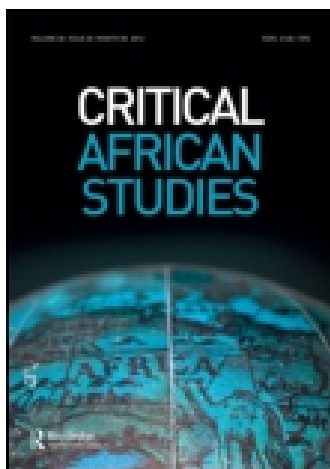


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Sellers on the street: the human infrastructure of the mobile phone network in Kigali, Rwanda

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Sellers on the street: the human infrastructure of the mobile phone network in Kigali, Rwanda

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This paper looks in detail at the social and economic background of mobile airtime sellers on the streets of Kigali. While informal networks have proved to be an invaluable resource for large multinational telecommunication companies seeking to penetrate African markets, changing technological capabilities may soon displace them. As Rwanda develops its Internet and payment systems, companies and institutions hope to provide airtime and services directly. The paper draws on interviews with airtime sellers in three neighbourhoods of Kigali to ask what this temporary source of employment has done to their long-term career prospects. While the Rwandan government information and communication technology (ICT) strategy has hereto focused on high-end ICT and business process outsourcing, this paper uses the experiences of airtime sellers to advocate for a more bottom-up approach to entrepreneurship and economic development in Rwanda. We stress that planners and researchers need to think more critically about value chains at the bottom of the pyramid, not just in terms of how informal networks can be used as temporary appendages to further the reach of formal multinational corporations, but how these new kinds of chains and networks can be re-engineered to provide permanent and sustainable livelihoods to workers and business owners at the base of the economy.

Keywords: labour; Rwanda; ICT; outsourcing; developmental state

Introduction

In 2001, Frederick Cooper wrote: ‘Africa is filled with areas where international investors do not go, even when there are minerals that would repay investor’s efforts. To get to such places requires not deregulation, but institutions and networks capable of getting there’ (Cooper 2001, 207). This paper examines the institutions and networks that have allowed multinational telecommunication companies to access Rwanda’s markets. In contrast with the older patterns of capital investment such as mining, agriculture or manufacturing, telecommunication requires both heavy infrastructural investment and the uptake of that infrastructure by the population. Thus unlike former patterns of enclave growth, telecommunication development requires making people customers and making territories ‘legible’ markets (Scott 1998; Ferguson 2005).

In Rwanda, telecommunications development has incorporated both institution-building and informal labour. Through its various arms, the Government of Rwanda (henceforth, GoR) has intervened to attract multinational companies into the country to build a foundation for an

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information and communication technology (ICT)-enabled knowledge-based economy. It has done so through building and managing physical infrastructure, financing the entrance of multinational companies, buying bulk bandwidth capacity from international providers and re-engineering the physical and political environment to make it more attractive to foreign investment. At the same time, the GoR has allowed multinational companies to use informal labour to penetrate the market, creating fleeting opportunities for work and capital accumulation at the bottom of the pyramid (BOP). The sanctioned use of informal labour by such corporations stands in sharp contrast with the treatment of independent street hawkers and other informal groups who are forbidden from engaging in commercial activities. While the GoR emphasizes entrepreneurship as a plank in its development programmes and discourse, strategy currently stipulates that entrepreneurship must fit within the strategies and interests of government and large-scale business.

With the growing awareness of the developmental potential of 'big data', coupled with the desire by telecommunication companies to shift towards enhanced customer service, African telecommunications sectors are gravitating towards a more disintermediated form of airtime distribution. This shift towards 'big data' is desirable for companies wishing to extend services but it is also strategic for young ICT entrepreneurs seeking to monetize applications and for governments wishing to target citizens for security, surveillance and taxation purposes. Thus while unregulated sellers helped telecommunication companies to achieve their rapid rates of penetration at the dawn of mobile telecommunications, they may not be so suitable for the next stage in its development. Some companies have already begun the transition away from network expansion towards enhanced customer service and data services. In Rwanda, this transition was described in interviews with a range of companies, including the large telecoms, MTN, Tigo and Airtel and by managers of local start-ups, such as SMS Media, Cyuda, Pivot Access and Vantage Technologies.

While the sellers themselves may not know it, a change is coming and they may soon need to find other types of employment. This paper focuses on that trajectory, sharing the results of a street survey conducted with 27 airtime sellers on the streets of Kigali in the summer of 2012. We first document the gains accrued by the individuals involved and then go on to query whether these gains will have lasting effects on social mobility.

Section one situates the position of airtime sellers within a broader understanding of the GoR's economic strategy in relation to ICTs. As the GoR seeks to attract international investment and transform the country into an ICT hub, it must increase the penetration of the telecommunications network, both through infrastructure and through the consumption of ICTs by ordinary Rwandans. In this regard, informally contracted airtime sellers have played a pivotal role, alongside massive government efforts to build infrastructure and create favourable formal institutions for investment and growth.

Section two moves on to describe the social and economic background of the street sellers interviewed by the authors. It reveals their relatively high earnings, their higher use of ICTs and their more active participation in saving schemes as compared to the wider Rwandan population. In short, informalized airtime distribution has provided real short-term benefits to those involved.

Section three describes respondents' plans for the future. In contrast to other studies of poor youth in Rwanda (Sommers 2012), airtime sellers are overwhelmingly positive about their futures. At the same time, most seemed unaware of shifting company and government strategies away from informal distribution networks towards digital distribution. In this final Section, we describe the tensions between the GoR's top-down economic development plans and the economic realities faced by ordinary Rwandans.

