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Branchless and Mobile Banking Solutions for the Poor: A Survey of the Literature

About 2.6 billion people in the world do not have access to formal financial services, and yet one billion of them have a mobile phone. Branchless banking systems take advantage of increasingly ubiquitous real-time mobile communications networks to bring banking services into everyday retail stores, thereby alleviating the lack of banking infrastructure in the communities where poor people live and work. Most of these deployments are quite recent, hence there is a shortage of hard empirical evidence relating to them. However, one mobile banking scheme, M-PESA in Kenya, has been phenomenally successful and has been a catalyst for much of the research done to date. In this article, we review the emerging literature on the definitions and model taxonomies employed in mobile banking; the status and drivers of global adoption of these schemes; the take-up and usage patterns of customers and their socioeconomic impact; and, finally, regulatory issues. Our objective is to help policymakers and practitioners in their continued efforts to create an enabling environment for branchless banking.

FINANCIAL ACCESS NEEDS

The financial lives of the poor have been amply and vividly described in Collins et al. (2009). Their income is precariously small and often irregular. For instance, they may be smallholder farmers with seasonal income or day laborers without guaranteed employment. Occasionally they face a crisis that can easily overwhelm their means, such as a serious illness or death in the family, or natural events such

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as an earthquake or drought. Dercon et al. (2007) discuss the risks faced by poor households and the informal risk-management strategies they employ to deal with them.

The role of finance, then, is to help the poor maintain a household and plan certain investments—such as in shelter, education, or enhanced productivity—in the face of erratic income and occasional disruptive events. It is not facetious to say that, in principle, the poorer the household, the more they need financial instruments to manage their lives.

The question, however, is not so much what role finance plays in poor people's lives but what role formal financial institutions play in offering services to the poor. With more than 2.6 billion people in the developing world living without a bank account of any sort and less than 30 percent of this population having access to finance, banking is simply not a mass market proposition (CGAP, 2010; Chaia et al., 2009; Demirguc-Kunt et al., 2008).

Mas (2011) challenges the notion that the main problem with poor people's access to finance is that they are too costly to serve, in that they only need small and infrequent financial transactions, and collecting and returning small amounts of cash is too costly to do profitably. If that were so, why would products that retail for 10 to 50 US cents and are not purchased daily—a jug of cooking oil, a bar of soap, a Coca Cola, a prepaid mobile card—be available in most stores around the globe? Suppliers of these products not only have to find a way to extract the cash from customers' pockets, they also must deal with physical delivery of the products. So doesn't it make sense that the people who buy these products will go to these same stores, pay 20 or 50 US cents in cash, and get their bank savings account credited?

Formal access to finance is hindered by a lack of relevant information and customer service infrastructure. Moreover, it is very expensive for financial service providers to pay out and collect small amounts of cash from lots of poor people using the proprietary physical infrastructure that banks use—that is, branches—and these transactions do not give poor people the kind of recorded financial history that providers can use to evaluate their credit prospects. The absence of such physical and informational infrastructure often makes it unattractive for financial service providers to offer products designed specifically for the needs of the poor, including appropriate transaction sizes and charging models.

Over the last five years, there has been a growing interest among policymakers, development organizations, and practitioners in developing countries in solving the infrastructure gaps that hold back access to finance. Much of their attention has been focused on developing branchless banking and credit bureaus.

Branchless banking is about building a general payments infrastructure that allows people and businesses to deposit and withdraw funds and make electronic payments from everyday retail stores, thus eliminating the need for bank branches or other bank-specific infrastructure. While much of the motivation in policy circles for branchless banking increasingly revolves around savings, branchless banking supports credit products in two ways: clients can use it to collect and repay

loans efficiently from more distant credit providers, and the transactions flowing through an account can be used to create a payment and financial history that might be used by credit providers to evaluate repayment prospects.

