Mobile Money

Africa's Force for Social Good

Bob Collymore

FOR decades, commodities ruled African economies. Oil, precious metals, and agricultural produce defined the continent's history and politics. These provided the backdrop for the continent's economic, political, and social growth.

But with the emergence and spread of the mobile phone, a new narrative is emerging. Today, mobile ecosystems are increasingly driving economic growth and job creation throughout the African continent.

In just over a decade, Africa has risen to become the world's second most connected region in terms of mobile subscriptions.

The continent has delivered the fastest growth in mobile subscribers in the world, which Ericsson projected in its 2015 Mobility Report would hit one billion subscriptions by now.

This surge in mobile penetration is having a profound economic and social impact. It has transformed lives in ways that have never been seen before.

According to a 2014 report from GSMA Intelligence, the research and analysis department of the GSMA telecoms association, the economic contribution of the mobile industry in sub-Saharan Africa stood at $102 billion—approximately 5.7 percent of the region's GDP. By 2020, this contribution is forecast to rise to $166 billion—the equivalent of 8 percent of expected GDP.

Alongside their direct economic impact, mobile and other transformative technologies, such as cloud computing, have broken down intra-Africa trade barriers by removing obstacles, increasing efficiency, and encouraging transparency.

These new technologies are enabling Africa to leapfrog some of the infrastructural challenges it faced previously, as well as eye a new facet of growth driven purely of its own initiative.

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Photo: Safaricom

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Nowhere is this more apparent than in Kenya, where mobile is literally carving out a new economic model.

Until the mid-1990s, Kenya was among the nations with the least teledensity in the world, where it took as long as a year to secure a phone line from the then state-owned operator. In those days, a one-minute local call would cost as much as five dollars on phones lines that were more often out of service than available for use. Kenya's liberalization of the telecom sector in 1998 paved the way for private sector investors to enter the market and create a paradigm shift in access.

This was in a country with a population of 30 million people and just 5,613 public payphones. Today, the story is quite different. The statistic I most like to quote is that there are now more mobile phones than toilets or water taps in Kenya.

Safaricom, a leading mobile operator in Kenya, has been a willing and active participant in driving this change over the last 15 years.

This has been in line with our company mission to transform lives. With over 25 million subscribers, the firm is listed on the Nairobi Securities Ex-

change. It provides over 200,000 customer touch points and offers over 100 different voice, data, financial services, and enterprise solutions for individuals, small businesses, and the government on a variety of platforms.

Safaricom has played a critical role in the mobile revolution that has driven the ubiquity of the mobile phone. Mobile as a technology has now become the connective tissue that drives Kenya's economy. This has allowed the country to 'leapfrog' traditional economic growth stages through the adoption of cellular and internet technologies.

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Of all the transformative cellular innovations, the most significant yet remains M-PESA—the most successful commercial mobile money transfer service of its kind anywhere in the world. M-PESA was pioneered by Safaricom. Launched in March 2007, M-PESA now has over 21 million customers who are served by over 85,000 agent outlets scattered countrywide. Currently, according to the World Bank, 93 percent of Kenyans are mobile phone users and 73 percent are active mobile money customers, and an additional 23 percent use mobile money at least once a day. Cumulatively, the value of person-to-person transactions is estimated at KSh4.2 trillion, or $41.2 billion.

Kenya is indeed a trailblazer in mobile money. Already, 80 percent of the world's mobile money transactions are happening in East Africa, mainly driven by Kenya, which is now the epicenter of mobile innovation. This has translated in up to 32 percent of the region's GDP (or about $125 million daily) being moved via mobile money—with projections for significant growth in the next few years. On the global front, mobile money is projected to become a $617 billion industry this year, according to technology research firm Gartner.

The story of M-PESA in Kenya starts in 2005, in a dusty town to the north of Nairobi called Thika, where a trial mobile phone loan service between female farmers discovered that there were possibilities for a more commercial application. The premise was simple: using SMS technology, users could exchange cash for electronic money (M-PESA), which could then be sent to other mobile phone users to redeem for cash.

