ICT Update

a current awareness bulletin for ACP agriculture

'Human ATMs' supported by GSM provide micro-finance services in **Uganda**

In **Malawi**, smart cards and biometrics are replacing paper ration cards

Financial cooperatives in **Mali** are introducing personal digital assistants

Financial services

Contents

http://ictupdate.cta.int

Editorial

The end of traditional banks?

Traditionally, the major banks have been reluctant to extend their services to rural communities in developing countries. Problems such as remoteness, low population densities in rural areas, and the small size of most transactions are compounded by the lack of roads, postal services and fixed-line telephone services. It is simply not profitable enough for banks to set up branches in 'the middle of nowhere'. As a result, over 2 billion people remain 'unbanked' – they have no bank account and no access to financial services.

Recently, however, a handful of information technologies, including the internet, point-of-sale (PoS) devices and, above all, the mobile phone, have begun to reach across this financial divide. Intriguingly, it is the very lack of financial infrastructure that may yet result in services such as mobile banking becoming widespread in the rural areas of many ACP countries even before they have gained much of a toehold in Europe or North America. The lead article in this issue explores developments such as the use of prepaid airtime as currency and the rise of mobile banking in countries such as South Africa and the Philippines.

Meanwhile, development agencies are experimenting with smart cards and mobile banks as means to deliver assistance. We look at one such programme in Malawi, launched by Concern Worldwide and Opportunity International Bank Malawi, in which cash payments are being made directly to thousands of people in need rather than food aid. Recipients can then visit a mobile bank where they use a smart card and biometric technology to access the money. The experiment is part of a shift on the part of donors to allow the recipients themselves to choose the form of assistance they need.

Elsewhere in this issue, we investigate the computerization of loans and savings administration. Although perhaps not the most exciting of subjects, computerization is vital for small financial institutions, since it can increase efficiencies that can significantly reduce the costs of providing financial services in rural areas. In a story from Mali, we see how members of the Nyèsigiso Network of credit unions are now equipping loan officers with personal digital assistants (PDAs) loaded with special teller software, enabling them to extend their services into new areas.

We also look at the role that ICTs play in the delivery of financial services by microfinance institutions. Uganda Microfinance Ltd, the subject of our fourth story, has piloted a remote transaction system that employs point-of-sale (PoS) terminals, supported by a GSM network for data transfer, and operated by 'human ATMs'.

At the same time, we must not get carried away on a wave of ICT euphoria. In our Perspectives column, Adam Rogers, head of communications with the UN Capital Development Fund, reminds us that inadequate ICT infrastructures and the high costs of bandwidth remain the biggest obstacles in this area.

In the Q&A, Gaamaa Hishigsuren, an expert on the use of ICTs for rural finance, believes that in future, the uses of ICTs in rural finance will continue to grow – the only question is how fast this will happen. But this will require improvements in infrastructure, and education campaigns to raise awareness among rural people about the uses of ICTs, and to address their fears about using technologies.

The barriers to extending much-needed financial services to the rural areas of developing countries are far from insignificant. However, overcoming the challenges of geography and costs that lie at the heart of the matter is where information technologies have always performed very well indeed. ■

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Extending the reach of financial services

It is clear that so far the benefits of the ICT era have not been evenly shared. Many worry that the digital divide is unbridgeable, pointing out that rich countries are growing richer from their advanced high-tech industries. The high-tech boom has enabled them to invest in the next generation of products, which contributes to higher profits, more capital to invest in R&D, and so on. The situation is changing, however, as connectivity in developing countries is rapidly increasing. Since 2000, for example, access to (mobile) phones has more than doubled in most developing countries; in some countries connectivity has been boosted by as much as 20 times.

The World Bank estimates that there are now more than 7000 microfinance institutions (MFIs) serving more than 16 million people in developing countries. Some of them have started to use ICTs to create 'branchless banks' and extend their outreach through, for example, mobile phone banking,

RON GILING/LINEAIR

Targeting the 'unbanked'

In the Philippines, for example, the mobile operator Globe Telecom is providing banking services for over two million clients who use their phones as 'mobile wallets' to send and receive domestic and international remittances, to make payments at shops and to pay bills. In South Africa, Wizzit, a virtual bank that is targeting the country's estimated 16 million 'unbanked', provides similar services to a rapidly growing number of subscribers in the townships and rural areas. An online service, MIX Market, has developed a global marketplace linking MFIs with investors and donors. Their databases contain information on hundreds of microfinance institutions, with the aim of highlighting and sharing best practices and promoting transparency.

In India, rural farmers and microfinance institutions are now doing their bookkeeping using mobile phones with a system developed by Tapan Parikh. He took advantage of the cellphone's built-in camera and microphone, and then modified the phone's functions using open-source software. The result is a low-cost, customizable accounting computer that can be used by people with varying levels of literacy and who lack access even to electricity.