OUR PURPOSE AND APPROACH

Our twin objectives in this article are to identify gaps in the existing knowledge base around branchless banking, and to provide information that will help policymakers and practitioners focus their continued efforts on creating an enabling environment for branchless banking. We also examine the evidence to determine whether or not branchless banking can live up to the potential of being a transformative service for the poor and unbanked. The success of Safaricom's M-PESA, a mobile money service in Kenya, has inspired many practitioners, but the true test lies in the ability of other markets to translate M-PESA's success into their own context and create an environment that promotes expansive and sustainable retail financial services.

Despite the growing attention branchless banking is getting in both policy and commercial circles, it clearly is still in an incipient stage of development worldwide. We hope readers will find this article a useful jumping off point to begin a more formal analysis of the big questions we raise here about the impact of widely available branchless banking: What is the impact on poor households of offering them a safe, convenient, and affordable place to save? What are the market structure and organizational incentives when the banking, telecom, and retail sectors come together to potentially bring financial services to every village and neighborhood? What is the economic spillover when nearly every citizen in a developing country has direct access to a low-value electronic payment system through their mobile phone?

Definition, Key Concepts, and Taxonomy of Branchless Banking Schemes

"Branchless banking" is a term coined by the Consultative Group to Assist the Poor (CGAP; Lyman et al., 2006) to refer to "new distribution channels that allow financial institutions and other commercial actors to offer financial services outside traditional bank premises." Branchless banking allows customers to conduct basic financial transactions such as deposits and withdrawals at everyday retail stores, using technology readily available to both customers and store clerks in the form of cards or mobile phones to properly secure and authorize the transactions.

Alexandre et al. (2011) prefer the term "banking beyond branches" in recognition of the fact that bank branches still play a fundamental role in supporting the liquidity of the cash-in/cash-out network in branchless banking schemes: "In the new cash ecosystem, retail outlets handle the last mile, but banks still do the long-haul. Bank branches will thus retain a role as cash distribution nerve centers in support of non-bank retail outlets located in their catchment area" (8).

While the key innovation of branchless banking is the use of everyday stores to capture customers' cash transactions, the key enabling factor is the existence of

ubiquitous communications networks that permit financial service providers to transact securely through these third-party outlets (Ivatury, 2006; Lyman et al., 2006). Moreover, the spread of mobile phone use represents a large installed base of virtual cards and point-of-sale terminals that branchless banking providers can leverage. Mobile banking is thus a subset of branchless banking that has the advantage of using people's own mobile phones, instead of having to distribute new cards to customers and point-of-sale terminals to stores (Porteous, 2006).

Much of the early literature on branchless banking focused on the technology component, particularly the mobile phone. Porteous (2006) was careful to distinguish between this focus and branchless banking based on the target customer segment: "Additive models are those in which the mobile phone is merely another channel to an existing bank account; while transformational models are those in which the financial product linked to the use of the phone is targeted at the unbanked, who are largely low income people." For a model to be transformative, it must provide a simplified set of products that can be effectively marketed to previously unbanked customers, and engage a network of retail outlets as cash-in/cash-out points that are an alternative to branches and ATMs. This distinction frames the core objective of branchless banking within the context of providing basic financial access to those who would otherwise have none.

Porteous (2006) and Lyman et al. (2008) further distinguish between bank-based and non-bank-based models, depending on the nature of the organization promoting the scheme. Non-bank-based models represent the entry of players with strong competencies in technology and/or retailing—as epitomized by mobile phone operators—into the distribution of financial services. Transformative non-bank-based branchless banking schemes represent innovative market disruption at several levels: entry by a nontraditional player, leveraging nontraditional channels, at scale.

There is also much debate about the appropriateness of the use of the word "banking" in branchless banking, and especially in mobile banking. Some reserve the word for services offered only by licensed banks; others refer to the service as mobile payments, in recognition of the fact that the primary customer transaction is money transfers. In this article we use the term to refer to any scheme that operates through a customer account and is authorized by the bank regulator, whether the activity is conducted under a banking license or not.

