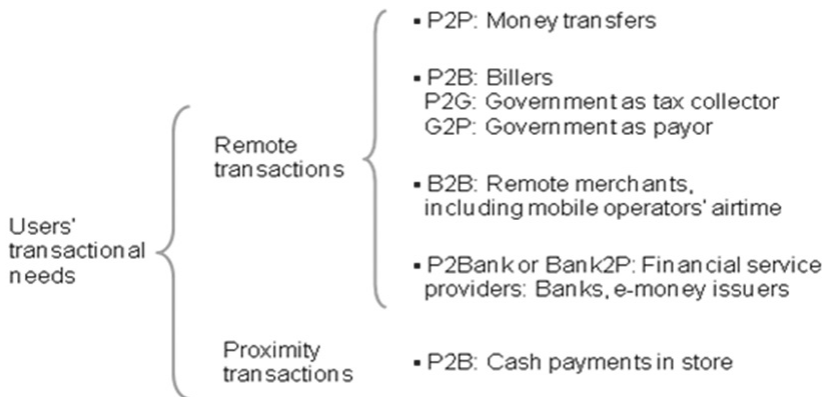


Figure 4. Type of Transactions Targeted through Agents.

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#### DRIVING VOLUME THROUGH BRANCHLESS BANKING

Most projects enable multiple transactions, but even then some ventures—in fact, the more successful ones—target particular transactions. In practice we observe five main types of services, shown in Figure 4, of which the first four correlate well with projects in existence today, as explained below.

#### **Person-to-person (P2P) Remittances**

The market for person-to-person domestic remittances has been tapped most successfully by M-PESA in Kenya, the new poster child of mobile money schemes. Their success has been stunning: M-PESA has registered over six million customers in two years, which now exceeds the number of bank accounts in the country. Its close to eight thousand agents do an average of 80-100 cash transactions per day, giving them a daily commission revenue of some \$7 (as compared to a store clerk's daily salary of around \$3 and store rent of \$1). The agent business is so lucrative that many stores have emerged as stand-alone M-PESA service points. The logo is pervasive, and most people are aware of the main customer benefit promoted by M-PESA: "Send money home."

The success of M-PESA does hinge on some factors specific to Kenya, which may not occur elsewhere. Kenya is at a relatively early stage of rural/urban migration, which creates many split families, and people still retain a strong cultural attachment to their villages. There are few alternative domestic remittance services—an inefficient post office service and the bus system—with no formal or semi-formal network of main street-based stores offering remittance services. Safaricom (the provider of M-PESA) has a very strong brand and enjoys a dominant position in the mobile telephony market with four-fifths market share, which gives it tremendous marketing muscle.

## **P2B and G2P**

The market for payments, whether people paying utilities, taxes, or credit card bills (P2B) or the government making welfare payments (G2P) to poor people, has been tapped most successfully by the larger banks in Brazil. There we find the precursor of modern branchless banking schemes, with a card/POS-based model that evolved over the last ten years. The country is now covered by some 130,000 outlets acting as banking agents (although only 39,000 of these offer full banking services) and serving some 13 million new bank customers who have been added since 2002. These developments made Brazil the first developing country that could claim that every municipality has at least one banking outlet.

The success of the Brazilian model hinges on a different set of country-specific factors. On the demand side, two factors created captive markets for new banking agents setting up in areas previously unserved by banks. First, the government embraced very early on the use of bank accounts to distribute its welfare benefits (under the Bolsa Familia program), and, in fact, most of the new bank account holders are welfare recipients. Second, bill payment is treated as a regulated banking service, so utility companies cannot sign up local shops as collection points, as is commonly done in other countries. On the supply side, two factors helped create a distributed network of agents. First, state resources were used effectively: state-owned Banco do Brasil and Caixa Federal led the charge in signing agents (the latter using a major lottery chain), and the extensive postal network was auctioned off as an exclusive banking agent (won by Banco Bradesco, which then created the Banco Postal as a joint venture with the postal service). These became three early and powerful agent networks, which prompted other banks (Banco Real, HSBC, Unibanco) to join in. Second, in Brazil there is a special retail payment instrument that allows agents to deposit and withdraw from their account at the branch of any bank. This enables banks to service agents who are far from their own branches, and thus they are truly free from geography when rolling out agent networks.

