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On the new frontier of mobile and money in the developing world: mobile phones, M-PESA, and Kenya

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Abstract

Today, nearly six billion of the world's seven billion people have mobile phones (UN ITU, 2013:1). As this technology has grown in popularity in the developing world, its potential capacity as a development tool has been explored by international agencies, governments, and businesses. While time will reveal the long-term effectiveness and morality of for-profit development ventures, M-PESA stands as an early example of aid agency, government, and commercial cooperation. Its capacity as a program to adapt and change to best suit the needs of its users, and its ability to overcome the many challenges to its success, serve as a precedent for development projects to come.

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Introduction

Today, nearly six billion of the world's seven billion people have mobile phones (International Telecommunication Union, 2013, p. 1). As this technology has grown in popularity in the developing world, its potential capacity as a development tool has been explored by international agencies, governments, and businesses. This article will seek to examine one such initiative, M-PESA—the SMS-based money transfer system in Kenya—exploring its origins, success, outcomes, and its greater consequences for development.

Mobile Phone Access

Although the data on mobile phone usage and ownership in sub-Saharan Africa remains incomplete (James and Versteeg, 2007, p. 117), much of the recent data points to a high penetration of the market (Omwansa, 2009, p. 111) and future projections estimate 97 per cent SIM penetration in Africa by 2017 (GSMA, 2013, p. 18). Low estimates report that over fifty per cent of adults own mobile phones, which is over a 150 million sub-Saharan Africans (Tortora and Rheault, 2011). Africa as a whole is the fastest expanding market in the world (Carmody, 2013, p. 24), with some 500 million people in 2012 using mobile phones (Rotberg and Aker, 2013, p. 111). The number of users is difficult to pin down because of the distinct way in which many Africans engage with this technology and the potential for inaccurate interpretation of available data. Firstly, most of the data available measures mobile subscriptions, and may therefore "overstate true penetration due to lapsed and duplicate subscriptions" (United Nations, 2010, p. 16) and, unlike the concept that most people in the developed world hold for mobile phone usage, using a phone does not necessarily equate to owning one. Many people in Africa share their phones, either by using their own SIM cards in a shared device or by buying minutes from neighbours (James and Versteeg, 2007, p. 120).

This penetration of the technology is critical for development in areas where landlines are uncommon, like sub-Saharan Africa. A ten-per cent increase in mobile phone users in a developing country can be correlated to an increase in GDP of over 0.5% (James and Versteeg, 2007, p. 117). The "real break-through" of mobile phones in Africa has been the recent expansion of pre-paid options for service, which has created an opportunity for access for those who could not previously afford a monthly service plan or lacked a bank account (James and Versteeg, 2007, p. 119). This accessibility has "allowed millions of

Africans to leap-frog the landline en route to 21st century connectivity" (Jack, Suri, and Townsend, 2010, pp. 85-6; Kapoor, Morduch, and Ravi, 2007, p. 82).

The increasing popularity of mobile phones in the developing world has led many to propose their potential to provide other services, including banking (Manson, 2013). There remains an "unmet demand" for inexpensive banking in much of sub-Saharan Africa, a demand that could be met by a mobile system (Jack, Suri, and Sloan, 2010, p. 19; Kimenyi and Ndung'u, 2009, p. 1; Donovan, 2012, p. 2650). The potential was first recognised in 2006, when researchers observed that "mobile phone customers had built their own informal money-transfer system, buying minutes in one location and texting them to another, where they were redeemed for cash" (Greely and Ombok, 2011, p. 55). This money transfer system using minutes as currency could be used to transfer money over large distances for individual use, to send money to family, or to purchase goods or services (Jack, Suri, and Sloan, 2010, p. 2). In 2006, few would have guessed that within just a few years, almost fifty-per cent of adults in Kenya would have "become regular users of a mobile-phone-based electronic payments system which processes more transactions domestically than Western Union does globally" (Mas and Ng'weno, 2010, pp. 352-3; The Economist, 2013).

M-PESA

Although M-PESA today is a successful commercial service, its beginnings more resemble those of a development project. Like so many missions aiming to provide poverty relief and economic development in recent years, the project was conceived of by a national agency in the developed world. In 2003 at the World Summit for Sustainable Development, the UK *Department for International Development* (DFID) reached out to a representative of *Vodafone* and offered a potential partnership. Believing that low returns were the root cause of the lack of interest in corporate "international poverty alleviation programs," DFID conceived that if it could decrease the initial required funds for a project, it might become an attractive venture for successful UK companies, who could utilise their ingenuity and existing infrastructure for development programs (Buku and Meredith, 2013, p. 385). *Vodafone* eventually secured the DFID proposal whereby DFID would help to provide the start-up funds for the proposed project. *Vodafone* coordinated with Kenyan subsidiary *Safaricom* and the Kenyan government to establish an emoney system, called M-PESA (Buku and Meredith, 2013, pp. 385-6; Mas and Ng'weno, 2010, p. 253; Omwansa, 2009, p. 110). Officially open to the public in 2007 by *Safaricom*, M-PESA was branded as a "short message service (SMS) money transfer system" which allowed for Kenyans to "deposit, send, and withdraw funds from a virtual account on their cell phones" (Jack, Suri, and Townsend, 2010, p. 83).

