

Mobile Money: A Foundation for Food Security

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO, 1996)

Let me begin by explaining that I am not a food security expert but a mobile financial services professional. In 2010, I was asked by the World Economic Forum to join their forum as an expert in mobile financial services. The specific focus of this forum was agriculture. To prepare for the forum, I researched the money-related issues around agriculture and the ways mobile money could be used to resolve these issues. When I returned, the U.S. state department asked me to present my views on how mobile money can address areas of food security. The genesis of this report derives from work done for the World Economic Forum and the state department.

THE PROBLEM

The world's population is estimated to rise to nine billion by 2050. With two billion more mouths to feed by 2050, it will be necessary to produce 70 percent more food than today.¹ Meanwhile, climate change continues to devastate current and future crops with droughts, floods, and fires. With population pressure increasing demand and natural disasters decreasing supply, world food security will continue to be one of the top humanitarian and economic concerns worldwide.

If we look at the dimensions of food security, financial resources and access to data/information are critical in six areas:

1. *Money*: Adequate income to sustain a family's food needs
2. *Prices/Markets*: Transparent prices and liquid markets that impact the

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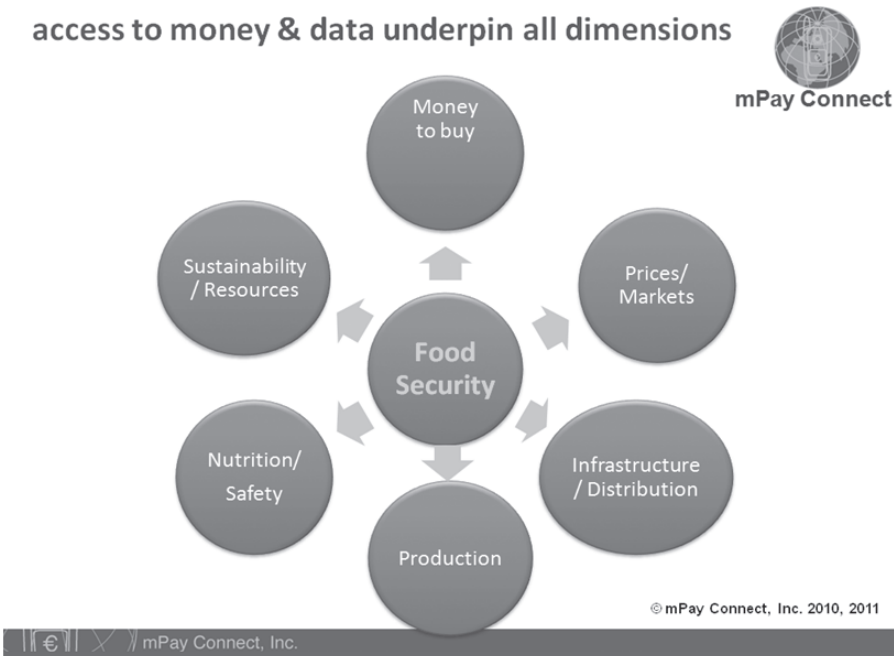


Figure 1. Access to money and data underpin all dimensions

affordability of the food to consumers

3. *Infrastructure/Distribution*: Adequate infrastructure and distribution networks to ensure that food is successfully warehoused and distributed without waste to those consuming it

4. *Nutrition/Safety*: Quality of the nutrition and safety of the food to be eaten

5. *Sustainability/Resources*: Degree of resource availability and sustainability of supplies for food creation in the value chain

6. *Production*: Quality of crop yields due to investments in areas such as farming equipment and fertilizers