## **E-Commerce**

Smart Money in the Philippines was conceived back in 2001 fundamentally as a clearing and settlement system for its broad network of prepaid airtime resellers. Through the Smart Money service, resellers can buy wholesale airtime and pay for it from a linked bank account, in real time, right from their phone. This led to unprecedented growth in the airtime reseller channel: over one million small *sari-sari* (Filipino mom-and-pop) stores act as airtime resellers, which translates into 1 out of 17 households being recruited to sell the services of just one company. Smart Communications is now looking to extend the use of Smart Money to become a clearing and settlement system for an ambitious new ecommerce platform based on connected devices to be installed at selected Hapinoy stores (a new initiative that seeks to brand and organize independent sari-sari stores).

The consumer use of Smart Money (i.e., by unbanked individuals storing or transferring value) has been much more limited, mostly because of the system's design. Linking the Smart Money "mobile wallet" with Banco de Oro account and the combination of mobile user interface and bank card have made the service unnecessarily complicated for many people. Smart Money has not developed an extensive cash in / cash out agent network, relying instead on its own stores and ATMs (using the bank cards). In particular, it has failed to engage its airtime reseller channel as Smart Money cash in/out points, mainly because the airtime commission at the shop is 12 percent. In comparison, a 1 percent commission for the cash product offers little incentive for shop owners. The result is that Smart Money does not promote the service to consumers even in its own shops.

### **Banking Services (Savings/Credit)**

This is the model being pursued by BancoEstado in Chile through its 1,600 Cajas Vecinas, as well as by larger banks in Colombia (some 4,000 agents, led by Bancolombia and Citibank) and Peru (some 2,500 agents, led by Banco de Crédito del Perú and Interbank). All of these work on a card/POS system. There are fundamentally two types of agents: those placed near a bank branch with the objective of decongesting branches (incentivizing customers to shift lower-value transactions off-branch), and those placed in more remote areas as bank outposts. Both models can increase banking access, by either lowering the cost of service or expanding coverage. In Peru, 50 percent of agents have been set up in districts with no bank branches at all, which has almost tripled the number of districts with a bank presence, from 5 percent to 14 percent.

It is hard to assess the net impact of these schemes on financial inclusion with the public information currently available. What we do know is that the use of agents is still relatively low, ranging from 30 transactions per agent per day reported by BCP to 12 per agent per day reported by BancoEstado. Banks are increasingly realizing the need to create integrated strategies to address financially excluded populations. BancoEstado has designed a three-pronged strategy: the Caja Vecina branchless banking program; a basic account that is available to all (the only prerequisite is having a national ID number) and incurs no fixed fees or account charges; and a new bank subsidiary, BancoEstado Microempresas, which addresses the needs of microenterprises. All the banks we have talked to in these countries see great potential in branchless banking.

In South Africa, banks are extending their transaction services using a mobile channel. First National Bank reports having four million customers on its mobile banking platform, although many of these people are existing bank customers rather than completely new to banking. ABSA and Standard Bank (through its MTN Banking, a joint venture with mobile operator MTN) are also re-launching their mobile banking services.

STYLIZED COST STRUCTURE OF 1G & 2G BANKING MODELS (all figures in USD)				
		Branch-based (1G)	POS-based agent banking (2G)	Cell phone-based agent banking (2G)
Fixed costs per outlet	Start-up cost per outlet	\$100,000 Office setup & conditioning, computer equipment, security, etc.	\$2,000 Installation including POS terminal, communications line, training & marketing	\$500 Training & marketing only; no equipment cost
	Useful life	10 yrs.	3 yrs.	3 yrs.
	Operating cost per month per outlet	\$8,000 10 salaries, rent, office maintenance	\$300 Equipment maintenance & supplies (e.g. paper, marketing materials)	\$50 Marketing materials only
	Max transactions per outlet per month	18,000 7 tellers, each doing 10 transactions per hour, 8 hours per day, 5 days/week	3,000 1 terminal, 10 transactions per hour, 10 hours per day, 30 days per month	3,000 Ditto
Variable cost per transaction	Communications costs per transaction	\$0.01 Minimal charge for uploading from IT system	\$0.05 The equivalent of 1 SMS per transaction	\$0.15 The equivalent of 3 SMSs per transaction
	Agent commission per transaction	-	\$0.10	\$0.10
Fixed cost per new customer	Customer acquisition cost	\$5.00 Cost of handling directly at branch	\$2.00 Processing cost & sign-up commission paid to agent	\$2.00 Ditto
	Customer credentials (card)	\$5.00 Half the customers get a bank card	\$10.00 Card issuance and maintenance costs	\$0.20 Over the air configuration of phone
	Average customer lifetime	36 months		
Back-office costs	Back-office cost per customer per month	\$0.30	\$0.30	\$0.30
Revenues to bank		4% p.a. interest spread + \$0.50 per transaction		
Customer costs per transaction (not borne by provider)		50c bus ticket + 2 hours travel & queuing time	30 mins total time	30 mins total time

Figure 5. Assumptions of Our Simplified Banking Model.

