

A Financial Analysis of Mobile Money Services

Peter LYONS

Techpolis Inc., Abu Dhabi, UAE

Abstract: With limited reporting by mobile network operators ("MNOs") on the financial performance of mobile money businesses, the paper develops a financial reporting framework to identify (and quantify) operating costs associated with delivering mobile financial services to unbanked populations in emerging markets. The framework is based on a review of relevant literature and an analysis of the financial reporting of conventional money transfer businesses. Using the mobile money framework and monthly mobile money customer/agent data reported by Safaricom Kenya, we developed a test-case model of the historical performance of M-PESA since its launch in 2Q07. The test case synthesizes the evolution of M-PESA's revenues, operating costs, and cash flow as a separate business-reporting unit within Safaricom. The analysis indicates that even M-PESA Kenya, widely regarded as one of the most successful MMS deployments worldwide, did not actually breakeven until nearly two years of operation. Based on the analysis, the broader (mixed) impact of mobile money services on a MNO's consolidated operating margins, working capital, and cash flow generation are extrapolated.

Key words: Mobile money, M-PESA, financial analysis, mobile operators.

In this paper the term mobile money service ("MMS") is used to refer mainly to person-to-person ("P2P") money transfer transactions initiated by a mobile subscriber using a SIM card based application and unique PIN linked to an electronic stored value account¹. The number of people making mobile P2P transfers is expected to reach 170 million people by 2011, according to ABI Research with demand driven mainly by people without bank accounts living in developing nations².

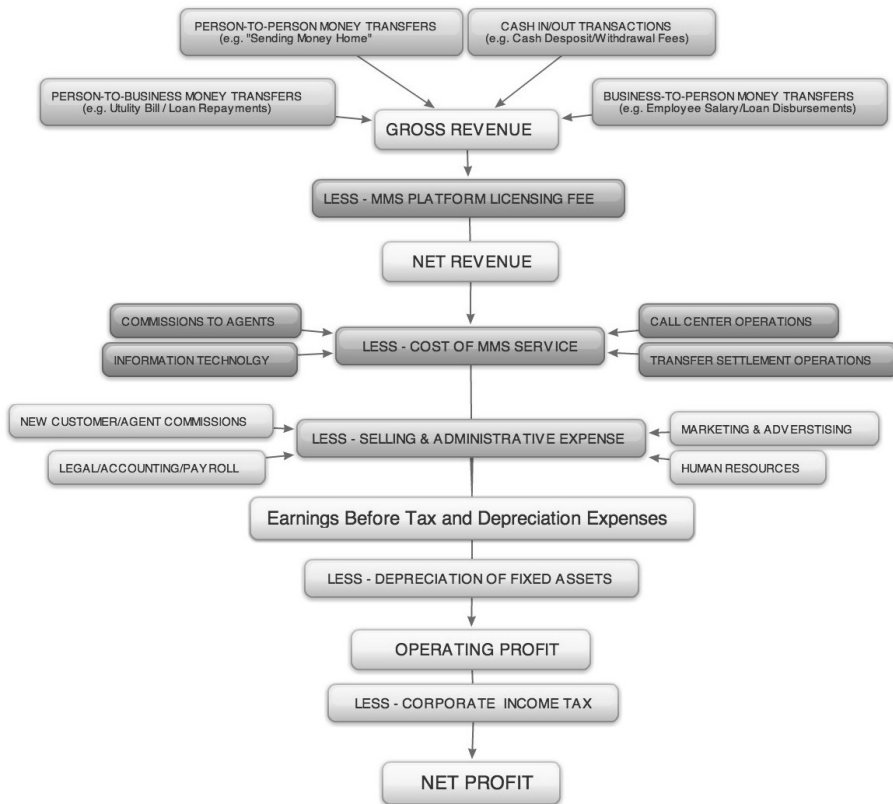
Mobile money offerings by MNO's require a supporting network of authorized retail agents to register new customers and provide cash deposit/withdrawal services. MMS agents generally receive a commission

¹ M-PESA customers' m-wallet information is maintained on a Vodafone server. Kenyan mobile operator Safaricom (which licenses the M-PESA platform from Vodafone) deposits the collective value customers' account balances into trust accounts at two highly liquid commercial banks in Kenya.