In Guatemala, the Banco de Desarrollo Rural (Banrural) provides microloans to more than 35,000 borrowers, and now boasts the largest number of retail outlets in the country. One force behind its expansion is a new biometric fingerprint technology that has enabled many who would otherwise have been excluded to access

automated teller machines (ATMs), and point-of-sale (PoS) networks. By using ICTs, these institutions can substantially reduce their transaction costs of serving poor and remote clients, enabling them to access financial services such as credit, savings and insurance. In fact, ICTs provide unprecedented opportunities for poor countries to leapfrog many stages of financial sector development.

a range of financial services. Biometric technology can remove significant obstacles to providing services in areas where many people are illiterate or have no personal identification documents.

Using this technology, the client simply places a thumb on a biometric reading device in their local bank to access to his or her savings account. In addition to enabling clients to deposit and withdraw funds from remote locations, this system lowers the risk of fraud and strengthens both the lender's and the borrower's sense of security.

Reality check

The challenges are indeed daunting. Inadequate ICT infrastructure remains a problem, and there is still insufficient cooperation among development partners. Although prices have been dropping, the high cost of international bandwidth remains beyond the reach of many in developing countries.

However, pessimists who claim that ICTs will only increase the divergence between rich and poor countries are misinformed. While ICTs should not be seen as a panacea for all development challenges, there is clear evidence that support for this sector produces tangible dividends.

There is no other option. The ICT sector is a growing segment of the global economy, and developing countries and their partners need to harness the opportunities if they are to lift their people out of poverty. More research, investment and support are needed if the digital divide is to be bridged – and then eliminated altogether. One important area is in broadening access to financial services. The Consultative Group to Assist the Poor (CGAP), with generous support from the Bill and Melinda Gates Foundation, is expanding its technology practice to identify, shape and nurture projects with microfinance practitioners, banks, and telecommunications and technology firms. But much more needs to be done, presenting enormous opportunities for both the public and private sectors to participate in solutions that will promote economic development. ■

Feature

Zara stands at the counter of the village shop waiting to pay for some rice and cooking oil, but instead of reaching for her purse to pay with cash, she takes out her mobile phone and uses that instead. Is Zara some 'with-it' gadget-loving resident of Tokyo or Seoul? Increasingly, customers such as Zara are far more likely to be living in Dakar, Nairobi or Khartoum.

For more than a decade IT advocates in Japan, North America and Europe have been predicting the imminent arrival of mobile commerce, and that ultimately cash, debit cards and credit cards will be replaced by mobile phones. While this has yet to happen in the North, in developing countries the mobile phone is being used in many innovative ways to deliver financial services to the 'unbanked' – the estimated 2.5 billion people worldwide

financial services that are suitable for them, small farmers, shopkeepers, traders and other small business owners have turned to other ways to make financial transactions using their mobile phones. The now ubiquitous mobile phone operators, and not the banks, are leading a revolution in the delivery of banking services.

As many as half of the 2 billion mobile phones in use worldwide can be found in developing countries. The GSM Association expects another billion to be sold in the next 18 months, 85% of them in the developing world. Particularly in Africa, people have begun to use their mobile phones in many novel ways. Perhaps the most remarkable is the use of prepaid airtime – the amount of time that can be spent talking on a mobile – as a sort of currency.

payment and wire transfer systems are non-existent, mobile airtime is being used by migrant workers who wish to transmit money to their families back home. The system is of course unsuitable for transmitting large sums of money, but for small amounts it is a very workable solution. In some cases, airtime has even been used to bribe officials.

A band-aid solution

Despite its popularity, swapping airtime for cash has a number of disadvantages that raise doubts about its long-term viability as a virtual currency. In Nigeria, Kenya and the Philippines, where the system is already widely used, the central banks are keenly watching its development and the impact it will have on their economies. As increasing numbers of people start

Mobile wallets and virtual currencies

For more than a decade IT advocates in the North have been predicting that cash, debit cards and credit cards will soon be replaced by mobile phones. While there is little sign that this is happening in the North, in many developing countries the story is very different.

who have no bank account and have no access to formal banking services.

For banks, with their costly 'bricks-and-mortar' infrastructures, rural areas with low population densities offer few attractive business opportunities. Moreover, the products and services offered by most banks are generally unattractive to small farmers and entrepreneurs. For instance, many banks require their clients to keep a minimum balance in their savings account, otherwise they charge a fee. Since few farmers can afford to keep enough in their account to avoid such fees, they use cash, avoiding the banks altogether. Banks in developing countries have therefore targeted middle- and high-income customers in towns and cities.

Mobile airtime as a 'virtual currency'

Necessity is the mother of invention. Where the banks are not providing

The process is simple, and makes use of prepaid mobile phone cards. Instead of calling the number on the card and entering the code that unlocks the airtime, the user sends the code to someone else via a text massage. The receiver can then trade the code for cash, for example, with a local merchant who needs the airtime or who wishes to sell the code on to someone else. In essence, the airtime is being swapped for cash; airtime has thus become a means of exchange, a 'virtual currency'.