The GoR's style of development has been characterized by others (Booth and Golooba-Mutebi 2012; Kelsall 2013) as a 'developmental patrimonial state' model, with a highly

disciplined technocracy implementing a state-led economic transformation in collaboration with party-statal and foreign capital. However useful this analysis is for understanding political commitment to development, it ignores how such large-scale investment (both multinational and domestic) affects ordinary Rwandans and informal economic livelihoods on the ground. As scholars like Purdekova (2011, 2012) have shown, this model has often involved heavy-handed social engineering at the level of everyday Rwandan society. In order to transform the economic landscape, the GoR has stepped up control over informal economic activities (Rollason 2013) and has attempted to re-orient the political imaginations of ordinary Rwandans away from the dangerous rhetoric of political tribalism that underscored the genocide to new ideas about entrepreneurship and self-sufficiency (Mann and Berry 2014). However as we will show, Rwandans are supposed to become entrepreneurs but not in ways that might imperil the wider strategy of attracting foreign investment.

Rwandan government strategy for enabling ICT-led growth has hereto focused on high-end software and application development and on business process outsourcing (BPO). It seems unclear how low-income and formally less educated people like the men and women surveyed in this paper are to be included. In this sense, the paper urges Rwandan policy-makers to more actively engage with ordinary citizens in their developmental plans.

This work is based on collaborative research conducted by researchers from the Rwandan ICT Chambers and the Oxford Internet Institute over the summer of 2012. The research took place within two wider projects and reflects the two disciplinary backgrounds of the authors. The ICT Chambers is in the process of developing a methodology for measuring the impact of ICTs on the economy of Rwanda. Elie Nzayisenga is an economist by training and the project therefore sought to quantify the impact of ICTs on local livelihoods. Second, the Oxford Internet Institute, in partnership with the University of Nairobi and the National University of Rwanda, is conducting research on the impact of fibre optic Internet connectivity on value chains in the tea, tourism and 'information-based services' sectors in Kenya and Rwanda. Laura Mann is a sociologist and Africanist by training, and this project used more qualitative methods. Fifty interviews were conducted with Rwandan business managers and policy-makers engaged in the ICT and BPO sectors of the Rwandan economy (50 interviews were also conducted in Kenya). This paper draws on some of these interviews to provide background to the wider development strategy of the GoR.

Together, the two authors interviewed 27 mobile airtime sellers in 3 neighbourhoods of Rwanda's capital city, Kigali: Nyabugogo, Nyamirambo and Kiyovu in Kigali Town centre. These interviews sought to uncover how the expansion of mobile telephony has affected the lives and futures of these informal workers. These neighbourhoods were chosen due to their different socio-economic conditions. Nyabugogo is a busy taxi and bus intersection near the centre of the town. There are also a number of markets in the vicinity and therefore a high level of daily traffic. Nyamirambo is a low-income residential neighbourhood in the southwest corner of the city. It is the most diverse of all Kigali neighbourhoods and houses the majority of the city's Muslim population. In contrast, Kiyovu is the one of the wealthiest areas of Kigali. Stretching from Union Trade Centre (Rujugiro Building) in the centre of town to Circle Sportif, this area includes high-end residential properties, President Kagame's house (Urugwiro village), Kigali Institute of Science and Technology (KIST) and the offices of many international businesses and Non-governmental organisations. The area's informal section has recently been the target of government efforts to clear the informal slum housing in the capital (Manirakiza 2012). Together these three areas provide an opportunity to better understand the economic and social profiles of airtime sellers in different neighbourhoods of Kigali.

In all three areas, respondents were asked a series of questions, detailing their economic and social backgrounds, their personal use of ICTs, their everyday sales activities and their plans for

the future.¹ The interviews were conducted in Kinyarwanda out on the streets where the sellers worked. The researchers took time to explain the purpose of the survey and to ask respondents for informed consent. By and large, individuals were happy to take part and most gave half an hour to an hour of their time to answer the questions. For all respondents, it was the first time they had been included in an economic survey. As always, there are some limitations. The sample size is relatively small and restricted to Kigali and unlike Rollason's (2013) long-term ethnographic study of motorcycle taxi drivers, our fieldwork involved a one-off survey. There would no doubt be differences between urban and rural environments and if we had conducted longer term work. Nevertheless, this survey should be received as the first explorative step in understanding the human component of the mobile phone infrastructure and the effect that this informal employment has had on individual livelihoods. As such, further studies are most welcome.

While informal labour has become a key resource for multinationals seeking to access African consumers, it is up to governments like Rwanda's to ensure that the involvement of such companies has lasting and sustainable impacts on the economic and social development of the population. Do these workers represent the necessary but disposable appendages of ICT growth in Africa? Or will they (and their leaders) find new ways to re-insert themselves in future economic configurations?

Planned markets

Rwanda has witnessed a dramatic transformation in its digital infrastructure over the past 10 years. This change has taken place within the context of what the government of Rwanda and its developmental partners have described as stable and continuous gross domestic product growth reaching 8.0% in 2012 (World Bank 2013).² This 'digital transformation' is not the result of a 'natural' diffusion of ICTs, but rather a very purposeful and strategic attempt on the part of the GoR to rewire the country to bring about an economic transformation (Government of Rwanda 2012a).