M-PESA signed up 20,000 customers in the first month after it was launched; two million by the end of its first year; 10 million by its third birthday; and onto its current 21 million subscribers—representing over 80 percent of Kenya's adult population. While Kenya is still a cash-heavy economy, with over 90 percent of transactions being cash-based, over 98 percent of all mobile money transactions in Kenya are conducted through M-PESA. CBK reported that, in 2012, the equivalent of 43.5 percent of Kenya's GDP was transferred via M-PESA. At the moment, in addition to transacting locally, customers can also receive funds internationally from over 100 countries.

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M-PESA's strongest selling point has been the greater convenience, safety, speed, and lower costs of transferring cash that it provides. The introduction of lower bands and tariffs to meet the needs of our customers has led to an increased number of transactions. Currently, it is estimated that over eight million transactions are carried out daily via M-PESA.

The huge success that M-PESA has enjoyed over the years has been driven by a number of factors—most importantly its focus on the customer. This has consequently spawned innovation and the continuous improvement of new and existing products to address customer needs. Of key importance has been the language of communication on the service, which is simple and easy to understand (sometimes in the vernacular) by customers.

Another factor of success has been the partnership struck with other institutions, such as the Commercial Bank of Africa and KCB Group, as well as other institutions. These include more than 2,000 PayBill partners, 42,000 merchant outlets that accept M-PESA as a mode of payment, and over 35 banks that have now integrated to offer mobile banking services through M-PESA. Mobile banking is having a profound effect on the global financial services industry, according to KPMG's 2015 *Global Mobile Banking Report*.

The expansive countrywide M-PESA agent network (it costs up to $1.4 million to maintain), together with dedicated resources across all business units, has contributed to the service's growth. The regulatory framework has also been supportive, cultivating an enabling environment for the service to thrive.

Together, these factors have backed the emergence and spread of M-PESA, translating into a huge impact on the Kenyan economy. Take financial inclusion figures, for instance, which are reported to stand at 80 percent at the moment; but when mobile money is removed, the number drops to 23 percent.

When it emerged, backed by continuous innovation, M-PESA spawned other products such as M-Shwari, a mobile-based product that enables subscribers to save and access loans on their phones. In this way, it quickly solved one of Kenya's biggest challenges: access to finance. In contrast, Kenya has an estimated 500 bank branches, 500 post office branches, and 352 ATMs.

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Simply put, M-PESA has proven to be most adaptable. M-PESA is actively transforming lives. It has already moved beyond being a person-to-person transfer product to a platform that enables financial inclusion, and is now inspiring new ways to provide access to essential services.

M-PESA services pervades every sphere of life. It now includes person-to-person transfers, ATM withdrawals, Lipa Na M-PESA (payment for bills and purchases through PayBill and Buy Goods and Services), Bulk Payments, Bank to M-PESA transfers and vice versa, M-Ticketing, Lipa Karo, M-PESA Prepay Visa card, International Money Transfer (IMT), Lipa Na M-PESA Online, and M-Shwari.

M-PESA has the highest penetration among the formally employed, and the lowest among farmers, pastoralists, fishers, and dependents, according to research by Kenya's Financial Sector Deepening. The study indicates that in 2006, 40 percent were using hand delivery to send money upcountry, while 20 percent used the bus; by 2009, however, over 47 percent used M-PESA to send money to family and friends, while hand delivery dropped to 32 percent and bus delivery to 9 percent. A University of Nairobi study in western Kenya also found that women entrepreneurs who had access to a mobile deposit account invested 45 percent more in their businesses.

However, the truly transformative story about how M-PESA can change lives is best illustrated in areas like Daadab, which is home to one of the world's biggest refugee populations. For some of the over 300,000 residents from Somalia, the camp is the only home they have known for two generations. The traditional concept of bricks-and-mortar financial access is simply not feasible in a tented environment like a refugee camp.