In the past few years, the swapping of airtime for cash has skyrocketed, particularly in areas where prolonged armed conflicts have disrupted formal financial services. In these environments mobile phone operators have thrived, and have provided the infrastructure necessary for using airtime as currency. In the Democratic Republic of Congo, for example, where

trading airtime as currency, the banks fear that they could lose control of the money supply, and hence an important means of controlling inflation and interest rates.

For the people who are using airtime as currency there is another drawback. In most countries, mobile phone users who buy prepaid airtime have to pay value-added tax and sometimes a telecoms excise tax too. Thus, whenever they use this virtual currency, they are also losing a lot of money to the taxman. In Kenya, for example, when users buy airtime, they also pay 26% tax. Thus if they pay 100 shillings for mobile airtime and then use it as a currency, they lose 26 shillings every time they make a 'deposit'. It is understandable why people are using airtime as a mobile currency in countries like the Congo, but it has its limits. It should therefore be regarded as little more than a band-

aid solution for bringing financial services to small farmers and entrepreneurs.

Wizzit mobile banking

A much more promising development is 'mobile banking', or m-banking. In the last few years, in countries such as South Africa, Kenya and the Philippines, a variety of 'mobile banks' have emerged offering a full range of banking services, at very low prices, that allow people to move money around via a mobile phone by drawing on a real or a virtual bank account, sometimes in concert with a debit or smart card.

The mobile phone eliminates most of the problems faced by traditional banks in delivering services to people in rural areas. Distance is no longer an issue: whether they live in a remote village or in downtown Nairobi, users can now manage their financial affairs using their mobile phone.

Wizzit is a South African mobile bank offering bank accounts that can be accessed via a mobile phone and a debit card. The company is a division of the South African Bank of Athens, because none of the four major banks showed any interest in the plans of its

founders to offer low-cost financial services to the country's 16 million unbanked through mobile phones.

In fact, the company is specifically targeting low-income groups, including small entrepreneurs in the townships and farm labourers in rural areas. To appeal to them, Wizzit does not require a minimum balance, and does not charge monthly fees. Instead, it uses a pay-as-you-go pricing model, charging between 1 and 5 Rand (0.10–0.50 euros), depending on the type of transaction.

Wizzit's clients can use their mobile to make person-to-person payments, transfer money to and from a savings account, pay utility bills and buy prepaid airtime. The company also issues a debit card that can be used to pay for purchases at any shop with a point-of-sale (PoS) terminal, or to withdraw cash from any automated teller machine (ATM) in South Africa. In the rural areas where there are few ATMs and PoS terminals, Wizzit has made special arrangements with local retailers who can use their mobile phone as a PoS terminal. The shopkeeper simply gives his mobile number to the customer who can transfer payment for any purchase

directly from their Wizzit account into the retailer's account.

Wizzit's ingenious system is based on a technology called unstructured supplementary services data (USSD), which is supported by all GSM phones and is compatible with older model handsets and SIM cards. The advantage of USSD is that it is both faster and cheaper than SMS.

People do not need to go to a bank branch to open a Wizzit account, since Wizzit has no offices. Instead, the company employs so-called 'Wizzkids', formerly unemployed people who are trained to sell the Wizzit service and sign up new customers in the townships and rural areas. New clients don't have to fill in an application form, supply identification or show proof of residence. They simply dial a special number on their mobile phone and type in their national ID number. And, if they have any questions, they can phone a call centre where the staff offer support in any of South Africa's official languages.

Since its launch in December 2004, Wizzit has already acquired more than 70,000 clients.

Wizzit's mobile banking services clearly have mass appeal, not only

because of the low cost, but also the convenience, ease of sign-up and, most important, accessibility.

Mobile wallets

The Consultative Group to Assist the Poor (CGAP) is a consortium of public and private donors who are interested in improving access to financial services. CGAP's technology programme is looking at how ICTs can be used to overcome some of the constraints, and is monitoring the development and the impacts of m-banking systems in several countries, including Globe Telecom's G-Cash in the Philippines and Celpay in the DR Congo.

In the Philippines, Globe Telecom is offering mobile banking services to poor Filipinos in outlying islands. Globe's G-Cash transforms Globe Telecom subscribers' phones into 'electronic wallets' – by sending an SMS, subscribers can buy goods and services, send money person-to-person, and receive domestic fund transfers and international remittances. G-Cash has already signed up 2 million customers, and is now expanding this revolutionary use of SMS to facilitate money transactions. Since December 2006 G-Cash services have been available in Hong Kong, allowing Filipino overseas workers to send remittances quickly and securely to their families back home.

