



Revolutionizing agricultural value chain finance: a digital perspective

→ For many developing countries, agriculture plays a major role in the economy with numerous cash transactions taking place throughout the farm-to-fork agriculture value chain. This paper proposes a three-step approach for replacing the cash payments made by large buyers (e.g. lead firms, cooperatives) to smallholder farmers with digital payments. By helping to transition these aggregated cash payments to digital payments, agriculture developers are well positioned to leverage digital finance on behalf of the agricultural base of the pyramid.

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A major issue for agricultural finance is how to cost effectively and securely provide financing to rural smallholder farmers in such manner that fraud is minimized and accountability and transparency is promoted. Digital finance is an efficient electronic payment mechanism that can work across a value chain. It is simple, convenient, affordable - and disruptively innovative¹. According to the GSMA there are 219+ mobile money platforms² With only a few exceptions these are primarily in developing countries and have been largely confined to the urban city centers. The ecosystem of private sector

players in this space (e.g. mobile network operators, third party providers, financial institutions) is now looking to expand into rural areas in pursuit of nationwide penetration and new market segments that will actively transact³ over the mobile channel.

Given the prominence of the agriculture sector in developing countries, the great need for financial inclusion and significant foreign direct investment in pursuit of return on investment (ROI), there is potential for digital finance to do for the economic base of the pyramid what the commercial banking sector did for the industrial revolution. >>

¹ Lee Babcock. The Next Great Innovation in Finance. ACIDI/VOCA. October 2013. <http://www.nextbillion.net/blogpost.aspx?blogid=3522>

² GSMA (2013) State of the Industry <http://www.gsma.com/mobilefordevelopment/programmes/mobile-money-for-the-unbanked/insights/industry-reports>

³ A current challenge for the industry is little or no transactional activity by new subscribers.



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INTRODUCTION

Originally referred to as mobile money this extremely young and fast moving industry is most recently being referred to as digital finance. Digital finance started as person-to-person (P2P) payments through cell phones, and rapidly expanded to serve the payment needs of large entities including businesses (B2P) and governments (G2P), respectively. As more and more money started circulating outside the banking system, banks began to see a competitive threat and no longer cared to sit on the sideline. Mobile banking (bank products on the phone) and branchless banking (non-traditional banking agents) have rapidly emerged by way of joint ventures between MNOs and banks. These changes have not been lost on Central Bank regulators worldwide who have, for the most part, embraced the potential for financial inclusion and are beginning to promulgate regulatory lessons learned and best practices. Meanwhile, mobile finance – of whatever variation – can be easily integrated with digital technologies such as smart cards, scratch cards, point of sale devices, bio-metric identity capture, ATMs and others. Hence the latest incarnation of the term ‘digital finance’, for an industry that began as recently as 2007. This paper considers the insertion points for digital finance into large agricultural buyer-to-farmer payment streams that can then be leveraged into savings, credit and micro-insurance products. Throughout this paper the terms digital finance and mobile finance will be used interchangeably.

For the mobile finance ecosystem, which includes MNOs and financial institutions, there are at least three barriers to rolling out agriculture digital finance platforms in rural areas that the agriculture development sector has successfully dealt with for decades. These barriers are: illiteracy, financial illiteracy and lack of trust. The agriculture development sector has many decades of experience successfully dealing with these same barriers. From the mobile finance ecosystem perspective, though, these barriers limit, or eliminate, the impact of conventional marketing and advertising through print and other media campaigns to promote mobile finance adoption. Securing trust is vital for the uptake of mobile finance in rural areas.

This is because smallholders have long been disenfranchised from the formal economy, they also tend to be illiterate and distrustful of banks and other large entities; some of them have never made a voice call. Building trust will involve promoting financial and mobile literacy and building a greater understanding among farmers about the features and benefits of mobile finance.

In order to transfer knowledge about good agricultural and agricultural finance practices, agriculture developers have developed skills and toolkits for navigating around illiteracy and financial illiteracy. After many decades of experience with adult participatory learning, use of radio, video and other information and communication technologies, designing non-narrative, visual curricula and more, these skills can be attractive to mobile money stakeholders. Of perhaps greater import, though, is the status of agriculture developers as trusted intermediaries in these value chain communities. This status stems from the work that is done, oftentimes, over a three to five year time period or beyond.

Agriculture developers that are already working with these populations can serve as key partners to bridge the gap between farmers and other value chain stakeholders and the ecosystem of mobile finance stakeholders. Against this backdrop, what follows is a three-step approach for expanding uptake and usage of mobile financial services in agriculture.