Up until last year, the World Food Programme (WFP) conducted air drops to deliver aid and essential services to residents of the camp. With mobile connectivity in the area, they are now able to send aid via M-PESA, as the funds are sent directly to a beneficiary's phone. The solution allows for the funding organization to place restrictions on where the money is spent, introducing transparency and accountability for less than a dollar a day.

M-PESA has continued to innovate, leading to its deployment in a variety of sectors—from health and energy to agriculture. A number of applications have been developed using the service as a backbone.

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For instance, M-PESA has helped to increase access to energy. With less than a quarter of the population on the power grid, a significant part of Kenya remains in the dark. For a deposit of around $35, a company called M-KOPA gives M-PESA customers access to a solar panel system to install at their homes. They then top it up every day to the tune of around 45 cents in order to receive energy—creating a pay-as-you-go power model. In practical terms, M-KOPA allows young school children to do their homework using a real power source, and not a candle.

M-PESA has also facilitated the development of agriculture. This is more so amongst farmers who grow tea, which Kenya is famous for, as a cash crop. For the over 500,000 tea farmers across the country, getting paid for their crops used to mean travelling to the nearest urban center, queuing for hours, and finally receiving a hand-written piece of paper bearing instructions on how much they would be paid. We have since moved the entire payment service to M-PESA, allowing 66 factories across the country to access a cashless payment service that will boost efficiency in factory operations. The factories transact approximately $9.8 million annually through the Factory Door Sales and receive payments using M-PESA, which has also addressed long-standing concerns regarding the security of factory employees handling cash.

M-PESA is also facilitating the recently launched e-input subsidy management system that improves the disbursement of fertilizer subsidies, which enables over three to five million smallholder farmers growing food crops such as tea, coffee, and sugarcane to have improved access to

quality assured input supplies, which will contribute towards increase in yield and productivity. The farmers receive their subsidies from the government through M-PESA, allowing for quicker disbursement of funds and safer transactions.

In developing solutions across sectors, M-PESA is also transforming the health sector. A good example is M-Tiba, an Android-based mobile application that has automated Kenya's Ministry of Health Tuberculosis (TB) Patient Management System. The application manages the accounts of all patients suffering from TB by verifying whether the patients are taking their drugs as they should, as well as checking in at all facilities that treat TB across the country. M-PESA allows facilities and patients to access shared wallets through which payments for medicines and other supplies can be processed, creating a closed loop and secure system.

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After just nine years in operation, M-PESA is already inspiring a wave of new thinking about payments across the world. According to PricewaterhouseCoopers' *18th Annual Global CEO Survey* (2015), the majority of CEOs of banking institutions (estimated at 93 percent) in Africa see mobile technologies as critical to the success of their business (higher than the cross-industry average of 81 percent). In Africa, payment systems and lending activities have emerged outside traditional banking structures, led by mobile phone operators.

Ghana recently became the latest country into which M-PESA has expanded—and the last of the African countries in which Vodafone (which holds a 40 percent stake in Safaricom) has a presence. Aside from Kenya, the mobile money service is already in Tanzania, South Africa, Lesotho, the Democratic Republic of Congo, Egypt, and Mozambique. Globally, M-PESA has been introduced to 11 countries, including Romania, Albania, and India.

The M-PESA system is also finding use outside the Vodafone/Safaricom network. In Afghanistan, an M-PESA variant is being used to pay Afghan policemen in Wardak Province. When, for the first time, the Afghan officers' wages weren't paid in cash, they were shocked at the high amounts they received, as there was no skimming by their superiors, who had been stealing about 30 percent of the money. In addition, because of the difficulties with security in the country—which sometimes made independent verification of records difficult—the

paper-based system enabled some users to receive pay for bribes. Using the mobile payment system also allowed them to weed out ghost workers, who benefitted from the previously used paper system.