In Zambia and the DR Congo, mobile operator Celpay is offering a SIM-based mobile-payment service – a 'mobile wallet', which allows registered customers to use their phone to pay for goods and monthly bills, and to transfer funds. Celpay customers receive a new secure SIM card, adding a menu to their phone that facilitates payments and provides access to their account. Money can be added to the Celpay account via transfers from a bank account, or by depositing cash or a cheque at a Celpay partner branch. They can then purchase any item by entering the amount to be paid into their phone and sending an SMS. The transaction is authenticated with a PIN and the money is immediately transferred to the designated account.

One of the major obstacles to the wider adoption of m-banking remains the alphanumeric interface on mobile phones. CGAP is therefore investigating a variety of interfaces that would enable illiterate people to input information more easily, including icons and voice-responsive systems.

The end of the bank?

For the most part it is the mobile operators that are doing the innovating in the field of financial services, rather than the banks. But increasingly the banks are coming to understand that mobile operators have the potential to completely take them out of the payment system and replace them. Mobile operators have a direct line into people's pockets. Why have a bank account, if your mobile operator provides the same service?

Mobile operators are already serving the mass markets in these countries, which the banks are not. They understand the needs of the mass market better than the banks do. They are already processing millions of very small transactions each day, so that mobile banking is a natural extension of what they already do.

In the North, banks have been reluctant to move into this area. In most developing countries, where banking systems have traditionally been weak, there is little in the way of vested interests that could block the uptake of mobile payment systems. Thus genuine m-commerce is now taking off in the South.

Mobile banking could well go down in history as an excellent example of a high-tech initiative that was first pioneered in the South and later adopted elsewhere. ∎

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Human ATMs – A bridge to microfinance

Uganda Microfinance Limited has piloted a remote transactions system (RTS) that employs point-of-sale (PoS) terminals, supported by a GSM network for data transfer, operated by human ATMs.

For many financial institutions in developing countries one of the biggest challenges in providing services for their customers is distance. Even microfinance providers that target rural communities find it difficult to reach their clients in remote areas.

One microfinance provider that has risen to the challenge is Uganda Microfinance Limited (UML, formerly the Uganda Microfinance Union). While UML has a network of 23 branches with automated teller machines (ATMs), most of these are located in towns, and are not easily accessible to clients in rural areas. UML has therefore developed and successfully piloted a remote transactions system (RTS) that employs point-of-sale (PoS) terminals, supported by a GSM network for data transfer, and operated by human ATMs.

These 'human ATMs' are in fact shopkeepers or other small-business owners who are employed by UML as agents. Since they are located in the villages where UML's clients live, they are much more convenient than the branches or ATMs in distant towns. Each agent is provided with PoS terminal, an electronic card reader, which allows clients to use a smart card to access UML's microfinance services – to call up the current balance on their account, and to make savings deposits or loan repayments.

How does it work?

Over the last 20 years, many banks and other financial institutions in the North have replaced their human tellers with ATMs in order to cut costs. In Uganda, it would be too expensive to install such machines in rural villages, so the UML solution is turning this process on its head. Rather than ATMs, the system involves a combination of local agents with PoS terminals, and clients with smart cards.

Although the RTS transactions are performed through the PoS terminal, the agent takes cash from the client as 'deposits', or gives money to the client for 'withdrawals'. After inserting the client's smart card into the terminal, the agent captures and stores data on savings deposits and loan repayments electronically. At the end of each day, the agent transmits all the transactions recorded in the PoS device via a GSM connection to a central server linked to UML's management information system, where the 'actual' transactions are made.

Early results and challenges

The remote transactions system offers many benefits. Clients can now simply visit the village shop to make deposit or loan repayments. They no longer have to travel to a branch in town, thus saving them time and money. The agents also benefit from the increased number of visitors to their shops, thus boosting their business, and the commission they earn.

By offering its services in isolated villages, UML has substantially increased its outreach to clients in rural areas. In just one year, the number of transactions has grown by 60%, agent commissions by 75%, and there are now agents in five villages offering RTS services, linked to the UML branch offices in the towns of Kayunga and Mityana in central Uganda. The Kayunga branch office, for example, is now connected to clients in Buwenge, a small town about 200 km away. And this is only the beginning, UML believes. The pilot is now being rolled out to other branches countrywide. The goal is to have 10,000 customers – one-fifth of its clients – using the PoS terminals and smart cards to make transactions remotely in the coming months.

Nonetheless, operating the system is not without its challenges. The printing of smart cards, for example, has been outsourced, and the printers sometimes do not deliver on time. While this remains a problem, it is not insurmountable. More serious is the difficulty in using the GSM network in that voice gets priority over data traffic, which sometimes results in the loss of connectivity. Also, the use of the GSM network is expensive, allowing only restricted use of live connections to the UML management information system. As a result UML cannot yet offer cash withdrawal services through the system.

Wi-fi on its way?