For example, if we consider the areas of production and income to pay for food, we find a precarious cycle that is exacerbated by lack of financial access. In his “New Variant Famine” hypothesis, Alex De Waal, a British writer and researcher on African issues and director of World Peace Foundation, linked the issue of health with farming. He argued that when crop yields are low, smallholder farmers—the vast majority of the population at the base of the global economic pyramid—do not earn enough to feed their families. This can lead to malnutrition, which would impact the health of the young and the elderly—those most susceptible to health problems. The women of the family, who are the caretakers, would be burdened with tending to ill family members. These are the same women who typically harvest the crops as well, since nearly two-thirds of all farmers are women. Since the women would be tending to the sick rather than to the harvests,

issue: precarious cycle further exacerbated by lack of financial services



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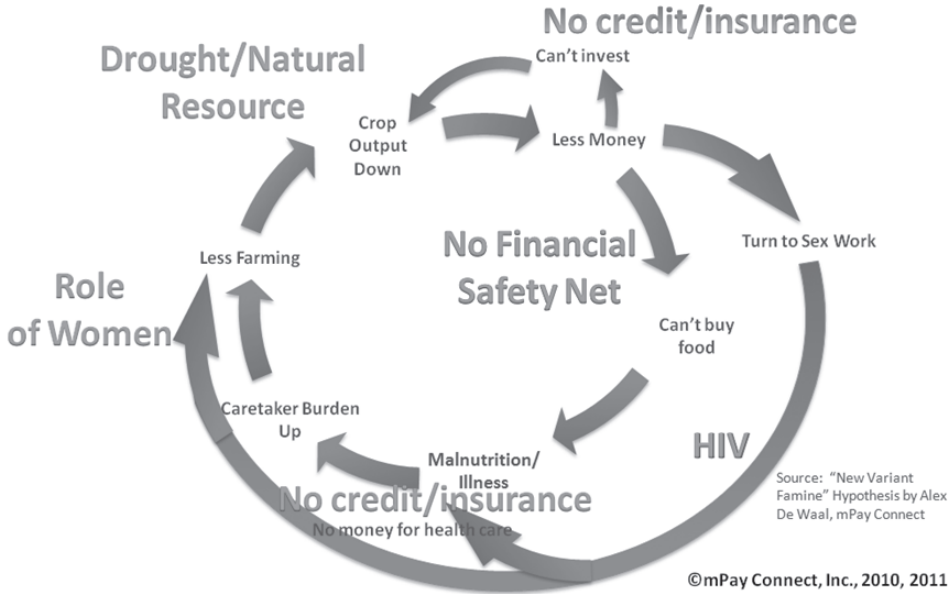


Figure 2. Precarious cycle further exacerbated by lack of financial services

crop yields would decline further. In other words, a precarious cycle of low crop yields, low income, malnutrition, further health problems, and lower farming productivity would occur. To make matters worse, during times of desperation, girls or women in the family could turn to or be forced into sex work to earn money, thus possibly adding HIV to the family's health problems.

Taking this one step further, we begin to consider how the lack of financial access adds additional problems to this already precarious cycle. An exogenous event such as a drought, flood, or fire will cause crop yields to decline. Without access to insurance or credit, these smallholder farmers are left with little to no income to feed their families, and certainly no money to invest in fertilizers, farming equipment, and other supplies that would benefit their crop yields in future seasons. Even without exogenous events, farmers will likely not invest in better supplies due simply to the concern that droughts, floods, etc. may occur. Farmers understandably would be more likely to save money to plan against potential income loss due to crop failure than to invest in better farming equipment and supply. To make matters worse, in the case of malnutrition or the spread of HIV, these families have no insurance to help pay for health care.

At the base of the pyramid, around 70 percent of the world, or 2.5 billion people, rely on the food value chain for their income.² Most are smallholder farmers. While it is unlikely that mobile money can change the course of population or cli-

