Next generation access to finance: Gaining scale and reducing costs with technology and credit scoring

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INTRODUCTION

A conference, jointly sponsored by the International Finance Corporation (of the World Bank Group), CGAP (a global consortium of microfinance donors and resource centre) and VISA International (a payments service provider) from 17–19 September 2007, brought together over 350 participants – representing microfinance practitioners, technology solutions firms, telecommunications companies, regulators, donors and investors and development professionals – from more than 60 countries to hear the latest on innovations in payment systems, mobile banking and credit scoring technologies and the potential of these technologies to contribute to increased access to finance ('A2F') for low-income consumers and businesses.

RECENT MAINSTREAM NEWS HEADLINES, research publications, and conferences have extolled the future of technology in financial services delivery. Earlier this year, The Economist proclaimed 'The end of the cash era', while a new Vodafone publication trumpets 'The transformational potential of m-transactions', and the opening statements of the conference called technology 'A seismic shift in the financial service industry'.

The conference moderators helped set the stage with some staggering numbers on technology adoption and expansion, as well as some more sobering statistics on financial services outreach. Today there are 3 billion cell phones in use around the world. Of the last 2 billion cell phones sold, 82 per cent were sold in developing countries. An additional 1.5 million people join the global mobile phone community each day. Internet usage jumped an average of 400 per cent from 2000–2005 in Africa, the Middle East and Latin America. Purchase transactions using cards (instead of cash) have also been growing fastest in developing markets (Stein, 2007).

In contrast, despite the expansion of microfinance services around the world, in developing countries roughly two-thirds of the population remains unbanked or underbanked. The average cost of credit in developing countries is still much higher than in developed countries and there is the potential for huge efficiency gains. Research shows that operating costs for microfinance providers average at 29 per cent across countries, compared to about 1.35 per cent for US credit card companies and about 1.6 per cent in the US housing finance market (Stein, 2007). The *Doing Business 2007* report also showed that among 82 credit bureaus worldwide, only 12 per cent collect credit data from MFIs, despite other research confirming that switching from 'blacklist' credit reporting (poor repayment reporting only) can increase the rate of credit approvals by 89 per cent (Stein, 2007).

The total global remittances (money transfers) market is estimated at US$800 billion per year. Today about 800 million people receive remittances – but the total market for remittances could amount

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to more than twice that number. The average money transfer amount is currently around $300, but industry participants would like to make it cost effective (and profitable) at amounts as low as $50.

Next generation solutions for A2F

Table 1 outlines the different levels where technology is impacting the delivery of financial services. The first level is at an industry support level, while the other three levels are located within the financial institution itself. As can be seen, there are many different technologies that are impacting access to finance; the conference focused mainly on those highlighted in bold in the table and described below.

Table 1. Technology matrix: How different technologies can benefit microfinance service providers

Operational Level Role of technology	**Technologies**	**Uses**	**Examples**	**Results and Potential?**
Industry support infrastructure Create or upgrade critical financial services infrastructure	**Credit bureaus**; national payments system; national identification systems; collateral registries; remittances framework	System-wide client credit histories; ability to use card/POS technologies; secure financial institution claim to loan collateral; remittance processing and payments	Ecuador: 113 non-regulated MFI are reporting to a private credit bureau (covering 150,000 clients and $200 million in loan portfolios). Alternative credit data models in US	Proven results. Credit bureaus increase access to finance. National payments systems are critical to card/mobile based transactions
Back-end operations Streamline or automate back-end operations or IS functions; improve data use for operational decision making	Information systems and data structures (including open-source); IT platforms; **credit scoring technologies**	Aggregation of client data for report generation, actuarial analysis, product targeting; automated loan approval and delinquency management; financial risk hedging; product design.	MiBanco Peru implemented a score card for microenterprise loan clients in 2001 and updated it in 2005	Information systems: proven results. Credit scoring technologies: mixed results – cost/ benefits to MFIs unclear. Potential: high?
Front-end operations Streamline, outsource or enable remote data collection and processing	Handheld PCs/personal digital assistants (PDAs)[Q32]; PCs; **agents & POS**; web or phone-based user interfaces; biometric identifiers; **mobile phones**	Account creation (client data capture, screening); transaction data; claims processing (savings, transfers, insurance)	PRADAN India's 'Computer Munshi' pilot used independent accountants to enter self-help groups weekly repayment data into PCs to improve group reporting quality and efficiency	Unproven results; pilots have had mixed results. Potential: low/medium?
Service delivery Improve delivery reach or efficiency	Mobile branches; ATMs; PC kiosk; card technologies ; **agents & POS; mobile phones.**	Cash management or e-payments: loan disbursal, installment payments collection (loan, savings, insurance), withdrawal and deposit services; e-money transfers; cash management at remote locations	G-Cash in Philippines – Globe Telecom and affiliated rural banks offer a 'mobile wallet' application enabling 1.5 million customers to perform loan or bill payments, money transfers, deposits and withdrawals, and retail purchases using their mobile phones and text messages	Unproven results. Too few examples yet to generalize. Costs are still high. Potential: high/medium?