### In-store Payments

No branchless banking project in developing countries has sought to take on cash on its home turf for payments in person at the local store. Yet this is where electronic money schemes in developed countries have traditionally focused their attention. Debit and credit cards have successfully made inroads as a substitute for cash for larger transactions, but they have by no means driven a movement toward a cashless society.

For all the problems associated with cash, it has some unique characteristics that make it useful: it is familiar to everyone from centuries of use, easy to value (by counting), quick to exchange (at least for low values), guaranteed to be anonymous (no traceability), sturdy (withstands harsh handling), universally accepted (no basis for exclusion, de jure as well as de facto), and divisible (you don't need to take all of it with you), and it incurs no marginal transaction cost (at least once you have the cash in hand). And from the merchant point of view, efficiencies from cashless payments will only be realized if both customers and suppliers accept electronic payments so that cash volume can truly be minimized. Such gains in efficiency are likely to be intangible for stores in rural areas.

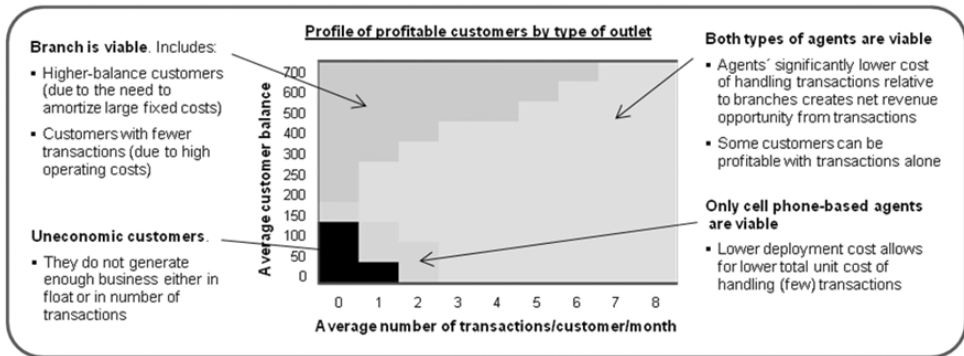


Figure 6. Profile of Profitable Customers by Type of Outlet.

Many believe that the most promising area for proximity “e-payments” is unmanned ticket machines, a niche where using cash is not so convenient. In addition, the issuer of transport stored value cards has two key advantages: it can drive fast customer take-up by adjusting ticket pricing to favor the new pricing scheme, and it can convert a sizable network of acceptance terminals to the new payment scheme overnight. This application may be of value in urban areas where large transport schemes prevail, but will likely struggle in rural areas.

### The in-betweens

We should mention a sixth category of branchless banking projects: those that have not sought to specialize in any particular payment opportunity and instead are tapping into several of them. G-Cash in the Philippines has been promoted on the basis of a mobile wallet, which by itself does not speak to concrete user benefits. Nevertheless, G-Cash has managed to register almost 2.5 million customers, although usage is still low and there is little awareness of the service in the marketplace. WIZZIT in South Africa is an independent company, and it has had to create a new proposition and brand without enjoying the marketing muscle of a big telco or bank.

### BUSINESS MODEL: A WORKED EXAMPLE

In this section we illustrate some of the key concepts we have discussed above with a simple example. We compare the economics of three different banking arrangements: one based on physical branches (which we term “1G”), one based on agents equipped with POS terminals, and one based on agents enabled by mobile phones.

Figure 5 provides a stylized cost analysis comparing the incremental costs per retail outlet, per transaction, and per customer for each of these three channels. While plausible, the cost models are idealized and do not correspond to any specific country or provider. Exact numbers would depend on a number of factors not examined here, such as the number of non-financial transactions (e.g., remit-



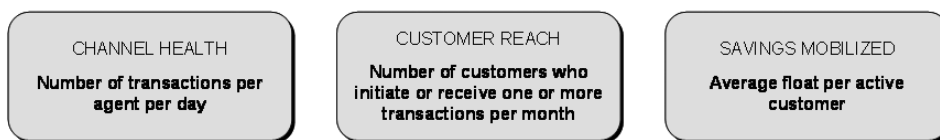


Figure 7. Key Transformational Branchless Banking Project-Level Metrics.

tances, bill payment) handled through the system or the regulatory requirements for branches and agents. The revenue side is assumed to be the same for all three cases, based on a spread on deposit balances and a customer fee per transaction (which we define to be any kind of monetary movement on the account).