With its small and predominantly poor population, the country was not initially attractive to international companies seeking new markets. To compensate, the GoR, through the party-affiliated company, Tri-Star Investment, helped fund the entrance of the South African telecommunication company, MTN, into the country (Booth and Golooba-Mutebi 2012; Kelsall 2013). In the words of Tim Kelsall:

Tri-Star contributed to a demonstration effect and learning experience in which one of the beneficiaries was an international firm. It thereby ensured not only that Rwanda entered the world of mobile telephony earlier than it would otherwise have done, but also that the network that was established was at least partly owned by domestic capital. (Kelsall 2013, 129)

This use of government or party funding to attract the participation of 'private' investment is common across other sectors of the economy and reflects the GoR's particular brand of developmentalism. Booth and Golooba-Mutebi (2012) and Kelsall (2013) have argued that the experience of Rwanda is best understood through the concept of 'developmental patrimonialism', a concept adapted from the work of Mushtaq Khan in relation to Asian development (Khan and Sundaram 2000). Khan claims that given the right conditions, rent-seeking or patrimonialism, can promote productive, long-term development by ensuring support for economic development from strategic partners in the private sector. In addition to the GoR's stated commitments to macroeconomic stability, strong investment in education and infrastructure and the creation of a 'business friendly environment,' Booth and Golooba-Mutebi have shown how the GoR has identified crucial sectors and then allowed 'party-statalts' to accrue rents and jump-start growth in these areas. The case of MTN mentioned above is a case in point. Thus while the GoR continually asserts

that private enterprise and entrepreneurship are at the heart of the country's growth, government intervention plays a strong role.

Almost all of the country (99.79%) has now been covered by mobile telephone networks with a subscriber base of 5,155,697 as of September 2012 (or 48.1% of the population) (RDB 2013). By the end of 2016, the Rwanda Development Board (RDB) projects this number to expand to 7,437,196. While MTN still dominates, two other companies, Tigo and Airtel have since entered the market. A fourth company and the former parastatal, Rwandatel is currently experiencing financial difficulties and its future is uncertain.

Internet penetration has also expanded from less than 1% in 2000 to 8% in 2012. In order to boost Internet penetration in all parts of the country, the GoR's RDB has laid a national fibre optic backbone and linked up the capital city through the Kigali Metropolitan Network. This active development of fibre optic by the GoR stands in contrast to Internet penetration in Kenya, where the government has taken a much less active role and coverage is thus concentrated around the coast and major cities. Similarly, when the RDB discovered that there was a shortage of international bandwidth and that smaller companies (that were competitors of MTN) could not effectively negotiate access to international connectivity, the GoR intervened once more to buy bulk capacity from international suppliers at wholesale rates for redistribution within the country. It has given responsibility over this Internet infrastructure and bandwidth supply to Broadband Systems Corporation (BSC), a private company in which the GoR is a majority shareholder. These interventions have made it possible for smaller Internet Service Providers to enter the market, particularly in areas with lower demand and have slashed wholesale bandwidth costs by 75% (Government of Rwanda 2012b). BSC is also establishing data centres and providing cloud services to serve national and international clients.

The GoR was also instrumental in convincing the international payment company Visa to choose Rwanda as its African headquarters and research base. While mobile money uptake is still low and most poor Rwandans still use low-denomination scratch cards for airtime, those in government and the private sector expect a mobile money transformation to take place in the coming years. In 2011, Visa launched the Rwanda Integrated Payments Processing System, providing a digital infrastructure for electronic payments and commerce within the country (Crisafulli and Redmond 2012). Since then, this system has been integrated and harmonized with wider regional payment systems such as the East African Economic Community's (EAEC), Common Market Protocol and the Common Market for Eastern and Southern Africa's (COMESA) Regional Payment and Settlement System (Maiyambere 2012; Mbabazi 2012). These integrations set the stage for Rwanda to become a regional trade and financial hub. Indeed, the body charged with promoting the cooperation of East African nations in the development of ICT infrastructure, the East African Communication Organization (EACO) has its headquarters in Kigali. Interestingly, the Rwanda Utilities Regulatory Authority (RURA) shares a building with EACO, signalling the close alignment of ICT policy with the GoR's ambitions to become a regional economic actor.

Within the country, Visa has also worked with the Ministry of Finance and the Association of Microfinance Institutions of Rwanda (AMIR) to develop a financial literacy campaign aimed at small and medium businesses (Nysesigo 2013). The company also plans to launch cashless financial solutions for unbanked customers and to work with the GoR to automate and modernize its revenue and tax collection systems. It has already launched three e-government services: Online Tax Payment System, the e-Payment system and the single Electronic Window System (Government of Rwanda 2012b). The major telecoms like MTN and Tigo are also developing mobile money systems for unbanked customers.

Companies like MTN are already forecasting the rapid take-up of mobile money among their customers, even among the poorest groups. One of MTN's senior managers explained how the

company started with scratch cards but has since introduced new payment systems as part of its growth strategy:

Now we have a system here, to do that, buy your airtime ... They [the sellers] are still in the street but not anymore using scratch cards ... It has really made some families to grow. And those scratch cards they are making really good business and changing the life of people ... The same person now we have given them the SIM card where they can buy electronic stock... So the arrangement has changed but to increase the customer experience, we may have [to introduce] a safe automated system. And then the customer can use mobile money to buy airtime and... doesn't have to pass through the man on the street ... because controlling a person on the street and controlling system is much more [easy] ... because we have the ownership, we know how to control it. (Senior manager, Kigali, 2012).

This transition towards a digital payment infrastructure is important for the company because it would allow the company to sell higher value added services to customers. It would also allow the company to have better information about its customers' spending habits and preferences through the proliferation of 'big data' (transactional data produced through telecommunication use). In the future, when mobile and Internet penetration reach saturation levels, telecommunication companies based in Africa will need to start pushing higher value services in order to continue to grow. They may also begin to sell data about their customers to other companies. Given the GoR's vocal support of 'ICT entrepreneurship' among the youth, the spread of mobile money is highly strategic for software developers and start-ups seeking to monetize their applications.