To improve the efficiency of its RTS services, UML is now testing software that will support the use of both wi-fi and GSM networks for quick and inexpensive transfers of data between the agents and the UML central management information system. UML is also in the process of introducing a wide-area network (WAN) to connect its 23 branches to the system.

Once these developments are in place, clients will be able to use their smart cards to pay utility bills and for purchases at the agents' shops. Ultimately, UML hopes to be able to offer its clients the same financial services as those available via normal smart cards at ATMs.

It is still early days yet, but UML is confident that – sooner rather than later – the RTS will be able to deliver the full range of financial services to its clients across Uganda. ∎

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LAIF/HH

Delivering food aid via smart card

Malawi, Concern Worldwide and the Opportunity International Bank Malawi have developed an alternative approach to delivering emergency food aid.

Last year, Malawi as a whole had a bumper maize harvest, although in some areas low rainfall resulted in local crop failures. This drought coincided with a period of very low tobacco prices. Particularly hard hit were many smallholder farmers in Dowa district, north of the capital Lilongwe, who were unable to buy sufficient food for their families.

Concern Worldwide, with support from the UK's Department for International Development (DFID), launched a programme to provide assistance to all directly affected families in the district. Traditionally, such assistance would have involved distributing food packages to the worst hit communities, although experiences elsewhere had shown that such aid deliveries can frequently be delayed, sometimes by several weeks. Moreover, farmers had indicated that they would

prefer to receive cash because this would allow them to decide for themselves how best to manage their own affairs.

Concern therefore decided to provide cash payments to the affected families rather than food packages. The Dowa Emergency Cash Transfer (DECT) programme builds on the experiences of a similar programme carried out during 2005/06 in which both food and cash were distributed. The aim of the programme was to permit households to meet their 'food entitlement' by giving them sufficient cash to buy the maize they needed from local markets, from traders or from other farmers with surplus stocks.

Organizing cash payments

During the 2006/07 'hungry season', Concern made monthly cash payments to about 10,000 households, or about

70% of the population of TA Chakhaza in Dowa district. The amounts paid to the families averaged MK 1660, or €7.80, depending on the size of the household and the price of maize on the local market, in order to ensure that each family's ability to buy food was maintained.

Concern, together with the Opportunity International Bank Malawi (OIBM), developed a novel approach to deliver these small amounts every month. Instead of issuing the traditional paper ration cards, which can easily be misappropriated, to each family they provided a plastic smart card with an embedded memory chip containing biometric (fingerprint) data and account information.

Each month, Concern calculated the amount of cash that each family should receive and directed the bank to load that amount onto the card. Card

holders could then visit OIBM's mobile bank – a 4×4 van that travelled around the district, stopping in different locations every day – to load their cards and to obtain their cash. To withdraw the money, the family representative simply would insert the smart card into a point-of-sale (PoS) terminal and place a finger on a biometric reading device. After proper identification by the 'system', they could withdraw part of or all of the money on the card. Meanwhile, the system would automatically update the account information contained in the memory chip.

The equipment needed to implement this novel approach was commercially available. In addition to 10,000 smart cards, a PoS terminal to read the chip and enter data, and a biometric reading device, they needed a webcam to take passport photographs, a fingerprint scanner to record fingerprint data, and a laptop with specialized software for inputting and backing up the data.

Implementation challenges

In introducing the system, Concern first had to overcome several obstacles. One early challenge involved registering all the families and issuing the smart cards. This took far longer than planned because prints of all ten fingers of each family representative had to be taken. Because of the hard manual work they do, farmers' fingers tend to be worn and scarred, so that multiple scans were often required to get good prints. Concern solved this problem by requiring that only five fingers be scanned rather than ten, thereby allowing the operator to choose the clearest fingerprints. This simple solution considerably speeded up the process of registration and issuing the cards.

A more significant challenge involved data management. For the system to work smoothly, Concern, OIBM and the smart card service provider needed to have the same relevant data for each family representative. Before the launch of the programme, most of the planning had focused on hardware problems, rather than on developing data management protocols or on training staff to gather the required information. In a few cases this resulted in the recording of incorrect or incomplete information so that some families were unable to access their money electronically using their smart cards, requiring bank staff to make cash payments manually. This problem also had the knock-on effect of slowing down the recording of payments and reconciling the bank accounts.

Success

These initial problems have been far outweighed by the success of the programme, however. Providing cash rather than food aid has enabled many of the households affected by the drought to make decisions that have led to positive and significant improvements in their lives. It has given them the flexibility to use the money to buy food, or to invest in their farms or other income-generating activities. Indeed, independent research commissioned by Concern has demonstrated that for each euro provided, an additional €2.10 of commercial activity has been generated.

The mobile bank has been welcomed by the whole community. Initial fears that people would not trust the technology or value the services of the bank have been unfounded. Testimonies from many of the families that received cash assistance clearly show that they appreciate and value the technology.