² <http://mobithinking.com/blog/mobile-money>

based on the number of new customers registered and on the volume of cash transactions made at their location(s) while money transfer commissions are reserved for the MNO. In the case of Safaricom M-PESA, the agent commissions for new customer registrations and cash transactions are collected from customers by the MNO, and "held" on the agent's behalf before being paid out to the agent channel in arrears at the end of each month.

Figure 1 - Mobile money service - Financial reporting framework



MMS revenues are derived primarily from transaction commissions charged for P2P transfers.³ Mobile money transfers are similar to traditional money transfers in that they involve the collection of cash by an authorized

³ Kenyan mobile operator Safaricom (which licenses the M-PESA platform from Vodafone) deposits the collective value customers' account balances in to trust accounts at two highly liquid commercial banks in Kenya.

agent and transaction processing over a secure payment network to another agent location for receiving party pick-up (usually in cash). In addition to individual P2P transfers, M-PESA has grown to include person-to-businesses ("P2B") transfers, bulk business-to-person ("B2P") transfers, and international money transfers.

Given the lack of data reported by mobile operators on the operating structure and financial performance of their MMS businesses, we created a financial reporting framework (Figure 1) based, in part, on the structure and reporting standards of mobile network operators and traditional money transfer companies such as Western Union.

■ MMS test case: M-PESA - Safaricom Kenya

Safaricom's M-PESA service in Kenya was decided on as a test case, since it is one of the only MNO's that provide monthly statistics⁴ on its MMS service. As of April 2010, Safaricom M-PESA reported:

- 9.7 million registered M-PESA customers of whom it is estimated about 60% are active MMS users;
- 18 thousand retail agents at which M-PESA users can cash-in and cash-out, of which nearly half are located outside urban centers;
- US \$328 million⁵ per month in person-to-person (P2P) transfers, which on an annualized basis, is equivalent to nearly 10-15% of Kenya's gross domestic product;
- US \$650 million per month in M-PESA customer cash deposits/withdrawal at agent locations across Kenya, with an average transaction size equivalent to US \$32 (MAS & RADCLIFFE, 2010).

Based on the operating statistics reported by Safaricom, M-PESA's monthly revenues, cost of service and sales expenses are extrapolated.

Although dilutive in terms of Safaricom's operating margins, the analysis indicates that the net impact in terms of the mobile market share, working capital liquidity, and cash flow should be positive for the MNO.

⁴ For the latest monthly statistics from Safaricom on M-PESA go to:
http://www.safaricom.co.ke/fileadmin/template/main/downloads/M-PESA_Statistics.pdf

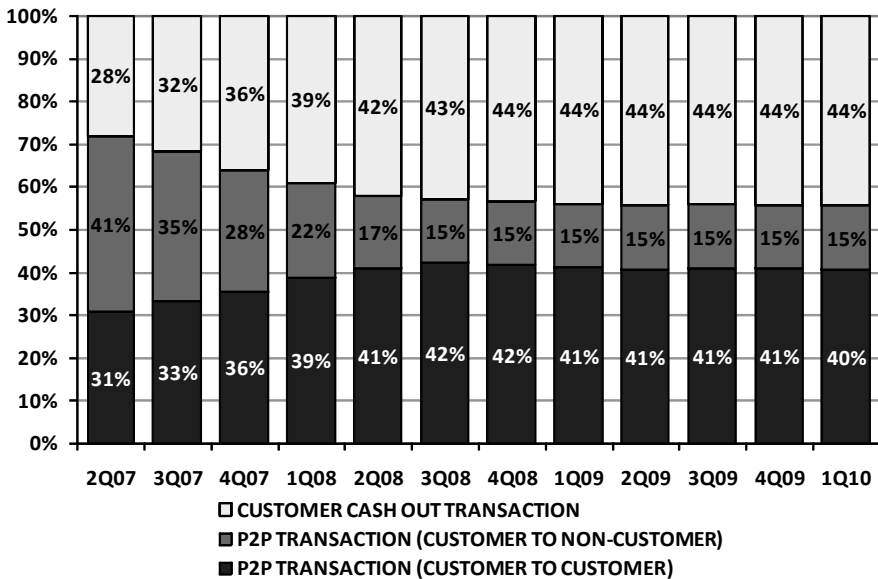
⁵ An exchange rate of 81 Kenyan Schillings per 1 US Dollar is assumed.