However, the project did not begin as a money transfer system. In October 2005, *Vodafone* and *Safaricom* piloted the program with a microfinance NGO in Kenya. The original concept for M-PESA was to provide a method via mobile phones for lenders to distribute their loans and for lendees to send payments back to the lenders (Buku and Meredith, 2013, p. 386). The disbursement and repayment option was primarily a failure

and it "became clear from the M-PESA pilot was that it would not primarily be used as a means to repay microloans" (Buku and Meredith, 2013, p. 388). In addition to payments to the microfinance institution, the pilot participants used the system in unintended ways, including as a payment system for goods or services for businesses and individuals, as a virtual safe for cash when physical banks were unavailable, as a bank account allowing people to safely travel by "depositing cash at one end, and withdrawing it a few hours later at the other" and as a money transfer system for family (Buku and Meredith, 2013, p. 387).

Realising the ingenuity of its consumers, *Safaricom* refocused the M-PESA project as a money transfer system, outside of both the microfinance industry and the formal banking system. In March 2007, *Safaricom* premiered M-PESA in Kenya and branded it as a service which "allows users to deposit money into accounts linked to their cell phones, to send balances using SMS technology to other users (including sellers of goods and services), and to redeem deposits for regular money." *Safaricom* would receive fees for withdrawals and transfers, but keep deposits free (Jack, Suri, and Townsend, 2010, p. 86). The transfer service was quickly utilised for not only remittances, but also as an informal savings account and an electronic payment system for bills and for goods and services (Jack, Suri, and Townsend, 2010, p. 83; Eijkman, Kendall, and Mas, 2009, p. 220; Mas, Radcliffe, and the Bill and Melinda Gates Foundation, 2010, p. 7).

The system's rapid and sustained success can be attributed to a number of characteristics. Firstly, Safaricom invested great effort in establishing a "broad and dense network of over 16,000 agents across Kenya," making it not only convenient, but also providing consumers a local face for the service (Jack, Suri, and Townsend, 2010, p. 84; Mas, 2009, p. 72). However, relying upon agents makes the management of cash flow potentially difficult. Occasionally, vendors turn away customers because they either have no electronic money or cash available to disburse (Jack, Suri, and Townsend, 2010, p. 117). Recently, M-PESA collaborated with Pesa Point, a "large ATM service provider" to provide another method for customer withdrawals (Buku and Meredith, 2013, p. 391) which will attempt to alleviate any temporary vendor cash shortages. Additionally, M-PESA is accessible to a large portion of the Kenyan population, especially the poor, because users are not required to have a bank account (Jack, Suri, and Townsend, 2010, p. 83-4). The increasing use of M-PESA by the poor is illustrated by the decreasing typical size of transactions as its popularity has grown (Jack, Suri, and Townsend, 2010, p. 91). Affordability and accessibility are crucial to the success of M-PESA in Kenya, as both poverty and unemployment rates remain very high (Buku and Meredith, 2013, p. 384).

Challenges and Responses

M-PESA faced a number of formidable challenges to its success. Firstly, an electronic transfer system could only be successful if Kenya had an established mobile phone market with a high penetration rate. The introduction of prepaid options, combined with the demographics of the country, generated the necessary market for the service. "It

would have been difficult for *Vodafone* to move M-PESA past the conceptualisation stage without the financial support and contacts provided by DFID" (Morawczynski, 2011, p. 197), demonstrating the merit of DFID's involvement. With both the required consumer-base and start-up funds, DFID and *Vodafone* envisioned M-PESA as a microfinance distribution and repayment method, an idea that was quickly abandoned after users completely altered the way in which it was used. Luckily, both DFID and *Vodafone* recognised the value of M-PESA as designed by the users and instead of discarding the microfinance program as a failure, they re-imagined its function. Furthermore, the pilot revealed that while a market existed for the service, "consumer training" would be an obstacle for success (Buku and Meredith, 2013, p. 388). *Safaricom* prudently introduced a national campaign to "cement trust and familiarity with the brand" at M-PESA's launch. Not only did they inundate television and radio, but also employed "traveling roadshows that provided customer training in the use of mobile phone technology and the M-PESA service" (Buku and Meredith, 2013, p. 389). M-PESA's success was not based solely on the merit of the concept, but on the ability of its architects to adapt and overcome.