Using this stylized cost model, we have simulated the profitability to a financial institution of reaching different customer categories. These categories are defined according to the intensity of usage of their account, based on both their average account balance and the number of monthly transactions they conducted. Figure 6 shows which types of customers are profitably served through each of the three channels.

Under the branch model, customer transactions produce net costs for the bank. For agent-based models, costs per transaction are sufficiently low to produce positive net revenue for the bank with each transaction. This highlights the fact that a key requirement of addressing poor population segments is to construct a transaction-based revenue model, so that even customers with a negligible average balance can be profitable as long as they undertake some transactions each month. While POS-based agents expand the set of profitable customers, the profitability frontier can be pushed even further with mobile-based agents, who present a much smaller incremental cost per new agent and per new customer. Some customers remain uneconomic at the overall scale of business assumed in this model.

Note that the average fee per transaction assumed in this model (50 cents) does not include the cost for the customer to go to the bank. If a customer needs to go to a distant branch, that typically includes a round-trip bus fare at 50 cents, plus two hours of travel and waiting time, which, at an income level of \$2 per day, corresponds to 50 cents in lost income. Thus, if the customer is using a branch, from their point of view, the bank fee may be only one-third of the total cost of their transaction. In contrast, if the customer is using an agent in his neighborhood, the total transaction cost is only the bank fee of 50 cents, plus 13 cents in lost time (30 minutes).

#### KEY SUCCESS METRICS FOR PROJECTS TARGETING THE UNBANKED

Real-world business models for branchless banking schemes are likely to be a lot more complicated than the simple, artificial model depicted above. They will differ by the range of services offered (payments only or a broader range of financial services?), the target customer base (focused specifically on people who are cur-

rently unbanked or not?), who their backers are (solely commercial players, or are social investors and philanthropic capital involved?), and how they are set up (what type of retail channels and technology are used?).

Each type of project will have its own set of key metrics that can help assess progress toward achieving their goals. To illustrate this, we propose three key success metrics by which we can evaluate the broad significance of branchless banking projects that target previously unbanked customers. These projects would aim to be commercially viable while achieving an agenda of broader financial inclusion; they have been referred to in the literature as “transformational.” The proposed key metrics are shown in Figure 7 and discussed further below:

**Number of transactions per agent per day.** This is a measure of agent channel health and is probably the single most important indicator of a project’s prospective viability. A higher number suggests that customer usage is good, agents are motivated to promote the service at the local level, and the agent channel will propagate organically, based on a demonstrated effect from successful agents. For this calculation, one should exclude information-only transactions (e.g., balance inquiry). This number ranges between 30 (BCP in Peru) and 12 (Cajas Vecinas in Chile). Useful benchmarks for this are the number of sales the stores typically do in a day.

**Number of active customers.** This might be measured by the number of customers who initiated or received one or more transactions per month over the previous three months (or since registration, for new customers). This captures regularity of usage and gives an indication of how many customers are using it to manage their daily lives. Again, one should exclude information-only transactions. While the number of active customers will impact the first indicator (more customers doing transactions using the agent), it is important to track this separately in order to measure how broadly usage is spread across the population. A useful benchmark is the total number of registered bank customers in the country or area served by the branchless banking project.

**Average float per active customer.** This measures the degree of savings mobilization achieved on individual projects. To have a clear picture, it is important to exclude float (accounts) held by agents and superagents, as the metric is otherwise influenced by factors such as channel structure and liquidity. A useful benchmark is the average bank balance for the country in question.

Note that we have omitted from this list of key metrics any notion of profit and loss. This is done for three reasons. First, we consider the above to be leading indicators of commercial success, and as such they are more helpful at this stage of development of the industry. Second, profit-and-loss metrics are very sensitive to accounting treatment, particularly in the amortization of fixed costs, and it is not practically possible to standardize the treatment across all projects. Third, there may be other commercial considerations for project sponsors, which may in fact be more important than the direct net profit from branchless banking operations. For instance, the prime motivation of mobile operators may be churn reduction (avoiding loss of customers to other companies) among their customer base or

reducing the cost of distribution of their prepaid airtime product. Banks, on the other hand, may want to establish a low-cost way of identifying and establishing an early relationship with customers that they can grow and develop profitably, or to reduce costs by decongesting branches (hence saving on costlier branch expansions).