Revenue drivers

Person-to-Person ("P2P") money transfer commissions

Safaricom charges a flat, 30Ksh (US \$0.37) commission on mobile money transfers between registered customers. M-PESA customers can also send money to non-registered customers; however the sender is charged a commission of 75Ksh (\$0.93). In the early stages of customer adoption, Safaricom likely earned a higher proportion of P2P transaction revenue on *customer-to-non-customer* money transfers (Figure 2). With the onus on the registered senders to pay the higher fee for transfers to non-registered users (usually family members back home), there was an incentive for senders to encourage recipients to become registered customers.

Figure 2 - Composition of M-PESA revenues (as % of total)



Customer cash transaction commissions

Safaricom charges registered customers an average 25Ksh (US\$ 0.30) commission for cash withdrawals at agent locations or "PesaPoint" ATMs. Cash withdrawal commissions are automatically deducted (real-time) from customer m-wallet accounts, however the corresponding payment by

Safaricom to the responsible agent is not made until the end of each month. The estimated cash withdrawal commissions accounted for 40% of total M-PESA revenues in 2009. Assuming an equal number of customer cash deposits and withdrawals, Safaricom does not generate any profit on cash transactions, but does benefit in terms of operating liquidity.

Customer-to-business transfer commissions

In Kenya, there are 75 companies using M-PESA to collect payments from customers including utilities, transport, NGO, Insurance, health services, government agencies, financial institutions, and schools. The Kenyan electric company, KPLC now has about 200 thousand customers paying their monthly utility bill via M-PESA transfers (MAS & NG' WENO, 2009). M-PESA charges a 30Ksh (US\$ 0.37) fee for P2B transfers, however unlike P2P transactions, P2B transfer fees can be shared between customers and receiving institution. It is estimated that an average of 350-400 thousand P2B transactions per month in the second half of 2009 occurred, accounting for about 5% of M-PESA gross revenues.

Customer-to-MNO transfers (airtime purchases)

Customers can buy prepaid mobile airtime, for themselves or other mobile subscribers, directly from Safaricom using M-PESA account without incurring a transaction fee. In 2009, about 19% of Safaricom's prepaid airtime purchases were transacted using M-PESA (MAS & NG'WENO, 2009). While airtime purchases do not generate M-PESA commission revenue, it can help Safaricom reduce total commissions it pays airtime resellers. Since airtime sales is often a higher margin business for agents than mobile money services, operators must be careful not to alienate its distribution channel by over-promoting direct airtime purchases via MMS.

Costs of service

Safaricom's M-PESA costs of service consist of a monthly licensing fee payable to Vodafone, agent commissions for cash transactions, expenses related to customer/agent call centers, settlement operations, and related IT costs. Expenses within these functions include personnel, software, equipment, telecommunications, and other expenses incurred in connection with providing mobile money services.

Licensing fee to holding company/MMS platform licensor

Unless an MNO develops, tests, and hosts an MMS platform in house, it will generally need to pay a licensing fee to the owner of the MMS platform (usually the MNO's holding company). Vodafone, which holds a 40% stake in Safaricom, licenses the M-PESA platform via managed service agreement and charges a fee of 30% of M-PESA revenues collected by Safaricom.

Cash in/out agent commissions

Cash withdrawal fees are immediately deducted from the customers' m-wallet account, however the corresponding payment by the MNO to the agent channel is not made until the end of the month. An aggregate of US \$650 million per month in cash deposits/withdrawals are transacted at M-PESA agent locations throughout Kenya, with an average transaction size of US \$33 per customer. On average an M-PESA agent handles 86 cash withdrawal/deposit transactions per day, generating about \$16 per day in commission revenue. After deducting typical M-PESA agent operating expenses (such as a 20% commission share with a master agent for liquidity management services), the average M-PESA retail agent makes a \$5 profit per day. In comparison, when an airtime reseller sells airtime to a customer, the original airtime investment is immediately recouped, and set commission is earned. In contrast, mobile money agents can receive their commission several weeks after performing a transaction (DAVIDSON & LEISHMAN, 2010). Due to higher upfront investment costs and ongoing liquidity management costs, M-PESA offers retail agents a substantially lower ROI compared to airtime sales: 97% vs. 370% (PICKENS *et al.*, 2009)

24-Hour M-PESA customer and agent support call center

This is the single largest cost associated with Safaricom's M-PESA business and includes salaries and benefits for call center employees, and information technology costs associated with providing 24-hour support. We estimate that M-PESA support calls account for nearly 30% of the one hundred thousand or so customer support calls received by Safaricom daily. This means that of the 1,500 customer full-time support staff employed by Safaricom at its Jambo call center, we estimate that at least 500 focused primarily on supporting M-PESA related calls.