In Ecuador, the Sistema de Dinero Electrónico—another M-PESA variant—has been adopted by the government to reduce its transaction costs. Mobile money is not a foreign concept in Japan or Korea either, where mobile phones have been used for payments for almost a decade. Payment services are often a standard feature of handsets there. Last year, one out of six Japanese users bought something in a shop using a mobile phone. People also use the system to pay bills and transit fares; businesses use it to funnel loyalty rewards to customers.

The most logical thought for many would be to consider what the future holds for M-PESA. Based on the successes already outlined, it would be easy to make the case for a new currency delivered via mobile phones, such as M-PESA. However, despite the mind-boggling figures, M-PESA still lags behind cash—with 80 percent of transactions in Kenya still being carried out in hard currency. But the seeds of new financial order could just be at hand.

History is replete with attempts to develop new currencies. In the thirteenth century, Chinese emperor Kublai Khan (better known in China as Emperor Shengde Shengong Wenwu) proposed a radical idea: he thought that money—in the form of seashells or gold coins—was valuable only if people believed in it. He knew that the different regions of China were issuing their own coins, which would make trade within his empire more difficult. So the emperor created a new currency based on paper money. By decreeing that it had value, his subjects believed that it did. His paper money not only provided a common currency for his empire, but was also far superior to gold and silver coins for an obvious reason: it was lighter. Being lighter, paper money made trade faster.

In M-PESA, we have the seeds of an even lighter currency format that has already started building trust. M-PESA also adds value by lowering the cost of exchange. A recent survey by the U.S. Federal Reserve Bank found that physical currency turns over 55 times per year, or about once a week.

When compared to the over eight million transactions a day that M-PESA handles within a much smaller population pool, transiting to an almost costless electronic payment system begins to make sense. In short, having a reliable, cheap, and trustworthy method of exchanging value has demonstrated its ability to build new economic models and make communities safer. It is the basis for increased access to financial services and the platform for a new era of currency.

In its bid to expand its reach and become more prevalent as a payment solution in Kenya, M-PESA could take a note from existing solutions, such as the traditional charge card used in the banking sector. We're thinking about a Near-Field solution that merges the convenience of M-PESA with a card; it could push Kenya to adopt card-based payment solutions.

This is similar to products being rolled out by Google Wallet, Verizon, AT&T, and T-Mobile. Near-Field Communications (NFC) could also enable M-PESA users to simply wave their phones at terminals in order to withdraw money or pay for goods and services.

In the same vein, M-PESA could take advantage of Quick Response (QR) codes. As more phones are produced with inbuilt cameras as a standard feature, they are thus able to scan QR codes. This technology could be used in the reverse to enable customers to display unique QR codes on their phone, which could then be scanned at the point of sale.

This does not mean, however, that the future of electronic currency is already here. Bitcoin, whose popularity was growing before its credibility took a hit with the spectacular collapse of its largest exchange, will likely not dominate the world as a virtual currency in a quarter century. However, there is no doubt that other forms of digitized money will arise because of the attraction of lowered cost of currency.

In coming to the end of this essay for *Horizons*, I would like to conclude with a few thoughts on the one frontier that has, as yet, remained largely untapped: the human body.

Already, there is ongoing work at Fujitsu Laboratories in Japan to develop a palm-vein solution that would allow sensors to collect data from fingerprints. The Ogaki Kyoritsu Bank in Japan also plans to introduce an ATM system that uses Fujitsu's technology. Customers who enroll will have no ATM card; instead they will use birth date, palm, and a PIN to access their accounts. In exchange for this convenience, customers have to give up some privacy: the absence of a bank card means that all those customer templates will be stored in a central database.

A number of banks have already adopted biometric systems that tap into the human body. Using one-to-one matching, banks in Turkey and Brazil have gone so far as to do away with PIN codes.

What is certain, therefore, is that technological innovation will remain the order of the day, whether with regards to currency or many of the other products that the financial services industry can be expected to roll out in the time ahead.