FURTHERING FINANCIAL INCLUSION THROUGH DIGITALLY FINANCED ENERGY

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ABSTRACT

Energy poverty is a development challenge that traditional, centralized approaches have been slow to overcome. Globally, 1.1 billion people remain without access to electricity, including 589 million in sub-Saharan Africa (SSA) (World Bank 2015). They rely on dangerous and inefficient alternatives to light their homes and operate appliances: kerosene lamps, diesel generators, and dry-cell batteries. By providing longer access to cleaner sources of energy, electrification brings immediate health benefits, improved educational outcomes, and opportunities for small businesses. Unfortunately, connecting households outside of densely populated areas to centralized electric grids is prohibitively expensive: up to $2,300 per rural household in SSA (McKinsey 2015, p. 24). Alternatives such as photovoltaic solar panels have existed for decades, but their upfront costs have been unaffordable for most low-income customers, with the vast majority unable to access the credit necessary to extend repayment over time. And where credit is available, the geographic dispersion of rural customers makes routine payments to a fixed branch or agent prohibitively expensive.

The expansion of digital finance systems in the developing world has altered this financial context and enabled new business models that rely on small, regular payments. In the off-grid energy sector a group of solar companies, primarily in East Africa and South Asia, are leveraging digital finance to offer pay-as you-go (PAYG) energy. This paper explains how digital finance is enabling PAYG energy expansion, which in turn provides a gateway to a range of financial products for the financially excluded.

Key words: Digital, Solar, Energy, Wallet, Scalability.

PAYG SOLAR - A PRELUDE

PAYG businesses rely on distributed energy sources where energy is generated at the point of consumption, in the case of PAYG solar, from a photovoltaic panel on the customer's roof. Products range in size from $15 portable lanterns to $150–300 small home systems, up to $1,000-plus larger home systems that power a host of consumer goods. Customers pay a fixed amount upfront to receive the product, and then make small, routine payments over time. PAYG solar units contain hardware that allows the seller to remotely lock or unlock the unit, based on receipt of payment. Once the customer's prepaid use is completed, the solar

device automatically shuts off until the next payment is made. Payment schedules are relatively flexible, allowing households to pace the use of energy according to their cash flows and ability to pay.

From the provider perspective, the ability to remotely activate/deactivate the solar device based on payment significantly reduces the risk of default and theft. This added security allows PAYG providers to offer consumer financing in one of two forms: energy as an asset, where the customer pays off the solar unit over 3–36 months and takes ownership when repayments are complete, or energy as a service, in which the customer signs a long-term lease with lower monthly payments and no intent to own. In this case, assets are upgraded or replaced over time.

While the monthly cost of PAYG energy varies with product size, the entry-level solar home systems available today represent a cleaner, higher-quality alternative to kerosene, at a comparable price point. An average Tanzania household, for example, paid $8 a month for kerosene, dry-cell batteries, and cell-phone charging in 2013 (Greenmax Capital Advisors 2013, pp. 132–3). A $150 solar home system—paid over 18 months— can effectively replace that expense while providing superior energy service, decreasing carbon emissions, and eliminating the danger of indoor fumes. For those relying on expensive, risky fuel sources, access to solar energy can be life-changing.

PAYG PAYMENT OPTIONS

As long as customers receive their incomes in cash, digital bill payment requires a cash-in point. For PAYG solar customers, there are two types of payment points:

1. FIXED ENERGY SHOPS OR AGENTS.

Some companies have trained agents to accept cash payments from customers unwilling or unable to use a mobile wallet. Payments are made in cash to the agent, then remitted digitally via the agent's mobile wallet. Agent commissions add another layer of fees, and customers must travel to them for every payment, a significant burden in rural areas

2. CUSTOMER MOBILE WALLET PAYMENTS. Customers can send payments from their mobile wallet and receive energy in minutes without leaving their house. While this does require a cash-in with a mobile money agent, PAYG companies are able to leverage the existing mobile money infrastructure.

The PAYG model becomes more expensive to scale if providers must maintain a retail or agent network, and far-flung customers may see PAYG energy as less affordable once they factor in the cost and time of travel. Because of this, there is a strong preference on the part of providers for customer mobile wallet payments: they provide the most transparency, allow for more accurate customer data, and are cheaper for all parties.

DIGITAL FINANCE –A FACILITATOR OF SCALED PAYG

Financed sales involve frequent interactions between seller and buyer. The nature of those transactions determines the scalability and profitability of a given business model. While PAYG businesses can exist without digital payments, the value proposition to both customers and investors is made much more compelling when digital payments are fully leveraged. In particular, they fulfil three crucial needs:

TRANSPARENCY: Digital payments give customers confidence that they are paying only the true cost of a product, with no extraneous commissions or fees. They also allow firms to account for revenue in real-time, accurately track repayment rates, and maintain ongoing oversight and communication with their customers.

AFFORDABILITY: In rural and peril-urban areas where the majority of energy poor are located, cash transactions have a high opportunity cost. Users who pay for energy in cash must spend time and money travelling to a central location to make energy payments, or companies must establish payment locations across a large geographic area and pass those costs on to customers. Digital payments allow smaller, more frequent repayments that fit the existing spending patterns of lower-income households.

SCALABILITY: When PAYG payments are made in cash, companies must establish an entire cash management system. Sales agents must be supplemented by collections agents, or perform both duties themselves. In those situations, managing existing customers may limit the ability to identify new ones. When mobile money is used for repayments, sales agents focus on originating new customers, while the company concentrates on product quality and customer service. Mobile money agents still have to exist in areas where the energy poor live, but the cost of that infrastructure is shared in part with other services that mobile money facilitates, such as domestic money transfers, airtime sales, and bill payment. Scalable, distributed energy becomes a more achievable goal.