Private sector businesses and local traders and businessmen also indicate that having access to banking services is seen as a real gain for the community. As well as providing access to loans and enabling them to save, it has also given community members a sense of involvement in local development.

Indeed, the response has been so positive that rather than collecting the smart cards and withdrawing the service at the end of the DECT programme, Concern and OIBM are now exploring ways to maintain at least a minimum level of banking services in the area, which are expected to contribute to local economic development even without the cash transfers. ∎

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Related resources

Foundation for Development Cooperation e-book: 'Electronic Banking with the Poor'
➔ Written by entrepreneurs from around the world who are pursuing ICT innovations for microfinance, this book is aimed not only at those involved in ICT experiments, but also for those in positions to influence the environments in which innovations take place.
www.fdc.org.au/Electronic%20Banking %20with%20the%20Poor/ EBWTP%20Full%20Document.pdf

United Nations Capital Development Fund (UNCDF)
➔ The UNCDF invests in least developed countries (LDCs) in order to help them reduce poverty and achieve the objectives of the Brussels Programme of Action for the LDCs and the Millennium Development Goals (MDGs). Its Microfinance investments provide enhanced access to financial services for households and enterprises, as well as direct support for start-up and emerging microfinance institutions.
www.uncdf.org

College of Agricultural Finance
➔ This is an Indian post-secondary institute servicing development agricultural finance. In 2007, it organized a National Workshop on ICTs for Rural Financial Services.
www.rbi.org.in/cab/index.html

Paper: 'E-Finance in Emerging Markets: Is Leapfrogging Possible?'
➔ By Stijn Claessens, et al. World Bank. This study examines the uses of ICTs in the delivery of financial services. It also reviews e-finance in emerging and other markets and projections of its future growth.
www.mecon.gov.ar/sssf/f_eapfrogging.pdf

Loan officer with a PDA dealing with a client.

Computerized credit unions in Mali

A model for West Africa and beyond

Financial cooperatives across Mali are now using hand-held personal digital assistants loaded with special teller software, inspiring financial institutions well beyond West Africa to do the same.

Picture the scene. One morning, Seydou Koné goes to Djicoroni Para, a credit union that is a member of the Malian Nyèsigiso Network. Seydou has been a member of the credit union for some time, but today he notices something different. When he arrives at the counter to make a deposit, he sees the bank clerk consult a small electronic device to update his transactions ledger. In the past, the clerk would have turned to his hard-copy files. The clerk explains, 'This is a personal digital assistant, or PDA. Look. You can see all the changes to your account. I can key in your deposit in complete security!'

Computerization

The Nyèsigiso Network is a group of financial cooperatives made up of a central credit union and 11 'mother coops', with 25 associated small outlets in the rural areas. Djicoroni Para was the first pilot site within the project 'Low-cost technologies to promote economic development of the poorest',

which has been launched across West Africa. Supported by Développement International Desjardins (DID), a Canadian NGO, the project is promoting the creation and development of sustainable financial institutions rooted in local communities in developing countries. DID, together with its local partner, the Nyèsigiso Network, developed the teller software – a mobile application for information on operations (AMIO) – for use on PDAs.

The Nyèsigiso Network introduced this technology as part of a scheme to modernize and consolidate the operations of its members that was launched in 2002. By December 2006, a total of 12 credit unions operating in both urban and rural areas had been computerized.

The members' outlets in rural areas generally have limited funds, making it difficult – or even unaffordable – for them to computerize their systems. However, by using PDAs loaded with the AMIO software, they have been able to do so at a fraction of the normal cost.

The software comes in two versions. The 'teller' version is designed for transactions on members' deposit accounts, while the 'credit' version provides data on the loans in a loan officer's portfolio and is used along with a banking software package (SAF 2000) at outlets that have converted their operations into processing centres.

The credit unions send tellers and loan officers out to the villages with their PDAs and a cash drawer once or twice a week, usually on market days. These 'mobile' loan officers now have the credit history of each of their borrowers at hand when they visit them in the field.

For the credit unions, in many places there is no longer any need for physical branches, or for permanent staff, thus reducing their costs. For their members, the services are also far more

convenient – they no longer have to visit the credit union office in person, since the credit union now comes to them.

Thanks to this technology, the risk of fraud and loss has been significantly reduced. For the credit union employees, the technology saves them a lot of time, as they no longer need to spend an hour or two at the end of each working day manually making a tally of the transactions that have been made. They have only to withdraw the PDA's memory card and hand it to a clerk, who takes it to the processing centre where the transaction data are entered on conventional desktop computers.