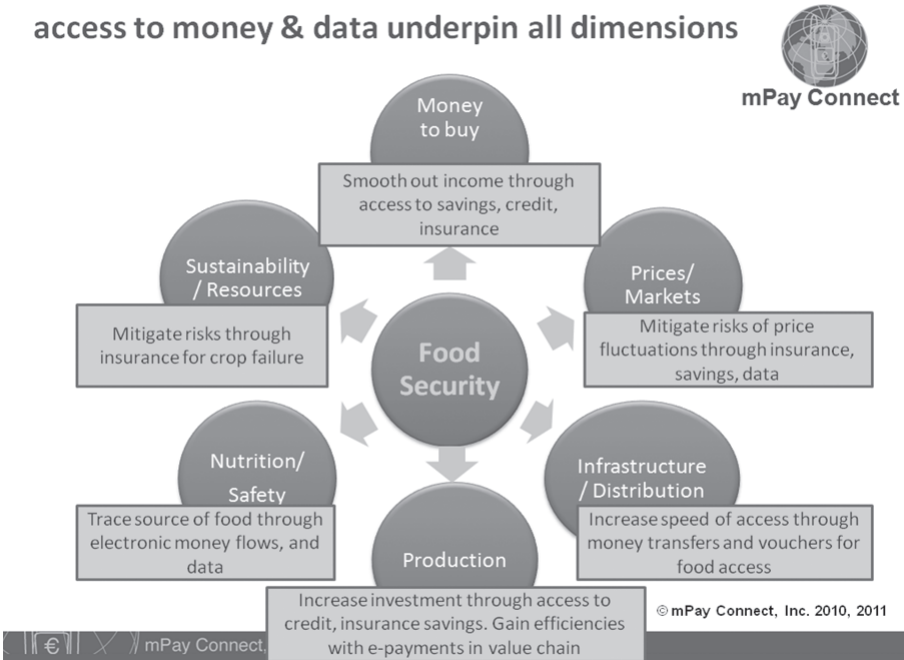


Figure 3. How can mobile money increase food security?

mate trends, it can have a positive impact on food security issues. In every category of food security, access to financial services has a positive impact.

For example, better access to financial tools such as savings and credit smoothes out farmers’ incomes so they can afford to buy food for their families. Credit provides the liquidity needed for farmers to invest in farming equipment or supplies, such as the fertilizer or seeds needed at a certain time of year. Micro-insurance provides a safety net for smallholder farmers by reducing the financial effects of droughts and other natural disasters. Knowing this, farmers can invest their money in better farming equipment and supplies to improve future crop yields, rather than saving it in case crops fail in the future. Access to credit enables manufacturers to purchase supplies and retailers to purchase food when their inventories are running low, even when their cash supplies are low. Through better transparency of market prices obtained over a mobile phone, farmers not only can find buyers remotely but also can lock in prices by receiving payment from buyers using mobile payments, which reduces the risk of future market fluctuations. Fast mobile payment settlement increases organizations’ motivation to participate in food dissemination when consumers are using food vouchers. And, finally, the electronic trail of money enables better traceability of the food value chain to help identify where tainted food supplies may have originated.

WHAT MAKES MOBILE MONEY UNIQUE IN ADDRESSING THESE ISSUES?

Mobile money involves using the mobile phone as a channel to conduct payments, account management, and other financial services. The majority of the world's population does not have access to bank accounts or computers, but they do have mobile phones. The vast majority of the population has had no other method of payment other than cash because they have been left out of formal financial services due to lack of access to bank branches, minimum deposit requirements, and lack of necessary documentation to register for bank accounts.

Mobile money services change these dynamics by enabling the unbanked to register mobile money accounts and by providing access to electronic payments through the customer's existing mobile phone for the first time. For the 1.7 billion people with mobile phones and no bank accounts,³ this innovation represents the first electronic money account that can be used in lieu of cash. These accounts require less registration documentation and have few or no deposit requirements. Using the infrastructure of existing prepaid airtime top-up agents of mobile network operators and other entities, mobile money users have access to "human ATMs" in their remote villages to get cash in and out of the system, in lieu of bank branches and ATMs.