For schemes promoted by mobile operators using their mobile telephony infrastructure, the GSMA uses the term "mobile money,"[1] recognizing that the primary purpose of mobile-enabled schemes is for cash substitution, including low-denomination store of value or means of payment. Bank-based schemes that use a card and point-of-sale infrastructure are commonly referred to as agent banking.

NUMBER AND STATUS OF GLOBAL BRANCHLESS BANKING DEPLOYMENTS: REAL TRACTION OR HYPE?

Over the last five years, branchless banking has become a core element of the debate over financial inclusion. The Brazilian banking correspondent model paved the way by showing the potential of agent banking to extend financial services more deeply into the areas where poor people live and work. The example is now being followed by banks in many countries, including Peru, Colombia, Bolivia, Kenya, South Africa, and India. At the same time, developing economies like Kenya have found themselves leapfrogging more developed markets by allowing the use of mobile phones to facilitate payment transfers for customers who are not linked to formal bank accounts. These approaches were first pioneered in the Philippines and South Africa.

Nevertheless, many industry observers report a sense of unease at the magnitude of the expectations being laid on branchless banking. Pickens et al. (2009) argue that the "current hype about the potential of branchless banking is running ahead of reality" (page 3). Getting a handle on the true state of the industry is therefore vitally important.

For starters, it is hard to keep abreast of the number and status of branchless banking deployments across the globe, due partly to the pace of announcements of new deployments and partly to the fuzziness of the definition of what constitutes transformative branchless banking models. Moreover, official statistics on branchless banking deployments are scarce. The authorities in Brazil (Banco Central do Brasil), Colombia (Banca de las Oportunidades), and Peru (Superintendencia de Bancos y Seguros) regularly report on the number, geographic spread, and transactional volume through banking agents in their countries, and the GSMA (2011) maintains a database of mobile money schemes,[2] but banks and mobile operators rarely report data beyond the aggregate number of registered customers, retail agents, and transaction values.

Using data from surveys with more than 16,000 users, McKay and Pickens (2010) reviewed the experience of 18 branchless banking deployments that were mostly but not exclusively mobile based, focusing on the number of customers served, service pricing, and customer needs. They found that each service averaged 1.37 million active, previously unbanked users and that the majority had more active customers than the largest microfinance institution. Branchless banking is also cheaper than traditional banking channels: on average, low-volume transaction prices are 38 percent lower than those of comparable providers. McKay and Pickens concluded that

> branchless banking has great potential to reach vast numbers of low-income, unbanked people at affordable prices with a wide range of products to meet their complex financial needs. Yet early experience suggests that although the potential is indeed strong, it is by no means guaranteed that branchless banking will deeply penetrate low-income, unbanked

segments with appropriately designed products. Indeed, in most countries, the challenge is still getting branchless banking started at all

While the explosive growth of M-PESA in Kenya has not been replicated elsewhere,[3] there are promising signs from other markets. Rotman (2010) notes that four services have been launched in Tanzania, the largest of which, Vodacom's M-PESA, has registered over five million customers and continues to increase the portion of those that are active (albeit from a low base). MTN Uganda's MobileMoney, launched in 2009 in partnership with Stanbic Bank, has registered customers at roughly half the rate of M-PESA in Kenya over an equivalent start-up period, and currently processes over 400,000 domestic money transfers per month (Leishman, 2010).

Under the sophisticated mobile operator-bank partnership developed between Telenor Pakistan and Tameer Microfinance Bank, the two players have split activities in the mobile money value chain, based on an audit of organizational competence, to enable the effective delivery of Easypaisa, Pakistan's largest branchless banking service (Davidson, 2011). Despite major regulatory challenges around customers' opening accounts, Easypaisa has processed over five million bill payment and domestic money transfer transactions in its first year of operation.[4]

In 2009, an estimated one billion people in developing countries had mobile phones but did not have access to formal financial services; this number is projected to rise to as many as 1.7 billion by the end of 2012 (Beshouri & Gravråk, 2010; GSMA, 2009). By that time, delivering mobile money services to unbanked customers could generate as much as US$5 billion in direct revenues in transaction fees per year for mobile operators, and an additional US$2.5 billion in indirect revenues.

