Mobile for Development Intelligence

M-KOPA SOLAR [1]

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M-KOPA

Established in 2011, M-KOPA provides solar home systems that innovatively couple machine-to-machine technology (M2M) with a micro-payment solution. The system includes embedded GSM technology for monitoring and metering usage, while its pay-as-you-go service carries the advantage of no large initial cash outlay. After an initial deposit, customers pay daily instalments via a mobile money service (M-Pesa) until paying off the balance. Once this repayment is complete, customers own the unit outright. Importantly, this solution is cheaper and healthier than the alternative, kerosene. M-KOPA solar is currently available in 750 outlets nationwide in Kenya through the Safaricom distribution network.

Year launched
2011

Business model
Consumer

Targeted Device
Basic/ Feature Phone, Other

Primary Delivery Technology
SMS/USSD

Products & Services
Payments

Markets deployed in
Kenya

Estimated number of users
30,000+ (750 outlets)

Background and opportunity:

Twenty years ago, few people believed that GSM mobile telephony would become affordable for low-income consumers in developing countries. However, due to lower cost handsets and pre-pay pricing plans, mobile phones are now a 'must have' for most families in sub Saharan Africa. At the same time, many of those who have mobile phones are still off the power grid. In Kenya, people will typically spend 20% of their income on kerosene and charging their mobile phones alone. M-KOPA was conceived as a solar powered system that offered a more cost effective energy solution to Kenyans. The system consists of a base-station with a solar panel, three lamps and a charging kit for phones. After paying an initial deposit of KES2500, customers pay daily instalments of KES40 (or about $0.4) via the mobile money service M-Pesa. Given that this system can provide both lighting and phone charging facilities, the cost compares favourably to the KES50 that a typical Kenyan would spend on kerosene alone. In addition, using a mobile money system (M-Pesa) allows customers to buy units of credit for their lighting system at any time. Many rural Kenyans are dependent on agricultural yields for income, which can result in variable access to funds. With this in mind, payment for the service is flexible, allowing customers to adapt payments to their income. The pay-as-you-go plan is designed such that customers pay for a period of one year, after which time they own the system outright. The same technology and business model used to sell Kenyans this solar system is extendable beyond lighting. "If a device has an 'on/off' function, then an embedded M2M system can be built to allow remote management and micro-asset financing". M-KOPA has been exploring new applications for M2M with the help of grant funding from the UK

[1] http://www.m-kopa.com/
[2] http://nyaruictcenter.wordpress.com/#jp-carousel-144

Government's DFID, the Shell Foundation and the Lundin Foundation. They see opportunities across energy, agriculture, health and information-management services. Examples might include water pumps for irrigation, cold storage for both domestic and commercial applications, as well as products like TVs for family use. "The business case firms up if the M2M enabled device can save customers money or offer them some other benefit, such as improved productivity."

Progress since launch:

How have things gone so far?

The project was initially piloted using grant funding that allowed for M-KOPA to proof the concept, and develop their business model. After about a year and half, M-KOPA had the proposition for what they were going to do at scale, and raised an equity financing round from impact venture capitalists. At this point, the project was converted from a pilot into a commercial business. The organisation is now rolling out its commercial operation in Kenya through the Safaricom network.

Scalability:

How is the service being scaled to reach a larger audience?

Reaching scale depends in large part on service providers building relevant price plans. These must recover payment for relevant products in a way that suits the customers' ability to pay. A customer's absolute income is a critical factor in this calculation, though research into financial inclusion also indicates that volatile income is a significant factor. "Flexibility is therefore key and mobile payment platforms offer us a way to provide for this – moving small amounts of e-money around at low cost." In this respect M-KOPA has focused on building responsive and scalable back-office systems to allow for flexible service provision. They stress that understanding the customer's ability to pay, and creating a business model that accounts for volatility of income comes first. "We're not a solar company, we're an asset financing company, born out of the idea that low income consumers have a hard time saving up enough money to buy a productive asset that will save them money in the long run." With this thought in mind, M-KOPA set about designing the payment models very carefully, testing various models with users and factoring their ability to pay. Scaling the product then turned on keeping the final payment models as simple as possible for end users. M-KOPA currently offers two ways to pay for the service generated using this research. The organisation is now at a stage where data transferred from their solar devices enables them to categorise different types of customers, better understand how cash flow moves into the business, and – crucially – understand how to better align their products to the financial behaviours and requirements of low income users.