Rugged enough for local conditions

There are two major types of PDA: Palm Pilots, which run the Palm operating system, and pocket PCs, which run on Windows. In choosing which type to adopt, the project had to take several factors into account. The PDAs had to be functional under harsh local conditions, and rugged enough to withstand heat, dust and shock. They also had to have rechargeable batteries because they would be used in remote areas where power supplies are not always available. The project chose to use Hewlett Packard iPAQ pocket PCs, as they were available from local suppliers, do not require air conditioning or constant power supplies, and need very little maintenance.

Following the success of the technology in Mali, other microfinance networks have shown increasing interest in adopting it. In recent months, DID has made a number of presentations and demonstrations to microfinance partners elsewhere in West Africa. Financial institutions in Mauritania and Mexico have now also adopted the approach, and have introduced pocket PCs and the AMIO teller software into their networks, also with support from DID. In Mexico, member institutions have even integrated a portable printer into the system so that loan officers can now issue receipts to clients in the field.

Keeping up with advances in portable technologies is a constant but welcome challenge for financial institutions in Mali. The project is now benefiting many poor communities in isolated areas, who are now much more firmly integrated into the local and broader economy. ■

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FAO/GTZ MicroBanking System for Windows (MBWin)

The MicroBanking System for Windows (MBWin) is a suite of banking software designed for a wide range of small-scale microfinance institutions (MFIs) such as cooperatives, credit unions, solidarity groups and village banks that wish to computerize their operations. Developed by FAO and the German Agency for Technical Cooperation (GTZ), the software is highly scalable, can cater to a wide range of users, and can be adapted to a variety of hardware configurations.

With this software, an organization can manage its clients' transactions, maintain a general ledger and monitor all financial operations. The integrated system generates preformatted reports that meet the basic internal and external reporting requirements of most microfinance institutions. The most recent edition, MBWin version 4.5.6, was released in March 2007.

MBWin offers full front- and back-office functionalities for
- accounting,
- loan portfolio management,
- deposits/savings management,
- client information/relationship management (CRM), and
- share management.

It is designed to handle a variety of financial products and services, with modules for current and savings accounts, time deposits, share accounts and loans, all of which interface with a general ledger module and a contact information module. It also supports online retrieval of photographs and signatures.

The software has a user-friendly menu and a set of shortcuts for quick access to its most commonly used functions. A 'balance enquiry by mobile' add-on, developed by the MBWin Competence Centre in Nepal, is also available, allowing customers to receive account balance information by SMS (for more information, visit www. mbnepal.com and click on 'Mobile banking' in the top right-hand corner).

MBWin is available in English, French Spanish, Russian and Arabic. It also has concurrent multi-language support (CMLS), which means that it can use up to three languages simultaneously. This allows clients and institution staff to choose their preferred language.

In a review of the software by the Consultative Group to Assist the Poor (CGAP) technology programme, MBWin is congratulated for having 'one of the richest user interfaces specifically designed for microfinance'. The review goes on to say that 'Once installed and configured, MBWin is quite easy to use ... the interface is user-friendly, and quickly performs transactions.'

On the negative side, the CGAP review notes that online help, warning messages and the user manual are not always current and need to be updated and improved. The review also highlights that there is no real multi-currency management, with only one currency allowed per database, and no support for personal digital assistants.

The developers believe that just because a financial institution is small, it doesn't mean that there shouldn't be high-quality financial software available to it. Along these lines, MBWin has recently begun to offer functionalities for MFIs that employ the approaches made popular by the Grameen Bank in Bangladesh.

The descendent of the DOS-based MicroBanking System first developed by the FAO in 1987, the first MBWin system was piloted in 2000 by the Energetic Women Cooperative (EWC) in Nepal. It is now used by a wide range of MFIs, particularly in Asia, but also in Latin America and in many ACP countries.

The full version of MBWin costs US$1500 per single user and US$2000 for the first ten concurrent users.

MBWin Light (preconfigured for a single user) is also available for US$500. ∎

A fully functional demo system can be downloaded free from **www.mbwin.net.**

Related resources

Paper: 'Electronic banking prepares the way for e-commerce in Zambia'
➜ By Michael Malakata. This paper explains how Zambia's banks are now offering electronic services to their customers, thus laying the infrastructure for e-commerce in the country. **www.ftpiicd.org/iconnect/ICT4D_ Livelihoods/ZM_Livelihoods_EN.pdf**

Brazilian Correspondent Banking Network
➜ By Terence Gallagher. This Powerpoint presentation describes an innovative powerful new delivery channel developed by Brazilian banks, known as 'banking correspondents'. Using technology and partnerships with retail, lottery and postal outlets, they have opened millions of new accounts in a few years in urban slums, periurban areas, and rural and remote locations. **www.infodev.org/en/ Document.74.aspx**

Prodem FFP – Smart ATMs for microfinance in rural Bolivia
➜ Prodem FFP has introduced 'Smart ATM' technology designed by Bolivian nationals. Smart cards store all the data of each account holder within a chip. Clients can access their account via a biometric fingerprint reader, and a voice-responsive interface that recognizes indigenous languages Quechua and Aymara. **www.prodemffp.com/ingles**