Finally, such developments are useful for African governments for security, surveillance and taxation purposes. Zambia, Kenya and Lagos city have already automated some of their taxation operations and have markedly increased their revenues (Blair 2009; Alemika, Cheeseman, and LeBas 2011; TCS 2013). In the summer of 2013, the Kenya Revenue Authority (KRA) announced that it would become mandatory for all medium and large taxpayers to file and pay taxes electronically (Mutai 2013). KRA is also using the telecommunications network to identify non-compliant small and medium enterprises for tax purposes. If other governments wish to automate and digitally process taxes, then mobile money penetration needs to increase.

This deeper penetration of mobile phone and data services among the population is also likely to increase the security and surveillance capacities of states as big data are increasingly being used by African governments for counter-terrorism and police work. In line with EAC integration, Rwanda made it mandatory for all mobile phone subscribers to register their SIM cards in 2013 (*Daily Monitor* 2013) and the GoR is currently developing a motorcycle database in collaboration with Tigo in order to improve security and road safety (Rollason 2013). In Kenya, the telecommunications giant, Safaricom has recently won a contract to increase the intelligence and security capacities of the state in order to deal with Al-Shabab terrorism (David 2014; Standard 2014). As the GoR faces similar threats from remnants of génocidaires, it is likely that similar arrangements are being negotiated between government agencies and telecommunications companies in Rwanda as well.

At all points, the GoR has intervened in the roll-out of all three infrastructures (mobile telephony, Internet and mobile money) because it views ICTs as a strategic component of its development vision. This vision is outlined in the national development plan, Vision 2020, which seeks to build a knowledge-based economy and to transform Rwanda into a middle-income country by 2020 (Government of Rwanda 2000, 2012b). Current government strategy for promoting ICT development focuses on two key objectives.

First, it seeks to attract international companies like Visa, Google and SAP to set up regional headquarters in the country and help upgrade the country's infrastructure. Similarly, it seeks to

provide a bridge for West African companies like Ghana's Ecobank to penetrate East Africa. To do this, the GoR has attempted to provide a legible and predictable framework for international actors to enter the country. In 2000, it established the Rwanda Investment Promotion Agency in order to bring more foreign direct investment into the country. This agency has since created a one-stop centre for new business registration. In 2001, the GoR established the RURA and the Rwandan Information Technology Authority (RITA)³ to regulate and promote ICT-based economic growth in the country. In the same year, it introduced a Zero-Tolerance for Corruption Policy (Porter et al. 2013). More broadly, the GoR has worked to strengthen security and improve the visual appearance of the country, through a heavy police presence, new paved roads, street lighting and signs, the outlawing of plastic bags and the prohibition of any unlicensed commercial activities on open streets. Due to these policies, the country has achieved high rankings in international matrices like the World Bank's Ease of Doing Business, Transparency International's Corruption Index and the ITU's ICT Development Index. The effect of the visual transformation is also clear when one speaks to foreign business people.

Second, the GoR hopes to support young Rwandan ICT entrepreneurs. Shortly after taking power, the GoR established Kigali Institute of Technology in an effort to boost its number of advanced technology students. It also sends Rwandan students abroad for training in IT and engineering. In 2010, Rwanda was reported to send an average of 300 IT and engineering students to India per year (Onyango-Obbo 2010). Similarly, it has wooed the American university, Carnegie Mellon to open a graduate degree programme for East Africa in Kigali. In its first year in 2012, the programme offered 40 places to Master's students from across the region. By 2016, it hopes to increase this number to 150. Outside of academia, the GoR has also helped finance an innovation and incubation hub, k-Lab, to support innovation and entrepreneurship among Kigali's tech savvy youth.⁴ At the primary and secondary levels, it has worked with the American programme, One Laptop Per Child (OLPC) to deliver laptops to Rwandan school children. It has already donated 100,000 computers and hopes to deliver another 500,000 over the next 5 years (OLPC 2013).

Through the dual approach of attracting international business and promoting local skills, the GoR hopes that the ICT sector will help create employment and entrepreneurship opportunities for its population. Vision 2020 sets the target of 1.4 million non-agricultural jobs by 2020 and the Economic Development and Poverty Reduction Strategy sets the target of creating 1,000,000 non-agricultural jobs by 2012 and 2,500,000 by 2020 (Government of Rwanda 2007a). Telecommunications have certainly contributed to job creation. Tim Kelsall writes:

Today, the MTN operation is invariably one of the top two taxpayers in Rwanda. It employs 690 people directly, only two of whom are expatriates. Indirect employment, including dealerships and security guards, is estimated at over five thousand. (Kelsall 2013, 165)

With Tigo and Airtel now in the country, these opportunities have grown further. Employment within these multinationals exposes Rwandan workers to international systems and technologies and allows them to forge relationships and to acquire trainings in other countries. Among the young entrepreneurs interviewed in the Oxford study, a significant number had worked in a large telecom before striking out on their own.

The GoR hopes the country will benefit from arrangements with multinational companies through knowledge transfer and revenue-sharing. It has also worked directly with such companies to roll-out e-government and other digital systems within its own borders. While officials emphasize that providing better and more efficient public services is the main motivation driving e-government programmes, the GoR also sees them as a strategic way of making the country an attractive testing ground for international companies wanting to develop and pilot solutions for

the rest of Africa and the developing world. The GoR hopes that when the time comes to take these innovations into neighbouring countries, Rwandan workers and consultants will be well positioned. Of course, these formal opportunities are restricted to those employed under formal contracts and certainly do not extend to those selling credit on the street.