User centric attitudes:

How does the organisation build itself around the end user?

M-KOPA has been oriented around customer needs from the beginning. "The premise of the way we work has always been – you just get out there and you do it. We put something into the hand of a customer, see what they do with it and then pivot and innovate accordingly. Where you end up might be quite different from where you started". From an early point of development, this strategy has ensured that customer requirements dictate key decisions about the business model. For example, when M-KOPA first tested solar products in Kenya they knew it was possible to collect micro-payments, but they questioned whether people wanted to own the solar product or just pay for the electricity. M-KOPA used initial tests to get user feedback on this question, "the answer, overwhelmingly, was that customers wanted to own the product, so we designed the rest of the business model for that demand". Further examples of user centric design are reflected in the device itself. M-KOPA started with a one light system that could charge phones, but found through user research that customers wanted bigger systems with more lights. "We've designed our commercial product purely through feedback we've got through trialling". Although at a relatively early stage, M-KOPA's Customer Care team already consists of over 60 members (around one third of the organisation as a whole), and is key to ensuring the organisation stays oriented around their users. In addition, M-KOPA track devices for usage, performance, and monitoring payments. The active monitoring of units allows for real time information about on-going operations. Here an embedded computer sends information to a central server about the user's consumption, photovoltaic energy production, battery voltage and any operational problems that could result in the unit failing. This data is stored in a central database, can be retrieved later, and also used to better understand the requirements of the end user. Interestingly, M-KOPA also highlight the value of being a small company with plenty of capacity to innovate. "Had we been a micro-finance company that had rules, regulations, and inertia built around a certain type of

product, it would have been a lot harder to end up where we are now. We've been able to do it a different way because we didn't have any rules". Though solar hardware is a critical element of the service, M-KOPA consider themselves a software company that puts hardware into people's homes. In particular, the M2M technology ensures that devices are connected, so as soon as the hardware is out in the field, data is being fed back to M-KOPA that can help them design better products, troubleshoot issues, and change the business model.

Challenges:

What are the internal and external challenges currently faced?

M-KOPA outline key challenges that span from hardware, service provision, agent training, as well as the regulatory environment for M2M services. From the hardware perspective M2M technology is the core enabler for services like M-KOPA, yet this needs to be available at a cost point that allows for scale. To put this into perspective, the pricing of M2M technology is still between $13 and $15 for even the simplest 2G models – which is almost as much as a basic phone. This price point of the simplest M2M modules prohibits their potential application in many smaller electronic items. "This could preclude the adoption of new consumer facing services where the total unit price is, say, sub $150." If this technology can become cheaper, the next critical challenge arises for service providers themselves [note: since the time of writing M2M chips have become available at $10 at volume purchase]. These providers – like M-KOPA – must first factor a total cost of operation which includes designing the M2M unit into the end-user device, connecting it (with a network operator SIM) and paying for data traffic. They must then create a price plan which recovers payment of their proposed product, and does so in a way that fits a customer's ability to pay. The challenge for these providers is to find a meeting point between the total cost of operation and the customer's ability to pay, where this meeting point is also facilitated by the innovative use of a repayment plan. Getting this right is key to supporting the business case. In more general terms, M-KOPA face a challenge because their service depends on the ability of consumers to pay-off devices over time. In developing markets in particular, consumers are more susceptible to shocks that might prohibit this (e.g., national level shocks like drought or political instability, or simply stresses on a single consumer's livelihood). Services like M-KOPA will inherit the risk that these susceptibilities bring. M-KOPA is also delivered through a system of agents, where training these agents poses a challenge in the form of well thought through training programs, clear agent KPIs, and provision of refresher courses in training. Finally, on the regulatory front M-KOPA identify a spectrum related issue with M2M more broadly. They ask whether there will be under capacity in older networks, seeing the potential danger of so-called 'white space' solutions that might undercut any attempt to cram more devices into the licensed spectrum. Without a clear space carved out for low specification M2M devices, this could be detrimental to the industry as a whole.