Sources: Based on Ivatury (2007); Rattan (2007).

Industry infrastructure support technologies. These facilitate the creation and improvement of industry infrastructure such as credit bureaus and national payments systems. Speakers reported on new private credit bureaus springing up in Africa and elsewhere. Benefits of credit bureaus are clear and include an increase in financial sector competition, decreased lender risk and an increase in credit approval rates. Technology adaptations are allowing even smaller institutions to access bureaus using lower-cost methods such as web services or batch services via internet, email or FTP. In the US, so-called 'alternative' credit bureaus are incorporating new kinds of data into credit reports such as salary information, rental payments or mobile phone payment history to create files for consumers who previously would have been classified as uncreditworthy. One private bureau in southern Africa generates individual credit records for group loan clients.

Some challenges to credit bureau implementation include stakeholder reluctance to share client information, consumer protection laws, the unproven viability of private bureaus and the potential cost/benefit for MFIs or other institutions.

All types of electronic payments and transactions require the backbone of a payments system, a network that facilitates the exchange of information and settlements between clients, merchants, banks and card issuers. VISA is an example of an international payments system, but there are other smaller (national or regional) payments systems. Most front-end technologies and delivery systems (see below) are not possible without the existence of a payments system, and the vision is of a shared platform for end-to-end delivery of a suite of financial services leading to economies of scale. The GSM Association is also working with 35 mobile operators in 120 countries to create a hub for an international mobile phone payments system (Soppit, 2007). Coordination between actors is important, to avoid increasing costs through the development of exclusive payments systems linked to one bank for example.

Back-end operations technologies. Such technologies, for example management information systems (IS), have always had a big impact on the efficiency of MFI operations. The conference focused on two technologies in this category: open-source IS and credit scoring technologies adapted to microfinance lending.

Open-source information systems (such as the Grameen Foundation's MIFOS technology) can make it cost-effective for even smaller MFIs to move to computerized systems. It also promotes local technical service providers, lowers maintenance costs and allows for easy customization and improvements in-house. Rather than waste resources in developing custom systems, MFIs can benefit from IS that innovates continuously with developments in the sector. No MFIs reported on their experiences using open-source software so no further conclusions were reached.

Credit scoring is a technology that employs statistical methods (such as regression or decision trees) to predict a certain outcome (such as the probability of default), based on historical information and other defined client parameters. There are a number of relevant applications for scoring in microfinance, including (credit) application scoring, delinquency management (collections scoring), client management (cross-selling/product targeting), behavioral scoring and bureau scoring. Since volume is key to generating cost-efficiencies in microfinance, scoring is hoped to lower the time and expense of loan analysis. Several MFIs and specialized service providers reported on their experiences with scoring, and benefits included more standardized loan approval decisions, improved loan officer productivity, faster loan processing times, and in some cases decreased portfolio at risk (although causality is difficult to attribute in the case of portfolio at risk). Challenges to widespread use of the scoring models included the poor quality of historical database information used to build models, organizational cultural barriers to use of scoring, and the low analytical relevance of the models for certain types of clients (i.e. rural clients, group loan clients). Regrettably, no cost–benefit analysis of the design and implementation of credit scoring models in the institutions was presented, which could assist other institutions interested in making the investment understand the potential financial trade-offs.

Front-end operations technologies. These enable the streamlining or outsourcing of client data collection or processing for branch or branchless banking. The transmission of loan application data to headquarters via mobile phone or PC/MIS, rather than using paper copies, is one example. Recent experiments with technology for front-end operations have had mixed results: one pilot in India that tested both mobile phones and PCs as alternatives to manual monthly data collection and processing, concluded that both technologies increased efficiency but the mobile phone model was three times more expensive than the PC model (Rattan, 2007). MFIs need to carefully assess each step of their business process before deciding which ones can be improved upon using technology. In countries with low labour costs, for example, solutions requiring investments in more expensive technologies might not be cost-competitive.