WHAT DROVE THE SUCCESS OF M-PESA IN KENYA?

The prospects for the success of branchless banking depend on a mix of country and business model factors. Given its unequaled pervasiveness in the domestic mobile money market, Safaricom's M-PESA provides a useful business case and Kenya a reference country, keeping in mind that the success factors identified there are not necessarily universal and could be context specific. For example, a number of studies (Camner et al., 2009; Heyer & Mas, 2011; Lo, 2010; Medhi et al., 2009) point to Safaricom's market dominance (it has over 80 percent market share in mobile telephony in Kenya) as instrumental in driving the success of the service, and the creators of M-PESA explain that in the early days, Safaricom committed significant operational resources to smooth out the challenges around liquidity management to build reliability in the system (Hughes & Lonie, 2006).[5]

In an ethnographic survey (Morawczynski & Pickens, 2009), M-PESA users claimed to have adopted the service, inter alia, because the money held in the account is easy to access. Other key factors were M-PESA's marketing, which was driven by simple messaging that addressed real customer pain points; significant promotional investments that transferred the substantial good will the public had

with Safaricom onto the new service; a consistent user experience at cash merchants that helped instill trust; and a pricing structure that closely matched customers' willingness to pay (Mas & Morawczynski, 2009; Mas & Ng'weno, 2010). Advertising was crucial during the early phase, as it helped to create customer awareness of the new service, followed by understanding, knowledge, trial, and, finally, regular use.

Most poor M-PESA customers said that they chose the service because of its low cost (Morawczynski & Pickens, 2009),[6] and M-PESA's pricing structure encourages users to experiment with the service while extracting value from the transactions that customers value the most (Mas & Ng'weno, 2010). However, Mas and Radcliffe (2010a) see a need for M-PESA's future pricing to be geared toward transactions of smaller value in order to maintain growth and move the service further down-market.

Research in Kenya shows that the overwhelming use of mobile money systems is for domestic remittances. Early M-PESA customers said there were some problems with the reliability of the service: failed transactions, inadequate responsiveness from Safaricom's customer care helplines, and frequent cash flow shortages at cash merchants (Pickens & Morawczynski, 2009). Other problems with M-PESA revolved around liquidity, operator networks, and difficulty integrating M-PESA with the systems of financial institutions (Haas, Plyler, & Nagarajan, 2010). Recently, however, there seems to be marked improvement in reported delays and better quality of cash merchants (Jack & Suri, 2010b). Finally, Mas and Radcliffe (2010b) identify three keys to the early success of mobile money schemes, as exemplified by M-PESA: (1) tap into a large unmet need, (2) trigger new customers' immediate willingness to try, (3) and have a high willingness to pay (or low price elasticity).

HOUSEHOLD USAGE AND IMPACT: IS M-PESA BENEFITING THE POOR?

M-PESA provides the background for the vast majority of studies on customer usage patterns and household-level impact. These studies show a tendency to move down-market over time, that simple money transfers still dominate usage behavior in Kenya, and that barriers to usage stem mostly from deficiencies on the supply side. Early evidence on household impact shows that branchless banking services can improve risk management, increase household investments and savings, and strengthen the social ties within communities. Yet most findings are only anecdotally supported, and those that are more quantitative have yet to demonstrate clear causal effects.