While the GoR supports the development of ICT entrepreneurship and regularly encourages Rwandan youth to engage, it places emphasis on the youth at the top socio-economic scale and on professional jobs. This is a problem because the GoR is behind its schedule for creating non-agricultural jobs. In 2007, for example, the GoR revealed that it was projected to create less than half the target for 2010 (Government of Rwanda 2007a). Similarly in its 2010 Special Economic Zone Policy document, high unemployment was identified as one of the major economic constraints facing government plans. The report writes:

There is a shortage of non rural/agriculture formal employment opportunities in Rwanda. There are only 7,263 formal small and medium sized enterprises (SME) constituting offering full-time jobs to 1.4% of the working population. Growing unemployment, especially amongst Rwanda's rapidly growing youth population, will reduce the impact of growth on poverty. (Government of Rwanda 2010, 8)

There is therefore an urgent need to understand job creation for ordinary Rwandans who do not come from privileged socio-economic backgrounds. How can professional jobs and business opportunities at the top of the ICT value chain also create jobs for those beneath?

While Booth and Golooba-Mutebi's 'developmental patrimonial' framework has proved useful in understanding the institutional capacities and motivation of the state to mobilize the country towards economic transformation, it does not tell us very much about how this model trickles down to ordinary Rwandans and it does not capture the interplay between large-scale investment (multinational or domestic) and local informal systems on the ground. The next section therefore looks at economic and social position of airtime sellers to better understand how informal workers may have benefitted from economic upgrading.

Ask not what your company can do for you

On a given afternoon in Kigali, Rwanda, one can find hundreds of mobile airtime sellers on the corners of the major streets. Hawking their MTN, Tigo and Airtel scratch cards and wearing colourful plastic waistcoats of yellow, blue and red, these predominantly young, male and low-educated sellers represent the human vessels through which multinational companies travel into the phones and pockets of African consumers (Figure 1).

The term BOP has been popularized by authors such as Prahalad (2005), Hart and London (2005) to refer to the economic opportunities and markets of poor consumers in the developing world. In the business school literature, BOP tends to be associated with pro-poor development, social enterprise and poverty alleviation. BOP initiatives are often presented as a kind of 'win-win' for business and poor people, with the claims that they first provide affordable consumer goods to the poor, and second that they usually involve poor people within their distribution networks. However other authors such as Dolan (2012), Elyachar (2012) and Meagher (2013) have been more critical of these developments.

Julia Elyachar has adapted Simone's (2004) concept of 'people as infrastructure' to argue that multinationals seeking new markets have come to see the social networks of the poor as potential distribution systems for their products and services, thereby commodifying the 'social capital' of poor people into multinational chains of accumulation (Elyachar 2005). In relation to BOP in Sub-Saharan Africa, Catherine Dolan and Kate Roll have likewise argued that BOP 'repurposes'



Figure 1. Photographs of Kigali airtime sellers, taken by Elie Nzayisenga.

informality (i.e. unregulated and unprotected labour of the poor) transforming it from something that was once seen as ‘drag on growth,’ into something ‘developmental’ and ‘useful’ for transnational capital. They write, BOP initiatives:

create and stabilize a framing of poverty as a product of market failure and its solution as the advancing of enterprise and market integration – a framing that facilitates the organization of informal economies as the objective of corporate governance and positions market engagement as commensurate with development imperatives. (Dolan and Roll 2013, 129)

Airtime sellers fit within this theoretical framework well. Multinational telecommunication companies use informal labour to market and distribute airtime and thus avoid expending time and money researching the challenging environment of sub-Saharan Africa’s consumer markets. While these companies have been able to frame this use of informal labour as a kind of pro-poor social enterprise, it is important to see how they have also depended on these sellers to penetrate ‘illegible’ markets. We therefore need to understand the balance of benefits between informal workers and these companies to determine if such an arrangement should be construed as ‘social enterprise’ or ‘pro-poor’. While the telecommunication companies are building long-term, highly profitable infrastructures for both delivering content and services and accessing potentially valuable data about Rwanda’s population and economy, the credit sellers are primarily gaining short-term financial benefits and some long-term skills and expertise. This section outlines those benefits in greater detail.

MTN, Tigo and Airtel all use similar practices to manage their airtime voucher sellers. There are no formal entry requirements or recruitment procedures. Sellers merely need to approach one of the main offices of the companies to buy discounted airtime vouchers. There, they are given some basic marketing paraphernalia in the form of waistcoats, street booths and sun umbrellas. Beyond the provision of visible marketing materials, the telecommunication companies do not regulate the activities of sellers. They work on commission, receiving no training or support from suppliers. When a seller reaches a certain level of sales, they are able to save up and purchase a moto, and thereby become ‘a distributor’ (provided that his/her chosen area does not already have a distributor).

For many, selling airtime is the closest they have come to formal employment. Among the sample surveyed, the majority had been employed in construction, informal trading or unskilled

farm labour before selling airtime. For example, the oldest respondent (aged 41) had lost his job in construction and had decided to start selling airtime when he found that construction jobs had become too rare. Others had never had a steady job. 33.33% of respondents had come to airtime selling on their own initiative while 40.74% were helped by friends who had given them advice and instruction to start. Most were born in rural areas and had come to Kigali to find better work opportunities. Only 5 were born in Kigali with a large proportion (11/27) coming from the Southern province. The majority lived in the poorer neighbourhoods of Kigali, often travelling substantial distances to sell vouchers in the central areas of the city.

One advantage for companies using informal networks for distribution is that they do not need to carry out market research. They merely let the sellers use their own 'market intelligence' to determine where business is most profitable. Use of informal networks shifts the risks onto those at the BOP.