Back office/transaction settlement

This includes SMS costs per transaction, salaries and benefits for back office staff, and related information technology costs. A typical M-PESA P2P transfer requires between 6-8 distinct SMS messages for transaction request, authorization, and confirmation. Mobile money SMS traffic is transmitted over the operator's network signaling channel, so transaction-messaging costs (borne by the MNO) are negligible on a per transaction basis. However periodic investment by the MNO in maintaining and expanding network-signaling capacity is required.

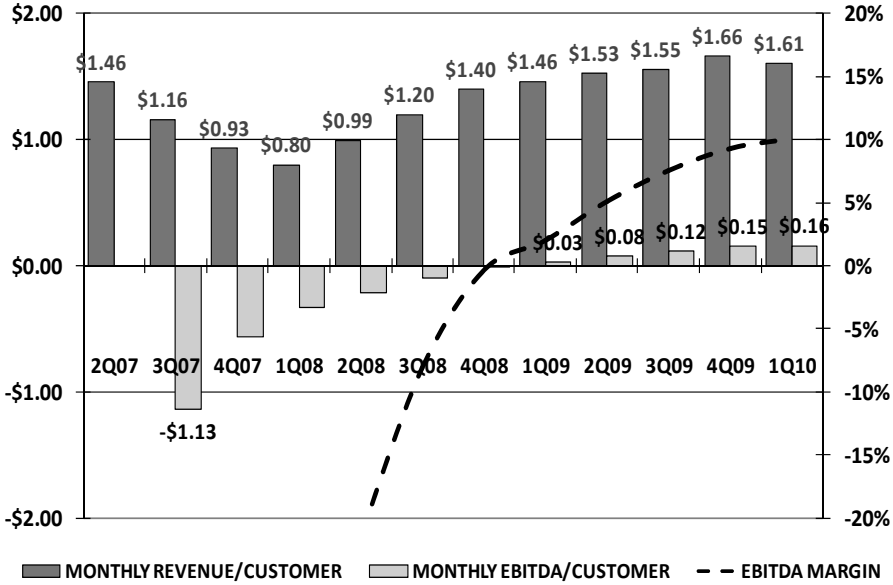
Sales, Marketing, and administrative expenses

Sales, marketing, and administrative expenses, ("SG&A") include salaries/benefits paid to sales and administrative personnel, as well as certain advertising and promotional costs. M-PESA is marketed to consumers and businesses using radio, television and printed advertising materials as well as on-site promotional activities. Inline with the financial reporting practices of most mobile operators, 80% of total advertising /marketing expenses are allocated to the cost of MMS customer acquisition, and the remaining 20% is allocated to the cost of new agent acquisition.

New customer/agent registration, training

SG&A expenses also include commissions paid for new customers/agents registered, third party "below the line" promotional services and agent training/evaluation. While M-PESA registration is free to prospective customers, the party responsible receives a commission equivalent to about \$1 per customer registered. A larger commission (about \$110) is paid for each new agent registered (usually by an agent aggregator). Early on, Safaricom hired a direct sub-contractor called Top Image to recruit, train and evaluate M-PESA agents (MAS & NG'WENO, 2009), however this function has shifted increasingly to agent aggregators and master agents.