STEP ONE

Market research into the cash usage behavior patterns of farmers

To inform the design of the requisite ecosystem of CICO agents and merchants that are tightly aligned along the targeted value chain, research is needed into the cash usage behavior patterns of farmers. At the same time, this research can also assess the financial literacy of farmers by identifying their existing savings, spending and borrowing behaviors and basic numeracy skills. Further, research can identify latent demand for financial products such as credit, savings, and payments as well as mobile money functions

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(e.g. free account balance inquiry, pictogram based menu, etc.). Programmed agriculture development interventions are often informed by comprehensive pre-project analysis work to identify efficiency gaps and inform the design of subsequent interventions to close those gaps. With some creative additional effort such pre-project analysis can also capture this kind of market research and financial literacy data. This approach was recently applied to the cocoa sector in Indonesia⁴.

Interestingly there has been little effort to date by MNOs to do market research to inform how to roll out mobile financial services into rural areas. Lacking such research, they have deployed the same marketing strategy, perhaps with some minor variations, that they used in the large urban

city centers. An example of this was Vodacom's initial rollout of M-PESA in Tanzania where their "initial campaign was completely unsuccessful since it did not capture the target market" (IFC, p. 3)⁵. This unscientific approach by the industry has been less than successful and it seems they are now realizing they need innovative partnerships to better understand the needs and constraints of a somewhat unfamiliar market segment. As either a standalone exercise or integrated into a pre-project analysis effort, this market research will provide visibility into the frequency of cash transactions, the average amounts, who makes the cash payments, and the precise locations where these transactions take place. The research done with cocoa farmers on the island of Sulawesi in Indonesia (see text box⁶) is a worthy example of this type of research. >>

⁴ USAID. Market insights into the financial behaviors and design of mobile financial services products for cocoa farmers in Indonesia. MicroSave and e-MITRA. 2013.

http://solutionscenter.nethope.org/assets/collaterals/Cocoa_Farmer_Market_Insights_Research_-_Final_Report.pdf

⁵ IFC. 2010. <http://www.ifc.org/wps/wcm/connect/3aa8588049586050a27ab719583b6d16/Tool+6.8.+Case+Study+-+M-PESA,+Tanzania.pdf?MOD=AJPERES>

⁶ The Next Great Innovation in Finance. ACDI/VOCA. October 2013 <http://www.nextbillion.net/blogpost.aspx?blogid=3558>

Agricultural mobile finance: understanding patterns of daily life at the BoP to leverage market solutions

For the USAID-funded cocoa development project on the Indonesian island of Sulawesi, mobile phones were selected as a cost-effective and convenient way to distribute and repay loans. This input supply financing scheme had a partner bank to disburse the loan, on behalf of the farmer, directly to the input supplier's mobile bank account. The farmer could then pick up the seeds and fertilizers from the input supplier for the next season. Upon harvest the farmer sells the cocoa to the other project partner, a large international buyer of soft commodities. Accounts are settled electronically, the farmer receives the profit via mobile phone, and the bank loan is paid off. Agricultural finance schemes like these are not novel, but using mobiles as the channel for disbursements and repayments is. Market research with 549 farmers looked at smallholders' use of cash and their levels of savings, spending, borrowing and financial literacy. It revealed that 34% of the survey participants receive between 1 to 12 cash transactions per year for their cocoa beans and 62% of the participants receive between 13 to 24 cash transactions per year. This indicated that the 600,000 cocoa farmers on the island of Sulawesi received 7.8 to 14.4 million cash transactions for their cocoa that was estimated to be worth \$450 million. This was a hugely important quantification of the cocoa digital finance market opportunity for the mobile finance provider. It was also learned that 67% of the farmers were interested in mobile money and that 46% and 36% already save and borrow, respectively. Finally, the insight gained about precisely where and how they spend their money helped to identify, develop and train the network of agents and merchants who are tightly aligned along the cocoa value chain—that essential space where the farmers live and work. This market research has emerged as a best practice for any agriculture mobile finance initiative.

STEP TWO

Strategic alliance formation

According to the GSMA (2013) future “investment will have to be made to reach out to more rural agents” and that “carefully identifying the right areas to put mobile money agents is critical” (p. 24). This portrays the industry’s interest in expanding beyond urban centers and according to Rob Munro is matched with “an arms race among rural commodity buyers to have the fastest speed of payment⁷.” The need for such non-traditional alliances is consistent with the literature as described by Accenture (2013) “challenges presented by the convergence between business objectives and developmental impact are increasingly seeing the formation of complex, multi-stakeholder” alliances in order to “leverage the skills, capabilities and financial resources of both development actors and business players” (p. 12)⁸.