## CONCLUSION

There is growing interest in many parts of the developing world in delivering financial services through retail agents, including post offices, airtime resellers, and local shops. Being able to transact at local retail agents has many potential advantages. For providers of banking services, it allows the rollout of a much more granular distribution network without incurring the large fixed setup and operational costs of branch and ATM networks. Retail agents are very cheap to set up and are typically remunerated on a per-transaction basis, so their cost to the provider is largely variable. Financial service providers can use agents to decongest branches, expand coverage to areas where they do not have branches, or develop lower-cost services for lower-value customer segments. For the customer, agents further reduce the cost of accessing financial services by cutting down on travel time and waiting time at banking outlets.

Modern agent networks rely on technology to eliminate credit risk and ensure the finality of transactions at the point of transaction between customer and agent. Some schemes use point-of-sale devices at the store in combination with customers' bank cards, while others use people's existing mobile phones as both a virtual bank card and a POS device. In either case, the technology platform is used to ensure that the bank or account issuer is able to authorize and execute transactions in real time.

Branchless banking (often referred to as technology-enabled agent banking) enables clients to store, send, and receive electronic money through local agents, rather than traveling to the nearest bank branch. It is hoped that by moving financial services beyond banks' traditional "bricks-and-mortar" infrastructure and shifting them to a more scalable, variable-cost channel, financial services can be provided profitably and sustainably to segments of the population that are poorer or more remote, and that are currently neglected by regulated financial institutions.

But what we are talking about is not the mere adoption of new channels and technologies by existing players in order to expand profitably into previously unserved customer markets. The possibility arises of creating very different value chain structures through a process of specialization and scale: retail outlets expanding their product inventory to include cash-conversion services at a very local level; grassroots microfinance institutions positioning and selling a range of microcredit, microsaving, and microinsurance services to poor people who previously relied on informal finance mechanisms; mobile operators aggregating large transactional volumes generated by the retail outlets, by microfinance institutions,

and (with mobile banking) by customers themselves; larger banks offering custodial and investment services. The financial services of poor people will have to be built on the basis of a more rational, specialized, and scalable industrial structure.

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1. Of course, cell phone customers do differ in terms of profitability. But the important point is that the mobile operator will not much care whether the last twenty 10-rupee (25 cents) airtime cards it sold were purchased by a single repeat (“high-value”) customer or by 20 infrequent (“lower-value”) customers: it still sold 20 cards.
  2. For a fuller discussion of the experience of e-money schemes targeting cash substitution, see I. Mas and S. Rotman, “Going Cashless at the Point of Sale: Hits and Misses in Developing Countries,” CGAP Focus Note 51, December 2008.
  3. David Porteous (2009). “Mobilizing Money through Enabling Regulation.” *Innovations: Technology, Governance, Globalization*, 4(3), 75-90.

### ANNEX

Branchless banking schemes may differ in three fundamental ways: (1) what payment instrument is used by the customer; (2) what type of player leads in building (and hence branding) the service; and (3) the degree of linkage of the account to a licensed bank. For mobile banking services, there is the additional question of what type of user interface and wireless communications channel is used. On the following pages are four charts analyzing the various cases that arise.

Type of Instrument	Key Benefits	Examples
<i>Magstripe card</i>	Many people already familiar with how to use cards. Use of card + point of sale device is fairly intuitive. Not dependent on telcos.	Banking correspondents in Brazil, Chile, Colombia, Peru
<i>Cell phone</i>	No need to deploy cards and POS devices if users already have a cell phone. Customers can check balances on their own (phone as built-in POS). •Use of ATM or POS terminals possible, but with equipment adaptation.	M-PESA in Kenya and Tanzania, G-Cash in the Philippines, Eko in India
<i>Magstripe card + cell phone</i>	Mobile banking customers have the option of using the card at any existing card-acceptance device (ATM, POS) without requiring modification of the devices.	Smart Money in the Philippines, MTN Banking and WIZZIT in South Africa
<i>Smart card</i>	Account balances can be held in the card, so transactions can be authorized off-line (devices need to upload transactions from time to time only). This cuts down on communications costs, and the solution works where there is limited telecom coverage.	Net1 U.E.P.S. in Africa, FINO in India (both used mainly for government payments)