Service delivery level technologies. Examples include ATMs, PC kiosks, POS devices and mobile phones and they allow financial service providers to reach more clients – over greater areas – at much lower costs. In some cases these technologies are combined with the use of banking correspondents (agents or businesses who conduct transactions on behalf of a financial institution) to allow for front-end operations transactions (such as account opening) as well as day-to-day banking services (such as account withdrawals or bill payments). Banking franchisee or correspondent models use the existing infrastructure of partners such as retailers, post offices, gas stations, remittance companies, lottery agents or government agencies to expand the bank or MFI's service locations. Participants from Brazil, Colombia, Mongolia, the Philippines, Kenya and Pakistan shared a wide variety of agent network models and a range of technologies to reach unbanked consumers. Many models used a combination of ATMs, mobile phones, POS devices and/or mobile bank units (technology equipped trucks) to reach the greatest scale, while giving both merchants and clients a choice of technology options. Card-based technologies are also being used to develop innovate ways to distribute social benefits payments to dispersed low-income clients while improving service and decreasing fraud. Participants were eager to discuss the business model options service delivery networks, as well as the risks (such as operational and credit risks), associated with each type of model.

Major conference themes

There were seven main themes that were present throughout the different topical discussions and in which participants had the most interest in learning more and in pushing the learning agenda forward.

Social and economic impact of technology on the poor. A general need was felt for better attention to baseline measures of economic development indices in order to understand and document the impact of technology on the lives of the poor. The breakthroughs of microfinance (group-based lending and customized cash-flow credit analysis) were based on a personal touch – what will be the impact of low-touch technology applications on the sector?

M-banking and other technology-based services can also alter or amplify social and/or economic relationships, and as yet there has been little work done to document these changes or to fully understand how social norms, community networks and giving and receiving behaviours influence uptake and use of m-banking or other technologies. Research in the Philippines on P2P money transfers using mobile phones showed that users transacted with a limited number of users (between 1 and 4), mainly friends and family, and still used other alternatives (like sending money via bus).

Disaggregation of business models for financial services. Experts from all disciplines (financial institutions, technology providers, mobile phone companies) referred to an 'Unbundling of services' in the retail financial sector. In the old model of financial services, the bank 'did it all', managing the customer relationship and delivery of services from the start to the end of the consumer experience. As new actors enter the market (mobile phone companies, postal banks, remittance service providers, etc.) it is unknown how these new actors will align themselves to work together and to exploit their own key competencies. Using m-banking as an example, there are significant differences, from both a regulatory and risk management point of view, between a bank-led model (mobile network operators (MNOs) act as bearers only) and a non-bank led model (where MNOs have real-time control of data). Despite the exciting experiences to date such as G-Cash and M-Pesa, in most other places there are still large gaps in understanding between financial institutions and mobile network operators, each of which has different goals, business cultures, attitudes toward customer information sharing and management, and levels of risk acceptance. Some of the key challenges expressed were:

- lack of guidance/experience in selecting the optimal business model for partnerships;
- extremely fast changing business models (for example, more similarities with fast-moving consumer goods companies rather than financial services);
- credit is still complicated and costly to offer through these new channels;
- challenges in merchant/vendor recruitment and management;
- switch to a cashless economy takes time and will involve ongoing investment in financial education/customer awareness;
- 'Cash is King' motto: no system will be successful unless there are many access points for cash-in and cash-out of the system (many-to-many syndrome, ubiquitous access).

Interoperability of systems will be critical to success. Remote payment networks are only viable and attractive to users if they are ubiquitous and easy to access. Disagreements on exclusivity between MNOs and banks on whether each party will have an exclusive relationship with the other limits the provision and uptake of services, lowering overall profitability and outreach and increasing costs of services to customers. The GSM Association among others is working to bring mobile network operators together to create common platforms and encourage interoperability standards. VISA and other payments system operators are doing the same for traditional card operated systems. According to some, the 'convergence of payments and mobile communications is inevitable' (Sikander, 2007), and indeed the consensus among participants was that the industry must promote interoperability and shared system development costs – so that the greatest numbers of users may benefit from the services. The other extreme (such as in Mongolia, where each merchant must own four different POS devices, one for each bank's payments system) results in multiplicity of effort and expenses for the sector and for clients. Interoperability is equally important to build efficient remittance processing networks and nationally inclusive credit bureaus, to avoid duplication of efforts or fractioning of credit information reporting.