A strategic alliance, for example, between a large commodity buyer and a mobile finance provider might seem challenging, but there are a number of dynamics that strategically align these future partners. The commodity buyer wants an efficient, low cost payment mechanism and the mobile finance provider wants a regular payment stream flowing into numerous mobile wallets combined with a program that reduces churn of its core voice customers. Meanwhile, farmers benefit from convenient and safe receipt and storage of payments upon sale of their product. The greater the number of routine transactions, the greater the potential to reach high transaction volumes. This presents an opportunity for mobile financial services providers to charge a small fee on each transaction.

Therefore, what has emerged as a ‘sweet spot’ for the insertion of mobile money into a value chain is to leverage the purchasing policies of large buyers of commodities that source from farmers. For example, Agribusiness Systems

International (ASI) facilitated the RiMFin alliance between TigoCash, one of Ghana’s leading mobile network operators; GADCO, a major rice producer and miller; and smallholder rice farmers to roll out and promote a new mobile money service. Through this program, GADCO sources product from up to 1,000 smallholder farmers, scaling up to 10,000 farmers after the project ends. Their cash payments to farmers were costly, difficult to account for, susceptible to fraud and onerous to pay out in a timely and safe manner. This strategic alliance story has been repeated with agri-digital finance initiatives in Tanzania, Uganda and Zambia all of which will be profiled in an upcoming landmark report by CTA to be published in July 2014.

STEP THREE

Mobile finance ecosystem creation via integration with agri value chain interventions

A healthy ecosystem of CICOs providing the supply of mobile finance (e.g. number and locations of carefully selected and trained CICOs) must be carefully balanced with the number and locations of farmers and merchants demanding the service. If there are too many CICOs their low earnings do not incentivize them to manage their CICO business and if there are not enough CICOs, farmers will lose interest. The insertion of mobile finance supply and demand into rural areas can be done in partnership with the agricultural sector actors. This is because the way agriculture developers transfer knowledge about good agricultural and agricultural finance practices provides an infrastructure that can be of interest to MNOs, financial institutions and third party providers.

Agriculture developers convene farmers and other stakeholders on demonstration farms and for workshops, trainings, and tradeshow, to promote better quality and quantity of production and/or post harvest handling as well as

⁷ Interview May 12, 2014 with Rob Munro, Senior Technical Advisor, Musika a Zambian non-profit that stimulates and supports private sector investment in the smallholder market.

⁸ Accenture Development Partnerships Impact Report. Driving Innovation & Impact in the International Development Sector. January 2013 https://archive.org/stream/566498-january-impact-report/566498-january-impact-report_djvu.txt

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formation of cooperatives and farmer groups. This convening of farmers and other stakeholders provides multiple and on-going touch points with farmers and other stakeholders that can be leveraged for the creation of a mobile finance supply and demand ecosystem that is tightly aligned along targeted value chains where farmers live and work.

Supply of mobile money agents and merchants

As previously mentioned the mobile finance industry is challenged by the need to train, and maintain on-going relations with geographically disbursed agents in rural areas. According to the GSMA mobile financial service providers currently host periodic ‘agent conventions’ in the field.⁹ These events cover basic customer service, liquidity management, fraud awareness and prevention, product awareness and more.

In collaboration and coordination with the alliance partner(s) the agriculture developer can work to identify, develop, train and even finance¹⁰ the network of independent CICOs that are tightly aligned along the targeted value chain(s) where the farmers live and work. These agents can be input suppliers, cooperatives, equipment vendors, traders, processors, warehouse operators or any other value chain stakeholders that might be ideally located and compliant with the partner’s selection criteria. As already mentioned under Step Two, most programmed agri-value chain interventions periodically convene stakeholders. These convening can be aligned with the industry’s current practice of ‘agent conventions’ by having as a sub-component ‘agricultural mobile money agent conventions’ with those value chain stakeholders that also serve as MNO CICOs.

Meanwhile, the same market research and process for identifying agents can also identify the larger network of mobile payments-acceptance merchants. These can be the same types of value chain stakeholders (in fact, an agent can also be a merchant) but can be a wider net that includes kiosks, schools, utilities, pharmacies, retailers and other actors in the village-based economy.