Development Outcomes

M-PESA is "widely viewed as a success story to be emulated across the developing world" (Jack, Suri, and Townsend, 2010, p. 83). Kenya, with a population of around 39 million, is a good example of the average African nation, making it a potential model for others in the region (Buku and Meredith, 2013, p. 384). By 2009, M-PESA had reached nearly "65 per cent of Kenyan households" (Buku and Meredith, 2013, p. 379). The UK's DFID, *Vodafone*, *Safaricom* and the Kenyan government successfully cooperated to create not only a profitable business, but also to provide a much needed service for Kenyans. M-PESA has the potential to greatly affect the Kenyan poor on a number of fronts, including savings, increased incomes, and female empowerment.

M-PESA can act as a cashless repository, and has the potential to "increase net household savings" (Jack, Suri, and Sloan, 2010, p. 10; Petronzio, 2013). Although an imperfect solution, M-PESA is used as an informal savings mechanism. "A 2009 study by William Jack of *Georgetown University* and Tavneet Suri of *Massachusetts Institute of Technology* found that more than three-quarters of M-PESA's customers use the service to save" (Greely and Ombok, 2011, p. 56). Though not designed as a savings account, M-PESA does not require that deposits be transferred or withdrawn promptly, allowing users to slowly accrue small savings (Jack, Suri, and Sloan, 2010, p. 16). As a savings mechanism, M-PESA meets a necessary middle ground for many users. It is less expensive and more convenient than a traditional bank account, but far more protected than cash kept at home (Morawczynski, 2011, p. 203; Plyler, Hass, and Nagarajan, 2012, p. 3).

Incomes, especially of the remittance-dependent rural poor, may be effectively increased as a result of M-PESA adoption. Unlike previously available options, M-PESA increased household incomes by 5-30% because of the decreased expenses of transferring money.

M-PESA remittances no longer required that the individual, friend, or family member physically take cash to the rural recipients. Instead, for the small transaction fee, "money could be sent from anywhere, and at anytime, as long as there was a balance in the account." Recipients also no longer had to travel long distances to receive funds, but could visit any nearby M-PESA agent (Morawczynski, 2011, p. 196).

M-PESA may also have the unintentional consequence of empowering women; "especially among poorer segments of the population, remittances and transfers received (and sent) via M-PESA are less visible than those transmitted by other means, such as delivery by a friend or relative" (Jack, Suri, and Sloan, 2010, p. 11). The invisibility and low expense of M-PESA may increase the likelihood of transfers from friends and family to female recipients. The use of M-PESA may allow women to thwart the complete control of finances by male family members (Morawczynski, 2011, p. 213). Women may be able to then preserve a greater portion of the received transfers, which could have repercussions on the "allocation of household spending" (Jack, Suri, and Sloan, 2010, p. 11).

Remittances and money transfers within Kenya have a particularly important impact on not only the economic aspects of Kenyans' lives, but also on the social structure and familial constructs in the region. Traditional gender roles are reinforced when men of the family move to urban areas for employment—remaining the primary form of financial support—while their families stay in rural villages and manage domestic and village responsibilities (Morawczynski, 2011, p. 105). However, this split family system does have the potential to strain familial bonds and relationships. While the option of remittances being sent electronically and cheaply may increase their frequency, it negates the need for the funds to be delivered in person, and decreases the likelihood that the men return to their home villages as often. Additionally, the increased independence of women because of their usage of M-PESA weakens these existing relationships, decreasing their dependence on their urban, working male family members, and potentially upsetting the 'traditional' system. The effects of M-PESA on the pre-existing remittance culture are complex, both reinforcing familial and social trends and pushing them to even further extremes. Whether this 'push' is to the benefit of the Kenyan people is unknown.

Various studies have concluded that M-PESA users have begun to save, to increase incomes, and to empower women in household finances, yet, the question remains of how development is being represented by this service. Not only is *Safaricom* a subsidiary of *Vodafone*, a UK company, but also M-PESA was developed using funds from UK DFID. While this is not inherently negative, it does serve as an example of Western intervention in the developing world. The project itself, in promoting technological advancements of the modern world—mobile phones and electronic money—highlights the discourse about the relationship between, and the definition of, modernity and development. While these advancements definitively can be argued to provide a much needed positive effect, it is positive in the eyes of the developed, Western world, where economic growth through increased incomes of the poor, increased monetary savings, and female empowerment in the household are considered integral steps within the development process. Not only is

this idea of development foreign, but so, too, are the mobile phones and the company supplying the service (Carmody, 2013, p. 34).