Regulatory challenges are many and varied. The influx of new actors and new types of transactions creates a host of new challenges for already overstretched regulators in developing countries. However, the lack of appropriate regulation could leave consumers vulnerable, providers exposed and governments liable in case of fraud or losses. Anti-money laundering/counter-terrorism financing (AML/CMF) laws may create additional barriers to the provision of financial services by some actors. Some of the many questions raised by both panelists and discussants included:

- Can mobile phone network operators accept deposits?
- Should telecommunications regulators be involved?
- Must mobile network operators meet minimum capital requirements?
- Can agents safely handle cash on behalf of a bank?
- Do agents need to meet AML/CFT regulations?
- How can banks confirm identities of clients they do not personally attend?
- Can all providers access payments systems on an equal basis?
- Are there foreign exchange restrictions on money transfers using agents or mobile phones?

- Can non-bank clients use m-banking services?
- Who maintains ownership of the 'float' (money held in mobile wallets/e-accounts)?
- Data security concerns: who has access to residual payment/customer information on mobile phone servers, etc.? Is encryption enough or should no data be kept after a transaction session is complete?
- What is the dispute resolution mechanism for the system?

The answers to these and many other questions remain to be answered, but countries with positive experiences in correspondent and m-banking (such as Brazil and the Philippines) stressed the need to involve regulators from the beginning.

Focus on creating an 'ecosystem' to allow development of sector. M-banking and agent networks are complicated systems that involve many market players: customers, banks, traders, retailers, service providers, merchants, regulators and mobile network operators, all in one model. Many participants commented on the necessity of involving all of these players in the design, operation and feedback loop for the network model in order to utilize each player's key areas of strengths and expertise and maximize the success of the payments or m-banking 'ecosystem'. The business model for each ecosystem will be different but unless there is a common platform for market participants to come together it will be difficult to gain consensus or move forward in implementation – buy-in from all parties was repeatedly mentioned as a key to success. The lead player must be able to 'sell' the service to other actors – especially if the leader is a mobile operator who may be viewed with suspicion by banks wary of new competition. The importance of agents and/or merchants should not be underestimated – vendors need a high comfort level and low set-up fees to encourage participation. For example, to bring together the often conflicting objectives of the mobile carrier, banks and merchants, Sony and NTT DoCoMo (the MNO) created a separate legal entity, bitWallet, Inc. to promote the shared interests of the contactless payment network in Japan, which now serves 23 million customers through 43,000 retail locations (Raby, 2007).

More rigorous cost/benefits analysis of technology solutions. Some participants voiced a need to compute actual cost savings from the introduction of new delivery channels or technologies and greater focus on sustainable business models, rather than assume that high-technology solutions are automatically better for microfinance. Technologies such as m-banking or front-end solutions cannot be lumped into one model for microfinance, as there are many variables to consider such as whether the main use is for data collection or transfer or both, who will use the device (the client or the agent?), and what the actual expected return on investment will be and over what period. Front-end technologies in particular appeared to have a mismatch with MFI/bank processes and may point to a need for simplification in order to be able to integrate better with existing software and processes. For remote data capture and transmission, connectivity may still be a problem in some locations, necessitating a search for other low-tech solutions. As costs of technology decrease over time, the opportunities for viable use in microfinance will increase (Rattan, 2007). The conclusion was that more research must be done in the area of cost–benefit analysis in order to substantiate the claims of cost savings and efficiency gains to microfinance from implementation of these technologies.

Technology solutions for very poor and remote populations. Before investing in delivery technologies such as m-banking, financial institutions and MNOs need to understand by whom, and how, these services are really being used. It is still unknown whether the most excluded populations are able to use technologies such as m-banking, or whether mainly more literate or urban clients benefit. Equity Bank related that customers had difficulty recalling the many text message formats to perform different transactions, and so used only one or two of the available services. The experiences in using technology to bring welfare payments to large numbers of the population offers exciting potential, especially when combined with financial literacy programmes and access to a savings account. New experiments in Kenya will test the frontier limits for using cashless systems for distribution of payments to even very remote and poor clients. The challenge will be to adapt existing technologies for use by the poor using text-free user interfaces (UI) (which employ graphics and imagery, voice-overs, mouse-overs and full context videos) – are one way to increase the depth of outreach. Hopefully future projects will incorporate these types of innovative technologies as well as make a stronger link between social programmes and permanent financial inclusion for disadvantaged populations, as there are still too few concrete examples of how to move recipients along the path to full users of appropriate financial services.

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