Demand by farmers for mobile money products and services

Meanwhile, the mobile finance industry is acutely aware of the lack of awareness of, and knowledge about, mobile finance, which significantly constrains the uptake by farmers in rural areas. As with CICOs, the same fora for the transfer of knowledge about agricultural and agricultural finance best practices can be used to promote awareness of, and education about, the features and benefits of mobile finance among the farmers. Practitioners of finance for agri value chains currently engage in the creation and delivery of financial literacy curricula that can now include treatment of mobile finance. Once the farmers have been made aware of, and have been educated about, mobile finance these same fora can be used to register new mobile finance subscribers. Further, according to the GSMA (2013)¹¹ at the point of registration if a new mobile money subscriber does a practice transaction, they are 26% more likely to be an active¹² account. The high context and trusted nature of agriculture knowledge transfer presents great potential for guiding new subscribers to make practice transactions upon registration which further supports the value proposition for creating agriculture mobile finance strategic alliances.

RECOMMENDATIONS

To best leverage the potential of digital finance on behalf of agriculture development throughout Africa, Caribbean and the Pacific, there must be an expansion of the traditional definition of agriculture value chain finance. The current definition embraces credit, savings and micro insurance with little regard for payment streams. Digital finance technologies and the new business model innovations enable reduce costs for stakeholders throughout the value chain. By leveraging the current “arms race among rural commodity buyers to have the fastest speed of payment¹³” to jumpstart the village based digital finance ecosystem in rural >>

⁹ GSMA (2013) State of the Industry

¹⁰ Each CICO is an entrepreneur and will need to already have, or will need to seek financing for, the requisite initial liquidity.

¹¹ GSMA (2013) State of the Industry http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/02/SOTIR_2013.pdf (p.20)

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communities, there will be subsequent value add opportunities to provide credit, savings and micro insurance.

A hoped for outcome of this and subsequent CTA reports, is the expansion of the traditional definition of agriculture value chain finance to explicitly include digital finance. By doing so, the value chain finance discipline and its practitioners will systematically explore lessons learned and best practices for the insertion of digital finance into agriculture. For example, it is commonly said there are more reasons why a strategic alliance will not work than reasons why it will work. Nevertheless, as previously stated there is need for “complex, multi-stakeholder alliances....between development actors and business players” (p. 12)¹⁴. The role of the agriculture developer in the strategic alliance – from market research, leading the alliance, promoting uptake by farmers and helping to identify, develop and train CICOs - must be closely studied and guidelines created. There must be further development of market research protocols and best practices for creation and delivery of financial and mobile finance literacy curricula. These and many other considerations must be systematically explored and a body of knowledge created.

CTA is helping to lead the charge by promulgating widely this emerging framework. In addition to this, and subsequent, reports CTA will convene interested practitioners at the upcoming Fin4AG Nairobi conference in July. Consistent with the African proverb “if you want to go far, go with others” the creation of a community of practice will invite others to contribute their inputs and feedback in order to continue this discussion and explore next steps. The community of agriculture value chain finance practitioners is well positioned to make a reality the vision that digital finance will do for the base of the pyramid what commercial banking did for the industrial revolution.

CONCLUSION

The Brussels Briefing presentation considered a three-step approach to agriculture digital finance; market research, strategic alliance formation, and integration into the menu of value chain interventions. Market research into the cash usage behavior patterns and financial literacy of the farmers are the key starting points which help to articulate the value proposition for bringing mobile finance partners to the strategic alliance table. The unique role of the agriculture developer in the alliance is to leverage its status as a trusted intermediary to promote demand for mobile finance as well as facilitate the creation, or supply, of agents and merchants that are tightly aligned along the targeted value chain(s). Agriculture buyers and mobile finance providers need each other and should work together to better serve the farmer while at the same time increasing profits.

CTA's upcoming landmark study to be released in July will profile three initiatives that leverage the procurement policies of large agri buyers by way of market research, strategic alliance formation and integration into value chain development. These initiatives are SmartMoney in Tanzania/Uganda, RiMFin in Ghana, and NWK in Zambia. The purpose of the landmark study will be to profile each business model by examining the challenges, benefits gained, lessons learned and best practices that have emerged for each partner in the initiative. Other examples of non-procurement based, but equally worthy, initiatives in agriculture digital finance include those for distribution of input subsidies, as a channel for distribution of food aid or other such creative applications of digital finance that solve important development and humanitarian issues.

For the large buyers in all three initiatives, by transitioning their cash payments to hundreds or thousands of farmers to digital payments cash handling costs and incidences of fraud and theft are reduced. SmartMoney¹⁵ is a third party plat-

¹² A common industry challenge is subscriptions that are ‘inactive’ – with little or no transactional activity – that generates little or no average revenue per user (ARPU).