Who Leads	Strengths and Opportunities	Weaknesses and Threats	Examples
<i>Mobile operator</i>	<ul style="list-style-type: none"> <li>•Comfort with transactional revenue model; makes possible true mass market approach and aspiration of reaching every last customer</li> <li>•A large base of customers, many unbanked</li> <li>•A powerful distribution channel (airtime resellers, own stores)</li> <li>•Brand, reputation, solid finances</li> <li>•Need to drive revenue from new services and customer loyalty</li> </ul>	<ul style="list-style-type: none"> <li>•Reluctant to increase scope of regulation (telco+ banking)</li> <li>•Unfamiliar with core banking processes: reconciliations, exception handling, fraud</li> <li>•Reputational and financial risks larger than for telco billing</li> <li>•Very concentrated sector—typically 2-3 operators only</li> </ul>	M-PESA in Kenya and Tanzania, Smart Money and G-Cash in the Philippines, Orange, Zain, and MTN across Africa
<i>Bank</i>	<ul style="list-style-type: none"> <li>•Banking license, subject to supervision by banking authorities</li> <li>•Advanced treasury, risk management, and fraud detection skills</li> <li>•Access to capital markets and investment opportunities</li> </ul>	<ul style="list-style-type: none"> <li>•Revenue model typically based on float (interest rate) and product cross-selling—presents limited opportunities for the poor</li> <li>•They operate a costly infrastructure, especially at the front end (branches) but also in the back end (MIS)</li> <li>•Some customers are too expensive to serve; little presence in the field, where poor people live</li> </ul>	Banking correspondents in Brazil, Chile, Colombia, Peru
<i>Third-party m-payment provider</i>	<ul style="list-style-type: none"> <li>•Often coming from the technology space</li> <li>•More eager to drive interoperability across banks and telcos</li> <li>•Often eager to partner with organizations serving the poor</li> </ul>	<ul style="list-style-type: none"> <li>•They may not have much power over much larger banks and telcos</li> </ul>	WIZZIT in South Africa, Net1 U.E.P.S. in Africa, Eko in India

## The Economics of Branchless Banking

Account Framework	Key Benefits	Examples
<i>Accounts issued by and maintained within core banking system of a licensed bank</i>	Maximize economies of scale by using a single platform; equal treatment for all the customers of the bank	Banking correspondents in Brazil, Chile, Colombia, Peru
<i>Accounts issued and maintained by a licensed bank, but on a separate platform</i>	Possibly cheaper to operate; may result in lower minimum profitability threshold for lower-value customers	BANSEFI in Mexico, Bank Andara in Indonesia (still in development)
<i>Accounts issued by a licensed bank, but account maintenance is outsourced to a third party</i>	Low-hassle, low-cost way for a bank to expand its offerings to a new segment	Smart Money in the Philippines (the bank of record is Banco de Oro, but the accounts are managed by Smart Comms), Eko in India (the bank of record is State Bank of India)
<i>Accounts issued and maintained by a non-bank, with funds deposited as pooled account in a licensed bank</i>	Minimize the scope for costly banking regulations and supervision; increase competition to banks	M-PESA in Kenya and Tanzania, G-Cash in the Philippines
<i>Account maintained entirely outside banking system</i>	Equivalent to an informal service, but backed by trust in mobile operator	None

Technology	Advantages	Disadvantages	Examples
<i>Tones / Interactive Voice Response</i>	Less intimidating for users as it does not require data entry; works on all phones	Uses the costly voice channel, subject to call set-up costs; not so secure; relatively slow to effect transaction	M-Paisa in Afghanistan
<i>SMS</i>	Many users familiar with SMS; works on all phones, with no prior configurations; automatically works across all telcos	Users must remember correct message syntax; not so secure; PIN remains visible in messages stored automatically in the phone	G-Cash in the Philippines
<i>USSD</i>	Creates interactive network-based menu; works on all phones	Use of the channel requires commercial deal with telco not so secure	WIZZIT in South Africa, Eko in India, M-PESA in Tanzania
<i>SIM Toolkit application</i>	Menu is resident in the SIM, so it is faster and easier to find; provides end-to-end security.	Must be installed on the SIM; customer may require new SIM, which makes it costly to implement; application is linked to particular telco.	M-PESA in Kenya, Smart Money
<i>Java</i>	Phone-resident applet provides graphical user interface and more branding possibilities; provides end-to-end security.	Requires high-end phones; phones must be data-enabled and the user must have a data plan; risk of spoofing when applet is downloaded	Obopay in U.S.