The sellers are overwhelmingly young people. Their age ranges between 17 and 41 years, but 89% (24) of them are between 19 and 30 years (Figure 2).

The majority of sellers are male, with only 30% (8) female present in the sample. They come from a relatively low-educated demographic. All had attended some level of primary school with 4 leaving before finishing, 18.5% (8) more leaving after they had completed primary school. 67% (18) had attended some level of secondary school but only 37% (10) had finished. None had attended university. When asked why they had dropped out of school, the overwhelming response was because of poverty and lack of finance. While primary education has been officially free since 2003 (and secondary education free since 2006),⁵ voluntary contributions, school supplies and the costs associated with forsaken wages all make education prohibitively expensive for many young people. And as the paper discusses later, the financial returns of formal education for young people operating in the informal sector are currently limited.

All surveyed respondents owned personal mobile phones. 52% (14) used two SIM cards so that they could sell both MTN and Tigo vouchers. 63% (17) could access the Internet over their phones. When probed deeper, 41% (11) used the Internet on a regular basis. 55% (15) used both mobile phones and cybercafés in order to access Internet. 18.5% (5) used their mobile phones only and 26% (7) used cybercafés only.⁶ The biggest barriers to Internet use were a lack of access to computers and laptops (63%), insufficient English (52%) and insufficient spare time (29%). The figures on language and spare time are particularly interesting because the GoR's current focus on extending Internet access is through network coverage and digital buses.⁷ As the GoR moves towards 'e-government,' it will have to address these other barriers as well. Providing physical infrastructure is no silver bullet without wider socio-economic change.

All but one of our respondents was able to send and receive money over their mobile phone. This number is significantly high, given the limited use of mobile money in the general population. At the end of 2012, only 20% of the MTN's mobile subscriber base used mobile money (Butera 2012). As mobile phone use was at 46% among the general population at the end of 2012, mobile money was clearly still quite rare at the time of the interviews and is still at a

<i>Age category</i>	<i>Frequency</i>
Less than 18	4 %
Between 19 and 30	89%
Above 30	7%

Figure 2. Age range of sample.

low rate. Airtime sellers are therefore well ahead of the adoption curve. In addition to sending and receiving money, a high number of respondents (70.34%) were also using official saving schemes either through banks, MTN mobile money or Tigo cash.⁸ As telecommunication companies begin to team up with banks, microfinance and saving and credit cooperatives to deliver micro-credit, those using mobile money will become more ‘visible’ and ‘predictable,’ and therefore more likely to be eligible for credit and financial inclusion. In Kenya, Safaricom has already started modelling the behaviour of its mobile phone users to uncover credit worthiness and offer insurance and loan services. Airtime sellers are therefore well positioned to benefit from these kinds of programmes and may well find ways to integrate themselves, either formally or informally, into future credit and insurance value chains.

On average, airtime sellers in Kigali city earn 3984 Rwandan francs (Rwf) or US\$ 6 per day (although this figure varies considerably depending on the area and seller’s initial investment).⁹ When compared to the average wage of Rwandans of a similar education profile, this figure is very high. For example, rural Rwandans of a similar educational background reportedly earn as little as 200–300 Rwf a day working as ‘diggers’ or ‘farm labourers’ (Sommers 2012).¹⁰ Prostitutes reportedly earn 100–500 Rwf per client (Sommers 2012). Higher up in the education scale, Rwandan schoolteachers can expect to earn 44,000 per year (until recently, 25,000 a year), or 121 Rwf per day.¹¹ Only Kigali motorcycle drivers earn similar amounts, ranging between 1000 and 5000 Rwf per day (Rollason 2013, 16). Selling vouchers on the street therefore represents a relatively affluent job for low-income Rwandans (although rent and food is likely to be more expensive in Kigali). It also exposes them to sales and customer service experiences and opportunities to network with local business people.

(Figures 3–5) show earnings in different areas of the city.

The average money Nyabugogo sellers can get per day is 2126 Rwf, the highest is 3400 Rwf and the lowest is 1400 Rwf (Figure 3).

The average money Nyamirambo sellers earn per day is 3334 Rwf, the highest is 9012 Rwf and the lowest is 1590 Rwf. The highest earner, who pushes up the average, comes from a particular background: he had formerly lived abroad in Uganda and had started selling vouchers after an accident caused him to stop working as a moto driver. He worked in Biryogo, a crowded and busy part of Nyamirambo and he invested a lot of money into buying scratch cards at the start of every day (Figure 4).

On average, sellers in Kiyovu earn 5917 Rwf per day. Here, the highest is 15900 Rwf and the lowest is 1588 Rwf. These figures are higher due the concentration of people in the centre of town

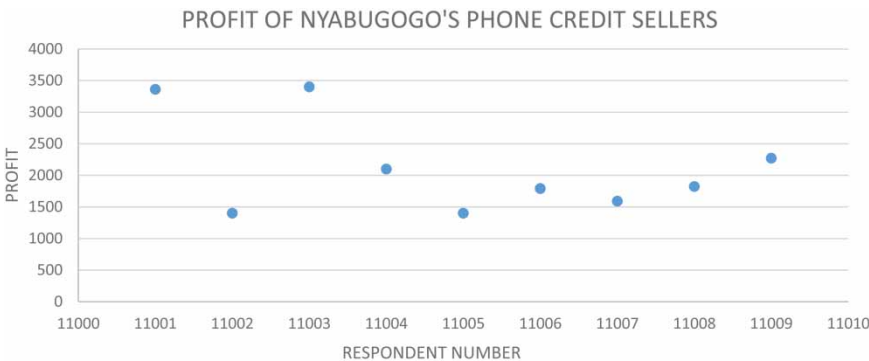


Figure 3. Profit of Nyabugogo airtime sellers per day.