By using these mobile money accounts, unbanked populations not only have access to faster payments over remote distances, but also to fundamentally new services such as credit, savings, leasing, and insurance that were previously not available. These new services are possible because of the significantly changed cost structures of delivering financial services without the need for bank branches, card infrastructure, or cash management (up to 98 percent cost savings over traditional banking access).⁴ In addition, by formally having access to electronic money accounts, mobile money users who previously conducted their financial lives in cash are now able to build a financial history, which can serve as a foundation for obtaining access to credit and other financial instruments in the future.

EXAMPLE CASES: INSURANCE, LOANS, PAYMENTS

The combination of new technologies and mobile money can fundamentally change an entire set of services associated with food security for the base of the pyramid. Consider, for example, the idea of insurance for smallholder farmers. In the past, these farmers have been unable to purchase insurance because the cost of infrastructure for insurance services did not allow for a sustainable business case. Given that these farmers live in remote areas and have small crops, sending an auditor out to assess the farmland, managing the cash for premium payments, and then sending an auditor to assess a claim was cost prohibitive for the insurance company. Today, this is changing. With the use of index insurance and weather stations that automate the measuring of rainfall, sunlight, and soil conditions, data is collected remotely to determine whether a crop should yield a positive or negative harvest, without the need for auditors. Using the mobile phone, farmers pay the premiums for micro-insurance when purchasing seeds, and claims are paid to

farmers using mobile payments. The cost of auditing, cash management, and claims management are dramatically reduced. The Kilimo Salama program run by the Syngenta Foundation in Kenya is piloting this concept with great success. The pilot has shown that farmers now invest their additional earnings into farming supplies, rather than saving that money for potential crop failures.⁵ This yields better crops overall. One can imagine that these programs could be globally scaled in the future and that further benefits could be achieved by leveraging existing earth satellites that collect data on farming conditions in addition to, or in lieu of, weather stations.⁶

There are other examples where mobile money is now being used to increase food security. In Zambia, Mobile Transactions, a mobile money services provider, has been leveraging mobile payments to increase the speed of payment to organizations disseminating food to the poor who are using food vouchers. By reducing the settlement of payment from months to minutes, the new method increases the participation rates of food disseminators.

In Kenya, Nuru International, an NGO focused on ending extreme poverty, is using mobile payments in its program, which includes farm loans for fertilizers. In this program, farmers will be able to pay down their loans using mobile money instead of spending more than two hours walking to repay the loans at a bank branch. Finally, in Senegal, mobile services provider Manobi is enabling farmers to secure fair market prices using the mobile phone and to purchase supplies remotely via their mobile phones. This is improving market linkages and efficiencies in the production value chain.

LOOKING AHEAD

Of course, access to mobile financial services is only one of many issues that will need to be addressed to enhance food security in the future. It will not solve the need for enhanced education, better distribution, or attention to climate change. However, it is an important lever in the issue of food security. As the 630 mobile network operators in the world continue to build 90 additional new mobile money systems to augment the already existing 150 systems today, and as more unbanked farmers adopt these systems, the limitations and friction associated with cash will eventually become a thing of the past. Enabling electronic payments and access to new financial services for the smallholder farmers and others in the food value chain will bring a new promise of safety, reduced risk, and access to funds. Through new payment mechanisms, credit, insurance, and savings, mobile money will enable smoother income for the poor and allow them to buy food for their families. It will enable better liquidity in selling and buying food and create more efficient markets. With micro-insurance, smallholder farmers will be able to invest extra income in better supplies and equipment to increase crop yields, rather than saving the funds to plan against crop failure. With faster electronic payments in the value chain, more participants will be motivated to distribute the food, and better traceability of food supplies will increase food safety. In short, mobile money may

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ultimately prove to be one of the most important foundations for food security in the next decade.

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1. *How to Curb Rising Food Prices*, CNN, October 17, 2011.
 2. *Business Strategies to Enhance Food Value Chains and Empower the Poor*, World Economic Forum, 2009.
 3. CGAP and GSMA.
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 5. Interview with Syngenta Foundation, 2010.
 6. Interview with NASA Earth Satellite research scientists, 2010.