PAYG ENERGY CAN DRIVE MOBILE MONEY ADOPTION

The 2014 GSMA report on mobile financial services found that only 38 percent of African mobile money accounts had been used in the past 90 days (GSMA 2016). And while digital payment volumes have skyrocketed, almost two-thirds of transactions are low-value airtime top-ups (Wag staff 2015). The routine payments required of PAYG energy provide an opportunity to diversify and expand use of mobile money.

Given the benefits of leveraging mobile money for payments, energy providers have been nudging (or requiring) customers to use mobile money in locations where that infrastructure exists. An informal CGAP survey of three leading East African PAYG solar companies, conducted in March 2015, revealed that 30–50 percent of their customers are “new” to mobile money (e.g., they started using mobile money to access the energy service). PAYG providers have had to become adept at registering customers for mobile wallets and training them in their use. These customers had not previously seen the value or relevance of mobile money to their lives, but access to solar provides a tangible incentive to register for—and

actively use—a mobile wallet. As a result, PAYG solar companies are now among the largest bill-pay recipients on mobile money platforms in Kenya, Uganda, and Ghana (Mark 2014). The high transaction volume generates added revenue to mobile money providers and has helped companies such as Fenix International become a dedicated menu option on MTN Mobile Money Uganda and Off-Grid: Electric in Tanzania to secure preferential pricing from mobile network operators (MNOs) eager to convert registered mobile money users into active users. In this way, PAYG energy companies and other service providers whose business models necessitate digital transactions can break the pattern of inactivity.

OBSTACLES TO GROWTH

PAYG solar providers are growing at impressive rates: M-KOPA, operating in Kenya and Uganda, recently installed its 300,000th unit. Off-Grid: Electric has more than 100,000 customers in Tanzania and Rwanda, Fenix International has over 50,000 in Uganda, and other operators are growing quickly in India, Ghana, and elsewhere. Hundreds of thousands of customers are already using digital finance to access electricity. Going forward, the potential to continue growing at this same pace will be limited by providers' ability to effectively deal with the following challenges.

A. LIMITED COVERAGE OF AGENT NETWORKS: Rural markets in Tanzania, Uganda, and elsewhere remain underserved by mobile money agent networks. This can be attributed to the higher level of difficulty in reaching widespread customers, but also to a perceived lack of value in rural consumers. This perception may be changing, as saturated urban markets and a desire to scale are encouraging MNOs to expand into rural areas. PAYG solar is providing a business case for the value of rural mobile money users, but until providers expand into these areas, PAYG sales agents must keep signing up customers for mobile wallets and companies must maintain their own workarounds for cash-in transactions, such as collections agents or retail locations.

B. EFFECTIVE RISK ASSESSMENT FOR CONSUMER FINANCE: The ability to remotely lock an energy asset ought to substantially reduce the risks of theft and non repayment. However, PAYG providers are finding that accurately assessing risk—while admittedly complex—is a more versatile, cost-effective competency than just being able to repossess and redeploy a unit in default. Assessments vary in their degree of sophistication: some businesses rely on agents' local knowledge, others use standardized questionnaires that produce an automated decision, and a few companies are exploring partnerships with alternative data companies to analyze call data records in an effort to predict repayment (McKinsey 2013). As competition grows among providers, the ability to identify viable customers beyond the top tier will be crucial to maintaining and expanding a given firm's market share.

C. WORKING CAPITAL CONSTRAINTS: The greatest challenge for PAYG solar companies is raising the working capital needed to finance their own stock. Outside of Kenya, commercial-grade debt has been reluctant to enter the nascent sector, and the cost of local capital is often prohibitively expensive (GSMA 2014).

Given those constraints, PAYG providers have had to fund operations primarily through equity rounds and concessionary debt, while experimenting with other tools, such as a recent securitization of future receivables (Greentech Media 2015). Such capital is normally dollar- or euro-denominated, creating large foreign exchange risks for companies that are lending in local currency. Greater participation from local financial institutions will be needed to scale sustainably, minimize exchange risks, and leverage the credit histories established through this lending.

CONCLUSION

For PAYG providers, future opportunities lie well beyond energy. Those that effectively address the aforementioned obstacles and scale their energy business are developing mechanisms to manage an ongoing financing relationship with lower-income customers that are the hardest to serve. Once established, there is virtually no limit on the products and services that might be offered through the distribution channel, with existing customers being less costly to serve, and therefore more profitable. Upon completion of a financed energy purchase, customers do not only acquire a solar unit, they also build a positive credit history and access an ideal form of collateral, which they can then refinance.

The combination of a productive and desirable commodity (energy), digital payments linked to PAYG technology, and robust service/distribution networks makes off-grid solar an ideal entry point for scalable consumer financing. But caution must be taken: consumer financing is a powerful tool, and it is a potentially dangerous one. Responsible lenders and diligent regulators must work together to ensure that finance is used to improve development outcomes, not merely to push product sales.

There is space for further innovation. Partnerships with local financial institutions could bring additional financial services to customers that were until recently unbanked, while lowering the cost of capital and foreign exchange risk for energy companies. Alternatively, energy companies could follow the lead of durable goods retailers in Latin America, some of which have transitioned into full-service retail banks (CGAP 2015). If PAYG solar companies can accurately assess the risk of lending to unbanked customers while expanding PAYG solar offerings to whole countries or regions, they will have built the “first scalable model for providing asset financing to unbanked consumers” (Winiecki 2015). PAYG companies have leveraged multiple innovations to reach their customers; how they evolve from here will determine their ultimate success.

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