Figure 3 - Evolution of M-PESA ARPU and operating margins



Average cost of customer and agent acquisition

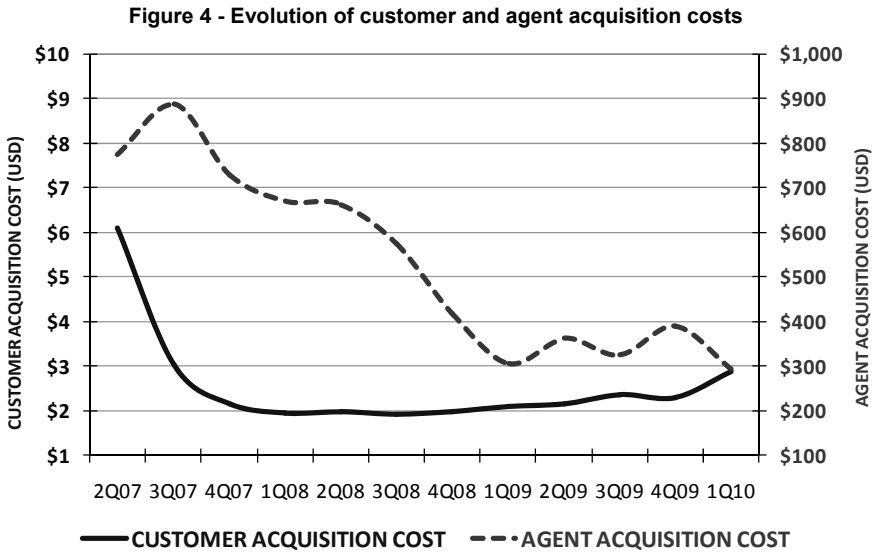
While the contribution of MMS to a mobile operator's ARPU has been well established⁶, we believe it is equally important to address the evolution of customer and agent acquisition costs. Indeed, the research indicates a substantial upfront commitment by the mobile operator early, aggressive agent acquisition, training, and support is required before customer growth can be sustained.

This means Safaricom's early success in agent acquisition is likely the exception rather than the rule; we believe that most MMS deployments should remain unprofitable well after initial deployment unless substantial scale in the agent network can be achieved (Figure 3).

As the agent channel gains scale, acquisition and training commission payments can be reduced for the MNO by using a tiered network of master

⁶ Average Revenue per User for an unbanked mobile money user in the Philippines is 74% higher than that of unbanked, non-MMS users (PICKENS, 2009).

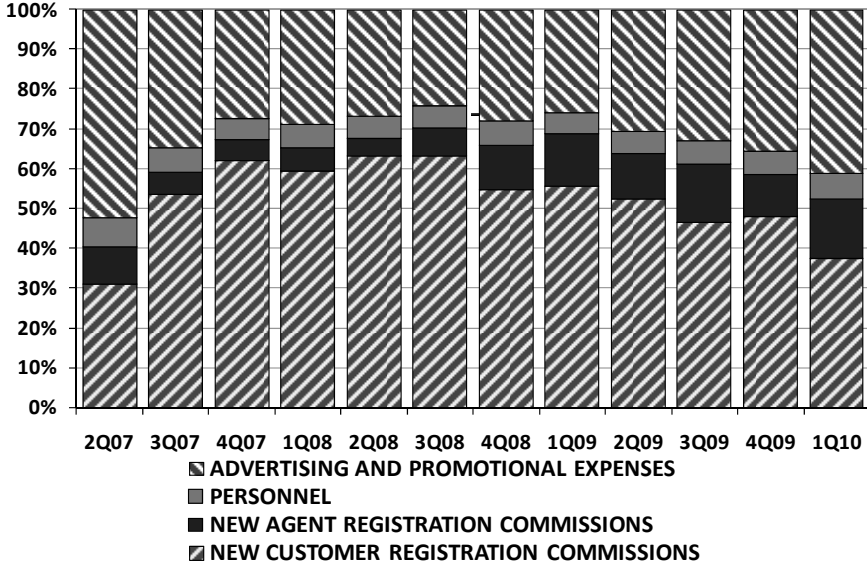
agents and aggregators⁷ (Figure 4). This approach allowed Safaricom to quickly increase the number of M-PESA agents while reducing the complexity agent management and expanding agent liquidity management capabilities (CAMNER, PULVER & SJÖBLOM, 2009).



As we can see in Figure 5, in the initial stages of M-PESA's launch, the bulk of customer acquisition costs were focused on advertising and promotional activities aimed at introducing the service and providing incentives for early adoption. Within a few months of the launch, however, the balance of customer acquisition costs shifted towards commissions paid for new customer additions.

⁷ A master agent is typically responsible for the liquidity management retail agents, while an aggregator is focused on registering new agents. Often these two functions are handled by the same entity.