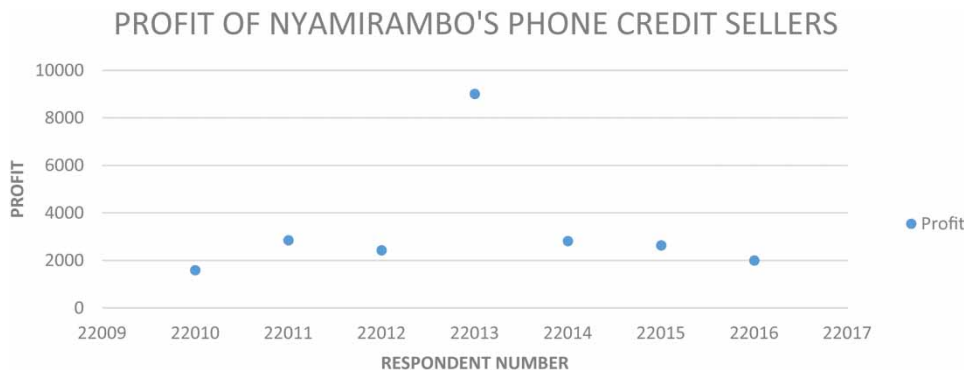


Figure 4. Profit of Nyamirambo airtime sellers per day.

during the day. The highest earner who takes home 15900 Rwf per day had already been promoted to MTN distributor (Figure 5).

We tested whether gender or education had any effect on profit and found that within the sample there was no statistical relationship between gender or education and earnings.¹² According to these results, sellers do not appear to increase their profits based on obtaining formal education. Other factors such as the area of operation and the amount of personal investment in vouchers were more important. This finding is in keeping with other studies of economic opportunity and educational attainment in Rwanda. For example, a USAID project found that ‘graduates of secondary school or technical school are often just as likely to be unemployed as those with fewer years of schooling’ (EDC 2009). In Rollason’s study of motorcycle taxi drivers, he similarly found that there was ‘[n]o evidence ... that a rider’s level of education had any effect on income’ (2013, 20). For many of Rwanda’s citizens, it would appear that education has not yet improved their economic prospects.

However, it is clear that the mobile phone boom in Rwanda has indeed provided opportunities to low-income, low-educated Rwandan youths to earn a relatively decent wage. When compared to many of the sectors where multinational companies are active in Africa, the telecommunication sector does seem to ‘trickle down’ to lower socio-economic groups. Importantly, these airtime sellers have been able to save money, partly as a result of their integration and familiarity with mobile money infrastructures. However, as indicated above, this period of opportunity is temporary. As Internet access and mobile money expand, the opportunities for street sellers will diminish. It is important to ask what else these young men and women can do to retain their (modestly

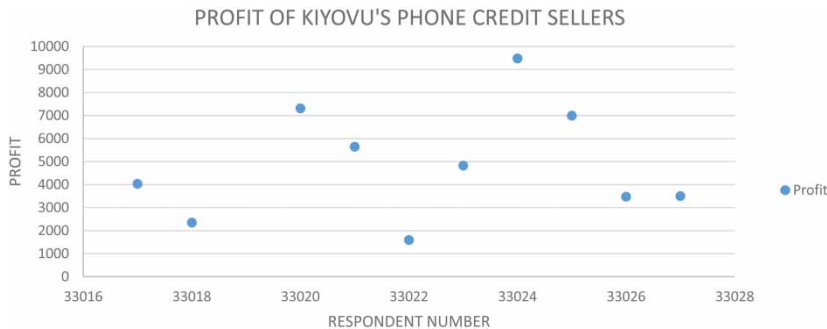


Figure 5. Profit of airtime sellers in Kiyovu per day.

improving) socio-economic statuses. Their relatively high savings rate and higher familiarity with ICTs and Internet use indicate that they have acquired some soft skills through their participation in selling airtime.

Self-reliance and control

When conducting research in Rwanda, one is often struck by the determination and strong belief of ordinary Rwandans in the government's Vision 2020 programme. In interviews with managers and entrepreneurs, it is striking how many align their own business plans with that of Vision 2020, often speaking unsolicited about the president, Paul Kagame as a source of personal inspiration. Among Rwandan business people, there is clearly a sense of pride in what has already been accomplished and a strong sense of hope for the future. Obviously, these groups have benefited most from Rwanda's development since 1994. One might expect that it would be more difficult to get the same perspective from less affluent Rwandans. Nevertheless, the hopeful discourse of the GoR does appear to have influenced our sample of sellers.

In interviews, respondents were asked to reflect on a number of statements designed to solicit their sense of hopefulness and their expectations about future economic security. All respondents agreed with the statement 'I am hopeful about the future' with all the respondents in two areas 'strongly agreeing' with this statement. While it was acknowledged that permanent work opportunities are few and far between, respondents also expressed the belief that 'anyone can get a job if he tries hard enough'. Respondents more strongly identified with the belief that 'If I want to be successful in the future, I need to start my own business' than with the statement: 'If I want to be successful in the future, I need to find a permanent job'. Figure 6 shows responses from the three areas:

Thus, in contrast to the respondents surveyed in Sommer's book, Stuck (2012) respondents were largely positive about their futures. Sommer's work concentrated on young people in rural Rwanda and Burundi. He found that the Rwandan youths in his sample faced bleak work prospects (partly as a result of the banning of many informal livelihoods) and limited capacities to save and start families. Surprisingly, their prospects compared unfavourably with those in Burundi, a country considered less economically successful. While the mobile phone credit sellers have little job security, they are doing better than many other Rwandans and are fairly positive about their futures. Whether this is due to their residence in urban areas or whether it is due to the particular activity of selling airtime, one cannot ascertain with certainty. However, it is clear that working as airtime sellers has given them a sustained source of income and a source of self-motivation.