A number of studies show that early M-PESA users were more likely to be younger, wealthier, better educated, banked, employed in non-farm sectors, own cell phones, and to reside in urban areas—in other words, they were not predominantly the poor or the unbanked, which corroborates findings from an earlier survey of WIZZIT's early mobile banking customers in South Africa (Ivatury &

Pickens, 2006). Commenting on the early South African experience with mobile money, Porteous (2007) states that "m-banking to date has not shifted the access frontier for transactional banking in South Africa, but that it may be shifting the future access frontier—in time, bringing within reach those at present beyond the reach of market-provided solutions for basic banking" (page 28). However, results from a recent survey in Kenya (Jack & Suri, 2010b) indicate that late adopters of the service are less educated, less wealthy, and less skewed toward males than early adopters; non-users remain the least well off and least educated group.

There is growing evidence that savings are being built up on branchless banking products. Jack and Suri (2010a) report that fully three-quarters of households in Kenya say that they use M-PESA to save, while Pickens and Morawczynski (2009) state that M-PESA is being used as a storage mechanism by one-third of banked and one-fifth of unbanked users in Kenya. In the same vein, Mbiti and Weil (2010) find that being an M-PESA customer decreases the use of informal savings mechanisms, indicating that M-PESA acts as a substitute for these instruments.

Jack and Suri (2010b) hypothesize that M-PESA could expand the reach of informal risk-sharing networks, thereby extending the pool of participants. Ethnographic research also shows that M-PESA is being utilized for the cultivation of livelihood strategies that help residents to cope with and recover from shocks (Morawczynski, 2009). Access to branchless banking services can also increase a household's capacity to make investments. Jack and Suri (2010a) hypothesize, for example, that M-PESA improves investment in and allocation of human and physical capital. This can happen through more frequent deposits in an M-PESA account, which are then invested in rural homes or transferred to a bank account to gain some interest on the money stored (Morawczynski & Pickens, 2009).

Branchless banking solutions can also change social dynamics in various ways. Morawczynski (2008) claims that M-PESA is becoming a tool for the maintenance of rural-urban relations financial relations in particular whereas Pickens and Morawczynski (2009) find that while M-PESA has made it easier for rural women to solicit cash from their husbands in the city, home visits by urban migrants have declined. Haas et al. (2010) explore the community-level effects of M-PESA and observe externalities for both users and non-users. Donner and Tellez (2008) note that "m-banking/m-payments systems [are] a reminder that an understanding of the role of the mobile in developing societies must include its role in mediating both social and economic transactions, sometimes simultaneously."

The business uses of M-PESA are less well documented. Mas (2010) argues that an "any-to-any" mobile payment system provides a platform for business and entrepreneurial innovation. For example, by reducing or even eliminating the need for employees and business associates to handle cash, business owners can devote less attention to the trust and logistical aspects of holding and moving cash within an enterprise.

Regulatory Protections: Is Banking Beyond Branches Safe and Sound?

Understanding the risks posed to the retail banking system by mobile phone-based financial service distribution presents challenges for regulators, who have to familiarize themselves with new technologies, business models, and commercial partnerships between banks and non-banking institutions. Kimeny and Ndung'u (2009) provide a unique perspective on the topic that is co-written by the governor of the central bank in the country that is in the eye of the (perfect) storm in mobile money: Kenya. They note that regulators have a duty to balance access to services with stability of the system, and for this reason Kenya is using the emerging lessons from the growth of M-PESA to pursue an active an public-private dialogue and facilitate an enabling environment for broader access to services.

Klein and Mayer (2011) propose a more specific framework for the design of the regulation of mobile financial services, concluding that "mobile banking illustrates . . . the way in which payment systems can be disaggregated into component services, namely exchange, storage, transfer and investment. Regulation should mirror this and be structured by services rather than along traditional institutional lines, like a bank" (page 19).

Klein and Dittus (2011) further expand on the "service-based" regulatory approach, explaining that a proportionate regulatory framework is one that fully takes into account the aforementioned component services. They present three questions for regulators to consider in developing new regulatory frameworks for mobile financial services: "First, is regulation needed? Second, if yes, is it justified by the benefits, for example in terms of financial stability? Third, if market failure argues for regulatory intervention, how does that compare to the dangers of regulatory failure?" (page 16).