Internet Bidding for Microcredit
➜ Report by Diego Rumiany on internet peer-to-peer loan bidding services Zopa and Prosper and 'social lending' in the internet era. Internet-based peer-to-peer (P2P) microcredit is convenient for both borrowers and lenders, and it may also be good business. Prospects for the developing world are more difficult to foresee. **www.developmentgateway.org/rc/ filedownload.do?itemId=1094104**

Q&A

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Realizing the potential of ICTs in rural finance

Why is it often so difficult to extend financial services to rural communities?
➜ Microfinance institutions in developing countries face two key challenges in reaching rural communities – high transaction costs and high risk. The high transaction costs are due to the small volume of transactions, poor infrastructure and the lack of human resources in rural areas, while the risk arises from the fact that rural people are dependent on agriculture for their livelihoods – the risk is systemic. Natural disasters such as droughts or floods can affect entire communities. Also, the prices of commodities in local, regional and global markets fluctuate, making market price another systemic risk. ICTs can help to reduce the high transaction costs, but can do little to eliminate the systemic risks.

How can ICTs reduce transaction costs?
➜ From the perspective of financial institutions, the increasing use of debit and (to a lesser extent) credit cards with automated teller machines (ATMs) and point-of-sale (PoS) terminals is helping to provide access to banking services. Although these technologies mean that banks no longer need to set up actual branches (with the associated costs), our research has found that while ATMs may be available, they are often located in hard to reach areas (i.e. urban centres in rural areas), they do not always offer a full range of services, or they are not fully utilized. For example, in some places, clients cannot use ATMs to deposit cash, but only to withdraw from their account.

In making deposits, the local currency can be a problem. Most ATMs are manufactured in developed countries, and are configured to accept only the major currencies (dollars, yens or euros). When installed in developing countries, they then need to be reconfigured to accept deposits in the local currency. Also, local currency denominations can be an issue. Some bank staff interviewed during the research indicated that some ATM machines only accept banknotes in certain denominations (e.g. bills of 10, 20 or 100) in the local currency.

Prodem, a non-profit financial institution in Bolivia, has succeeded in developing an ATM that not only accepts the local currency, but also meets the specific needs of its rural clients. Launched in 2000, the 'Smart ATM' is quite impressive. It features a voice-activated interface that recognizes Spanish and the two main indigenous languages, Aymara and Quechua, and a secure fingerprint recognition system. Using a smart card, clients can now access their account simply by placing a finger on the biometric pad, rather than entering a personal identification number (PIN), so it can be used by illiterate clients. The Smart ATMs are now being manufactured locally, at about half the cost of conventional ATMs, and so could be widely introduced to rural areas.

Which ICTs have been tested but do not work in this context?
➜ The personal digital assistant (PDA) once held great promise for managing financial information. Loan officers can gather data in the field and process loan applications directly on the PDA, which minimizes the possibility of data errors. In addition, once the data are stored in the PDA they can be transferred directly to a central database, thereby reducing transaction costs. Indeed, there have been lots of experiments with PDAs in India and elsewhere, but they have not always lived up to expectations. Some of those that did get to the pilot stage have been discontinued, since the high costs of introducing PDAs have tended to outweigh the benefits.

What factors affect the uptake of ICTs for rural finance?
➜ One important factor is scale. If the population density is low, then the costs of ICTs tend to outweigh the benefits. The uptake of ICTs has been much greater in countries such as the Philippines, India and Bangladesh, where population densities are high, so that economies of scale are possible and can justify the high fixed start-up costs of the technology. Also, in some countries the telecommunications infrastructure may be inadequate, or it may not be appropriate. For example, e-banking has great potential, but in order to realize this, it is essential to have the right infrastructure – access to the internet – especially in rural areas. Mobile phones require a different, lighter infrastructure. In countries with high mobile penetration, it is possible to extend financial services to rural areas. There, mobile banking services have a much greater growth potential than does e-banking.

The regulatory environment is another crucial factor. Some countries, for example, do not allow financial transactions to be made over the internet, or by phone, so that financial institutions can not use these technologies, or mobile service providers must partner with financial institutions in order to offer their services. If they are subject to regulation by the central bank, they must comply with the country's banking regulations, as well as those of the telecommunications sector.

A final but equally important factor is education and awareness raising about ICTs among potential clients, but this step is often ignored. Even when the right infrastructure and regulations are in place, if clients are still not comfortable about using technology, then it's not going to go anywhere. Many people in rural areas remain very skeptical about using technology in relation to their money. In their financial affairs many people still prefer the personal touch and seeing actual cash transactions being made. The important issue here is to invest upfront in public education about the use of technology for financial transactions, in order to build trust. The next question, however, is who will pay for this education. ∎

ROEL BURGLER/HH