Representation of Success

Global media coverage of M-PESA has been strong, with many more news pieces and magazine articles available than academic articles and research. While this can be partially accounted for by the recency of M-PESA's implementation, it is nevertheless a point of interest. The media often portrays the win-win of M-PESA: DFID, *Vodafone*, *Safaricom* and the Kenyan government successfully worked together to produce a popular, profitable, and much-needed service (Ngugi, Pelowski, and Ogembo, 2012, p. 12). As a wanted service for development, it has the potential to impact trade, with positive ripple effects throughout the economy (Jack, Suri, and Sloan, 2010, p. 10; Morawczynski and Miscione, 2008, p. 289). Unlike many development projects, the central bank "was consulted from the inception of the idea, and has been actively involved in the development of M-PESA since its earliest pilot stages in 2004" (Mas and Ng'weno, 2010, p. 355). Hailed as not only a developmental success, M-PESA is also a triumph for international, governmental and commercial cooperation (Lucci, 2012, p. 8). However, what the media fails to highlight is just as insightful, and rather unfortunate. M-PESA is advertised as a *Safaricom* initiative. While this is true, it would not have come to fruition without the ingenuity and funding of DFID and the cooperation of *Vodafone*. The successful collaboration between the aid agency and commercial business should be emphasised as a potential example to follow in future development projects. The vast resources of aid agencies and businesses could be put to good use if given the opportunity to work together. Additionally, the failed initial purpose of M-PESA as a microfinance tool is neglected. Instead of featuring the imagination and resourcefulness of the Kenyans in the pilot and branding M-PESA as a concept that the poor made their own, it is usually characterised as launching in 2007 fully formed by Safaricom as a money transfer service. While Safaricom wisely adapted the service, the impact that the users themselves have had on M-PESA's success should be emphasised.

Finally, media representations lack any interrogation about M-PESA's commercial nature. M-PESA, as a business, challenges the 'traditional' view of a development project. Unlike most development programs, M-PESA is intrinsically interested in making a profit and will price its services at the highest point that people are willing to pay. It is not inherently interested in development, nor in the well being of the Kenyan people. In this case it may have been M-PESA's very nature as a commercial entity that aided its success. Safaricom's incentive to educate the public about the program and its flexibility to respond rapidly to customers needs may not have existed had it been a charitable body. It is unknown whether a non-profit venture would have been as successful at overcoming and adapting to challenges. But ethical concerns remain. This is not to say that M-PESA cannot or should not have a developmental effect on Kenya's poor and unempowered, but raises the question that needs to be asked of other such cooperative ventures today and in the future: can a for-profit company be an ethical and effective tool for development? A number of commercial projects that specifically target

the poor have proven to be both profitable and provide favourable developmental outcomes (see Prahalad, 2009), but criticisms about the potential pitfalls of such situations remain (see Cross and Street, 2009). Many in the development sphere conclude that future successes hinge on the collective support and creativity of the private sector, not only international organisations, donors, and governments (Lucci, 2012, p. 1) and time will tell if such endeavours prove fruitful for both business and development.

Conclusions

As profitable business for *Safaricom*, M-PESA has rapidly become a popular means to do business day to day, including everything from receiving pay and purchasing goods to sending remittances home and saving money. By transforming economic linkages between individuals, M-PESA is spurring economic development by removing barriers like cost and location, to the benefit of the consumers' well being (Jack, Suri, and Townsend, 2010, p. 98). "The experience of M-PESA demonstrates how powerful a payment network offering convenience at an affordable cost can be" (Mas and Ng'weno, 2010, p. 367). Despite its economic and social effects, the future of mobile banking hinges on the attitudes and recognised value of its users, users who are liable to not only consist of educated, urban youth, but also the poorly educated, those in rural communities, and the elderly (Mburu, 2012, p. 222). However, this is the true brilliance of mobile solutions—accessibility—that could allow technologies like M-PESA to act as a truly revolutionising force, despite their for-profit nature.

The popularity of mobile phones in the developing world, especially amongst the poor, is creating the facility to "affect lasting social and economic change" (Rotberg and Aker, 2013, p. 114). While time will reveal the long-term effectiveness and morality of for-profit development ventures, M-PESA will stand as an early example of aid agency, government, and commercial cooperation. Its capacity as a program to adapt and change to best suit the needs of its users, and its ability to overcome the many challenges to its success, should serve as a precedent for development projects to come.

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