Partnerships:

What is the value of partnerships, particularly with MNOs?

M-KOPA has forged a number of partnerships with donors, investors, and M2M specialists, as well as their relationship with Safaricom. Donors provided funds for initial pilots, which was particularly valuable at a stage when the business model wasn't yet clear. This allowed for greater flexibility in proving early concepts, rather than unhelpfully tying the organisation to untested ideas. "Getting innovative flexible money early on is good". Some of the grants given were also convertible grants, which have since been turned into stakes in the company. That being said, DFID and the Shell Foundation have also provided grants at a more mature stage of the organisation's development, where they encourage M-KOPA to keep innovating with respect to new products and services (e.g., M2M applications in water, and other core services). "The roll of the donor money right now is to allow us to keep innovating". In addition, various technical partners are a great asset to M-KOPA. In particular, there exists an M2M knowledge base in the UK that's not present in Kenya. Here M-KOPA have forged a critical partnership with Eseye Ltd. In addition, d.light are a key partner with respect to manufacturing the solar lighting product itself. Finally, Safaricom are the 'scale partner'. "The big opportunity with Safaricom is that they have 50,000 outlets, 18 million customers, and they like our product". Here brand extension of Safaricom and M-Pesa have been significant for M-KOPA. "Our product isn't branded specifically as Safaricom, but it's associated with Safaricom, and this makes it more trustworthy".

Looking back, looking forward:

What key lessons have been learnt, and what are the organisation's future objectives?

M-KOPA see potential for M2M services to scale quickly in emerging markets. They also see that such a scenario will have longer term implications for positions taken across the M2M value chain (technology, data, and consumer services). While M-KOPA aims to reach significant scale throughout Kenya itself, the organisation also lists the following wider industry objectives; regarding these as key to unlocking the potential of emerging market, consumer based M2M services. In the short term they see the supply of an M2M unit with specifications appropriate to the needs of emerging market users as critical. This would reduce the bill-of-materials cost, towards a target price of $5 within a couple of years (for minimum order quantities of 100,000). Secondly, they hope that MNOs and service providers will continue to build innovative service models using mobile payments and M2M. In the medium term, M-KOPA hope to see progress made on regulatory issues. Here the aim will be to develop simplified standards and reduce the barriers to efficient, cost effective scaling of high volumes of connected devices. Overall, the key is innovatively using available technology to help customers save money and allowing them access to previously unaffordable energy products. Here mobile technology is proving invaluable. Looking more specifically to M-KOPA, their objectives are threefold: firstly they look to reach scale; secondly they look to invest in growth in other markets (though recognise that Kenya is still a big market, with plenty of work to do); thirdly they look to invest in new products that can leverage M2M technology for use in emerging markets. “The telecoms industry is full of ingenuity when it comes to adaption of technology; we see a case here to repurpose some basic technology for new value-creating services.”

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About the GSMA Association

The GSMA represents the interests of mobile operators worldwide. Spanning 220 countries, the GSMA unites nearly 800 of the world’s mobile operators, as well as more than 200 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers, Internet companies, and media and entertainment organisations. The GSMA also produces industry-leading events such as the Mobile World Congress and Mobile Asia Congress.

About Mobile for Development - Serving the underserved through mobile

Mobile for Development brings together our mobile operator members, the wider mobile industry and the development community to drive commercial mobile services for underserved people in emerging markets. We identify opportunities for social, economic impact and stimulate the development of scalable, life-enhancing mobile services.

About Mobile for Development Intelligence

MDI is a freely available, online platform of market and impact data, analysis and access to an active community of practice. The mobile phone’s ubiquity is uniquely well-placed to drive economic and social development in emerging markets. Investments in the mobile and development sectors are rising yet there is limited data on which to base these decisions. MDI is designed to bridge this information gap.

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