¹³ Interview May 12, 2014 with Rob Munro, Senior Technical Advisor, Musika a Zambian non-profit that stimulates and supports private sector investment in the smallholder market.

¹⁴ Accenture Development Partnerships Impact Report. Driving Innovation & Impact in the International Development Sector. January 2013

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form that works with large agricultural cooperatives and private sector entities that buy crop. SmartMoney currently engages in cotton, coffee, rice and maize in Tanzania and Uganda. Started in 2010, this initiative quickly demonstrated that it wasn't enough to just work on transitioning the cash payments to farmers to be mobile payments. Instead, to promote payments uptake, it was necessary for SmartMoney to rethink its business model and become the digital currency for the entire village economy thereby laying the foundation for what is becoming an exciting new culture of rural savings¹⁶.

The VISA-funded RiMFin¹⁷ initiative in Ghana with TigoCash and GADCO, Ghana's largest rice plantation, and implemented by ASI and OpenRevolution has trained 722 farmers through April 2014. Transaction and other data are currently being collected and lessons learned and best practices being extracted.

The largest cotton buyer in Zambia, NWK Agri-Services, has for eight years persistently pursued

an electronic payments solution. Their story began with mobile payments, then with e-vouchers and most recently with bankcards. NWK has 130,000+ smallholder farmers and cash payments throughout the regions that have exceeded \$44M USD. In addition to the costs of disbursing cash, they also recently had an employee killed during an attempted robbery.

The landmark study will consider each of these initiatives within the framework of the three-step approach to agriculture digital finance; market research, strategic alliance formation and integration into value chain knowledge transfer. In addition, the study will analyze the performances of each of the alliance partners in terms of farmer impacts, transaction volume, average transaction size, cost savings, and increased customer loyalty and alliance issues. Such type of operational and financial due diligence will highlight the critical value proposition dynamics for the benefit of both agriculture developers, MNOs, third parties and other potential alliance partners.

¹⁵ USAID. Chris Statham, Kirsten Pfeiffer, and Lee H. Babcock. ACIDI/VOCA . 2013 <https://communities.usaidallnet.gov/ictforag/node/361>

¹⁶ Fulgence Kalisa, Deus Manyenye, Beyond cash, ICT Update. 2014 <http://ictupdate.cta.int/Feature-Articles/Beyond-cash/176/1392206125>

¹⁷ This author conceptualized and designed this project submission to VISA's Innovation Fund and coined the term RiMFin (Rice Mobile Finance).

ACRONYMS/GLOSSARY

Agriculture Developer – In the context of this paper this is the entity taking the lead role in closing the efficiency gaps in the value chain. This can be a private sector agricultural lead firm, a donor or government-funded agriculture development implementer or some other entity.

ARPU – Annual Revenue Per User (ARPU) is a key metric for mobile network operators (MNOs).

B2B – Business to Business payment streams

CICO (Cash-in/Cash-out Agent) – An independent, retail entrepreneur who typically has an on-going business kiosk (e.g. selling fast moving consumer goods) or other comparable entity that serves as touch point for the community. By becoming a MNO agent they can potentially experience increased foot traffic into their store and earn commissions but must provide customer service and successfully manage the cash and electronic liquidity requirements. In the context of this paper, agents can be

value chain stakeholders such as: input supply stores, cooperatives, warehouse operators, etc.

Churn – The term used to describe SIM-card switching by voice customers indicating their lack of loyalty to any one MNO. MNOs are providing value added services like mobile money to promote loyalty among customers and thereby eliminate churn.

Financial Institution – In the context of this paper a financial institution is a bank or non-bank entity that either uses an MNO or third party provider mobile wallet for simple distribution and/or repayment of a loan or has joint ventured, with either, to provide a financial product on the platform.

G2P – Government to Person payment streams

GSMA – GSM Association – GSM is a voice protocol standard and the GSMA is the apex organization for 850 mobile network operators worldwide.

M&E – Monitoring and Evaluation (M&E) is a process for tracking program progress and evaluating program impact to inform policy makers and project management.

MNO – Mobile Network Operator (MNO), commonly referred to as a 'telecommunications' company that provides voice connectivity. In Africa prominent MNOs are Tigo, MTN, Airtel, and many others.

Mobile Financial Services (MFS) Provider – This can be either an MNO, financial institution or third party that leverages the GSM (or the equivalent CDMA) voice technology platform to accommodate transfer of electronic value.

P2P – Person to Person payment streams.

Third party providers – Like an MNO, these providers also provide a mobile wallet and payment functionality by riding "on top of" the MNO infrastructure.



About CTA

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities.

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For more information on CTA, visit www.cta.int

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