Figure 5 - Composition of M-PESA customer acquisition costs



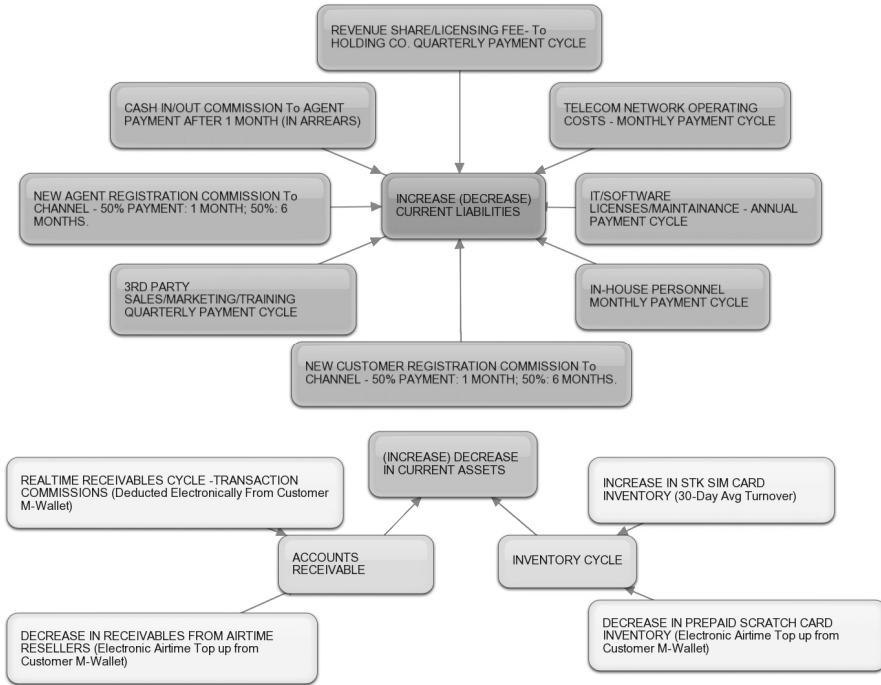
M-PESA's impact on Safaricom's consolidates results

In 2009, M-PESA generated approximately \$7 million in monthly revenue for Safaricom, equivalent to eight percent (8%) of the operator's total revenues. While accretive in terms of revenue per user, M-PESA's relatively high customer acquisition costs (15% EBITDA margin) are dilutive relative to Safaricom's consolidated EBITDA margin of 44%. Despite a dilution in Safaricom's operating margins, mobile money operations should benefit an operator by reducing the accounts receivable cycle; ultimately improving the MNO's operating liquidity and cash conversion cycle⁸. The reduction in accounts receivable is possible thanks to the real-time deduction of M-PESA commissions from customer m-wallet accounts and direct airtime purchases from the operator instead of airtime resellers.⁹

⁸ The cash conversion cycle measures the amount of time needed to sell inventory, collect receivables and pay suppliers/service providers.

⁹ In the case of Safaricom, airtime resellers earn a 6% commission on airtime sales.

Figure 6 - MMS impact on the MNO's working capital cycle



■ Conclusions

The MMS financial reporting framework and the M-PESA test-case presented in this paper are intended to provide the reader with a rudimentary understanding of the financial mechanics and operating structures of a mobile money business operated by an MNO.

While M-PESA appears to have become modestly profitable for Safaricom beginning in the 1Q09 (nearly two years after its launch), its market success in Kenya can be attributed to several factors not easily replicable by other operators in emerging markets.¹⁰ Nonetheless, we believe that many emerging market MNO will be forced to offer some type of

¹⁰ First and foremost, Safaricom had an 80% mobile market share in Kenya at the time of its M-PESA, giving enormous market power and leverage with existing airtime resellers and its budding MMS agent channel. Secondly, Safaricom benefited from an unusually supportive regulatory environment and an ineffectual banking lobby in Kenya.

mobile financial services in an effort to improve customer loyalty, particularly among the prepaid subscribers which usually account for the bulk of their customer.

While most MMS deployments are unlikely to be substantially profitable for MNO operating company in the medium term, net benefits for the operating company's working capital cycle should prove sustainable and cash flow positive over the long term.

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