Lyman et al. (2008) and Alexandre et al. (2011) provide a comprehensive review of regulatory issues that are specific to branchless banking. Both conclude that risks associated with current branchless banking models are primarily operational and can be managed via prudent systems and controls applied to real-time transaction monitoring. USAID et al. (2010) complement this analysis and offer a comprehensive mobile financial services risk matrix, detailing each risk involved in the delivery of bank-led, MNO-led, and hybrid models, respectively, and commenting on the policy options and implications for each in turn.

Given that branchless banking is in a very early stage of development, there has been little crystallized risk to test the regulatory frameworks currently in use. One empirical study, which focused on consumer protection issues arising from various client access channels in Brazil, Kenya, and South Africa, found that third-party cash merchant channels have not resulted in higher reported incidents or claims (Collins et al., 2010)

Is it a deposit or not? This question underpins the distinction between non-banks and banks in the regulation of branchless banking. Taking deposits brings with it a series of prudential regulations to ensure that funds are managed safely on behalf of the customer. Lyman et al. (2008) suggest that non-bank institutions

should be allowed to offer stored value accounts under an e-money license, whereas Alexandre et al. (2011) emphasize that regardless of the structure of the model, funds should always be held in a prudentially regulated bank. Tarazi and Breloff (2010) identify two pillars of existing regulatory frameworks for branchless banking for the protection of customer funds held by non-bank e-money issuers: safekeeping—the requirement that non-banks maintain unencumbered liquid assets equal to the amount of issued electronic value; and isolation—the requirement that the funds underlying issued e-money be insulated from institutional risks of claims by issuer creditors, such as claims made in the case of issuer bankruptcy. Ehrbeck and Tarazi (2011) argue in favor of enabling service providers to pay interest against e-money account balances, noting that "e-money represents a promising opportunity to provide low-income individuals with more than just payment and safe storage services: it can offer savings vehicles with the full benefit of interest and deposit insurance. The extension of such benefits can be done with relative ease and at minimal risk" (page 41).

The successful extension of financial services beyond bank branches is dependent on finding a channel that can adequately meet the needs of customers in terms of both convenience and services. The vision of ubiquitous branchless banking services is associated with high-volume, low-value transactions that occur with a regularity associated with cash: quick, convenient, and, most importantly, guaranteed. Once monetary value is stored by an electronic medium, the settlement systems behind the transaction must be robust enough to allow all parties to remain confident that the system can *immediately* identify whether the customer has sufficient funds to meet the demand of the transaction.

Lyman et al. (2006) note that systemwide credit risk is greatly reduced when cash merchants' cash-in/cash-out transactions are funded from their own accounts (that is, on a prepaid basis) and transactions are authorized in real time. Alexandre et al. (2011) argue that under these circumstances, the relationship between the branchless banking scheme operator and the retail stores offering cash-in/cash-out services is more akin to reselling than an agency, and they propose the term "cash merchant" rather than the more established "agent" to describe these stores.

Robust systems and technologies are therefore required to communicate the settlement of payment instructions effectively and efficiently in order to meet the demand of a potentially high volume of payments. Porteous and Bezuidenhout (2008) explain that it is possible to offset the increased risk caused by using less secure mobile technologies by introducing operational controls, such as transaction monitoring.

In terms of consumer protection regulation, Mas (2008) notes that when using cash merchants, the framework for consumer protection should include consumer awareness safeguards, transparent fees, and clear, well-publicized complaints procedures. Dias and McKee (2010), in a complete review of the consumer protection aspects of branchless banking, conclude that "the evidence to date shows that the benefits of these new services far outweigh the risks, and many times they reduce

important shortcomings commonly associated with informal providers, such as loss of customers' funds or service discontinuity" (page 13).

Accurate customer identification (or know your customer, KYC) is a considerable obstacle to expanding financial services to the poor, due to the lack of formal identification (national identification card, passport, etc.). Alexandre et al. (2011) discuss the issue of KYC and opening accounts, noting that tiered KYC requirements are necessary to fully leverage expansive cash merchant networks. This would allow cash merchants to open limited service accounts and bring more underserved customers into the system.

Although there has been an extensive assessment of the safety and soundness of branchless banking systems, a few issues have not been explored sufficiently. First, the principles and systems for appropriate ongoing supervision remain to be determined because of the limited experience of regulators actively supervising large-scale branchless banking operations.

Second, due to the nascent stage of global market penetration, there is little certainty regarding the impact of electronic money on monetary policy. Jack et al. (2010) offer a first look at how existing models of monetary theory can be used to think about the impact of mobile banking on the operations of the financial system and the implications for monetary and regulatory policy faced by central banks.

Finally, and perhaps most importantly, there has yet to be a failure of a large-scale branchless banking scheme to demonstrate mismanaged operational risk or fiscal irresponsibility. Therefore, existing regulatory frameworks may be sufficient, but they have not been tested to determine whether they can truly protect the market and consumer from the crystallized risk they are meant to mitigate.

MARKET AND VALUE CHAIN STRUCTURES: HOW WILL THE PLAYERS COME TOGETHER?

Branchless banking entails a convergence of services from banks, telecoms, and retail players. This presents the challenge of determining what kinds of partnerships and business models will be most conducive to accelerating this convergence.

Mas (2009) analyzes branchless banking in terms of a "horizontalization" of the financial services value chain, rather than as head-on competition between banks and telecoms:

> 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 cus-

> tomers themselves; larger banks offering custodial and investment services. (page 72)

The potential strategic objectives, comparative advantages, roles, and risks for mobile operators engaged in branchless banking or mobile money solutions are discussed by Mas and Rosenberg (2009), who point out that "the fact that mobile phones can be used as transactional devices doesn't necessarily mean that the mobile operator needs to own the financial service" (page 1). Davidson (2011) expands on this point and introduces the idea of a business owner as "the bank, operator or third party that assumes the bulk of the financial risk of offering a mobile money service. The business owner contracts with other entities to undertake the activities in the mobile money value chain it chooses not to operate itself" (page 3).

The role of banks in branchless banking is discussed at length in many papers, which explore the process of finding a role in a new market segment (the unbanked) that challenges many established banking norms. Mas and Kumar (2008) explore the various options available to banks to translate the potential of mobile phones into greater financial access for poor people. However, it is apparent that banks and mobile operators are finding it challenging to develop partnerships that enable them to operate in tandem with each other, thus limiting the number of institutions entering the market. Kumar et al. (2010) note that microfinance institutions, by and large, have not played a significant role in the implementation of mobile banking services. Saxena (2009) identifies ten main challenges microfinance institutions face in deploying alternative distribution channels. In the same vein, Owens (2008) explores the potential for smaller banks and third-party service providers to leverage branchless banking platforms.

The complex competition is also ultimately a driver of the level of interoperability among payments systems in order to facilitate transactional services across platforms and institutions. Bellis and Nagel (2009) emphasize that interoperation between mobile money schemes allows players to reap the full effects of networks and could benefit overall customer adoption, as consumers would no longer have to pick the "winning" service provider. While we conclude that there is evidence that "absent early regulation of mobile money, services can develop without raising competition concerns," interoperability will likely become an issue as services mature. Indeed, Mas (2011) identifies four paths to building mobile money ecosystems, and all but the first involve some form of interoperability: the "dominant player" path exemplified by Safaricom's M-PESA; the "orchestrated multi-party path," in which one entity organizes a coalition of diverse players under a multi-party interoperable framework; the "gradual bank-based path," in which banks exploit their unique ability to grow a mobile money service gradually by building a distribution network over time; and the "decentralized unbundled path," where an ecosystem develops absent of any coordination and without any single player emerging as the lynchpin.

The success of branchless banking schemes also hinges on the ability of the scheme to mobilize and incentivize an adequate distribution network of retail stores. Among those offering ideas for effective schemes are Mas and Siedek (2008), who explain the basic mechanics for store-based transactions and the technology requirements for these transactions to be trusted. Using case studies, Davidson and Leishman (2010) provide an in-depth analysis of business practices methods for building, incentivizing, and managing retail networks. The authors highlight the importance of building a distribution network that is ubiquitous, trustworthy, lowcost, and liquid. Pickens et al. (2011) draw on their analysis of branchless banking agents in Brazil, India, and Kenya to recommend lessons for practitioners to build a viable cash merchant network where the business case works for the entire supply chain. And, finally, Flaming et al. (2011) provide an agent management tool kit, drawing from interviews with industry practitioners and vast agent data to analyze the economics of the agent supply chain and address practical questions involved in building an agent network.

CONCLUSION

Can branchless banking live up to its potential, or is it destined to become yet another fad in the protracted fight for financial inclusion? The success of M-PESA in Kenya does show that there is a real customer demand for convenient money transfers and payments and, to a lesser extent, savings. Still, demonstrable mobile banking success stories remain the exception rather than the rule. Where these systems are taking root, there are encouraging signs that their adoption shifts more and more over time toward poorer parts of the population.

There are some important questions that need to be answered before we can conclude that mobile money will become a powerful tool for financial inclusion. First, how will the experience be replicated in markets where mobile operators have a less dominant position, regulators are less open, and demand conditions less certain? Second, how will banks and other financial service providers connect to mobile money platforms to expand the range of financial services available through these platforms? And, third, will the cost of financial transactions offered through mobile money schemes fall enough to really become of use to poor people who need to transact at levels as low as $1?

The biggest gap in the research on branchless banking remains the market structure aspects: understanding the set of incentives that operate on each of the players involved (customers, banks, telecoms, financial switches, regulators). There is not likely to be a unique model that balances the interests of these players, and their respective roles are likely to vary from country to country and from deployment to deployment. Nevertheless, we need to get smarter about harnessing their commercial interests and competitive advantages within a cooptation framework. Only then will we be able to build the kind of ubiquitous retail payment platform that can be used to deliver financial services efficiently and profitably to all.

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1. The GSMA is the global association of mobile operators.
2. As of August 2011, there were 110 live deployments targeting the unbanked in developing countries.
3. Mas (2009) proposed three headline metrics for evaluating the stage of development of branchless banking deployments that target the unbanked: number of transactions per cash merchant per day, number of active customers, and average float per active customer. On these measures, no deployment has equaled the take-up rate of of M-PESA in Kenya: it has achieved a penetration of more than 50 percent of the adult population in Kenya and more than 60 percent in its own base

of mobile customers; its 20,000 retail outlets are 20 times the number of branches in the entire banking system, or 100 times the number of branches of the country's largest bank; it handles more transactions in Kenya alone than Western Union does globally (Mas and Radcliffe, 2010a).

4. Other case studies include Celpay and Mobile Transactions in Zambia (Leishman & Desai, 2009), Smart Money and G-Cash in the Philippines (GSMA, 2010; Pickens, 2009), True Money in Thailand (GSMA, 2010), Giros Tigo in Paraguay (GSMA, 2011), and Zain's deployment of Zap in East Africa (Leishman, 2010). Chipchase and Lee (2011) present profiles of potential Afghan mobile money customers, drawing on insights from interviews.
5. Daily trading records from a sample of M-PESA cash merchants show that stores require intense daily liquidity management support, and that rural areas face greater difficulties in managing their liquidity (Eijkman et al., 2010).
6. For example, sending Ksh 1,000 (US$13) through M-PESA cost US$0.39, which is 27 percent cheaper than the post office's PostaPay and 68 percent cheaper than sending it by bus.