52% of the sample was self-sufficient and self-contained (they do not receive financial assistance from others nor do they support others) with a further 33% offering support to other people. Despite being relatively self-sufficient, most lived with other young people in order to save money on rent. The majority used earnings to cover rent and food expenses, with many stating that it was hard for them to save given the high cost of living in Kigali. One respondent also used a large proportion of his income to pay for school fees (he was the only respondent still at school). The others did not feel that education offered a good investment.

70.34% had ambitions to move up to the role of supervisor or distributor once they had earned enough money. Only 11.11% did not want to move up in the system. These answers suggest that sellers are not aware that infrastructures are likely to change in future. When pressed for alternatives, many expressed the desire to continue to be sellers of other products in the future, explaining that they had acquired sales experience and had accumulated savings. Of these, men aspired to become drivers of motos and taxis and used their earnings to pay for driving school fees. Women

<u>NYABUGOGO sellers</u>	
How much do you agree with the following statements?	
“Work is so rare that people do not share information widely”	11% strongly agree, 43% somewhat agree, 46% strongly disagree
“Anyone can get a permanent job if he tries hard enough”	89% strongly agree, 11% somewhat agree.
“I am hopeful about the future”	11% strongly agree, 89% somewhat agree
“If I want to be successful in the future, I need to start my own business”	67% strongly agree, 10% somewhat agree. 11% neutral, 11% somewhat disagree and 11% strongly disagree.
“If I want to be successful in the future, I need to find a permanent job”	11% strongly agree, 78% somewhat agree, and 11% neutral
<u>NYAMIRAMBO sellers</u>	
How much do you agree with the following statements?	
“Work is so rare that people do not share information widely”	71% somewhat agree, 14% somewhat disagree and 15% strongly disagree.
“Anyone can get a permanent job if he tries hard enough”	100% strongly agree.
“I am hopeful about the future”	43% strongly agree and 57% somewhat agree.
“If I want to be successful in the future, I need to start my own business”	86% strongly agree, 14% somewhat agree
“If I want to be successful in the future, I need to find a permanent job	43% strongly agree, 57% somewhat agree.
<u>TOWN CENTER (Kivovu Zone) sellers</u>	
How much do you agree with the following statements?	
“Work is so rare that people do not share information widely”	55% strongly agree, 45% somewhat agree.
“Anyone can get a permanent job if he tries hard enough”	91% strongly agree, 9% somewhat agree.
“I am hopeful about the future”	55% strongly agree, 45% somewhat agree.
“If I want to be successful in the future, I need to start my own business”	82% strongly agree, 18% somewhat agree.
“If I want to be successful in the future, I need to find a permanent job”	45% strongly agree, 55% somewhat agree.

Figure 6. Attitudes about the future.

respondents aspired to become sellers of clothes and fruit and used their earnings to save for investments.

It is clear, both from their responses about the future and from their stated future plans that our respondents view self-employment as a more realistic prospect than finding permanent employment. These sentiments reflect the GoR's promotion of entrepreneurship and self-sufficiency. In

1999, the GoR launched and has since heavily financed a Private Sector Federation to help coordinate private enterprises. It has also worked with many international organizations such as Educat, Bridge2Rwanda, Isoko Foundation, Global Relief and Development Partners, Karisimbi Partners and Digital Opportunity Trust to promote a pro-entrepreneurial mindset within the population. This ideological project is important to the government as it fears ideologies of political tribalism. It is for these various reasons, that Rwanda has been called a model of ‘market-led development’ by business school scholars, despite the strong intervention of the government in infrastructure and party-statals (Fox 2013).

However, the GoR has diverged from other African governments in terms of how that discourse has been translated into policies affecting poor people. While many other African governments have permitted and even encouraged street vendors and other self-employed informal workers (Hope 2012, 85), the GoR has taken a much firmer view of informal commercial activity. It has focused on the formalization of informal systems of economic governance, seeing formality as the basis for scaling up the economy and providing security.

The chief way the GoR hopes to engage low-level commercial activities is through the cooperative model. Cooperatives are intended to further the economic development of Rwandan producers by integrating individual producers into formal systems of regulation and connecting them with opportunities within larger value chains (Government of Rwanda 2007b). However, Rollason’s research on the motorcycle cooperatives (2013) has shown that cooperatives have not contributed significantly to poverty reduction but have improved security and control within the sector. In contrast, motorcycle drivers saw the informal ‘boss’ system as a way to significantly improve their living standards. This system allowed drivers to rent or lease-hire for purchase motorcycles on terms that are affordable to them. Similar formalized schemes organized by cooperatives were deemed to require unaffordable down-payments and restrictions requiring riders to apply for loans as larger groups (23).

In many cases, economic activities that take place outside of cooperatives are forbidden and police will fine, imprison or impound the equipment of those who transgress (Rollason 2013; Berry, *forthcoming*). For example, Berry has shown that female-dominated activities such as fruit selling and domestic labour are heavily policed, as such activities are seen to undermine the broader (visual) economic transformation of the country (*forthcoming*). The position of informal airtime sellers is therefore unique and reflects their pivotal role in the penetration of the mobile infrastructure into local communities and social networks. Selling airtime on an informal basis on a street corner on behalf of a large multinational company is permissible, but selling other goods informally on the street independently of large companies is not permitted. In one case, individuals have taken the initiative as ‘entrepreneurs’ in their own right – whereas in the other case, they are part of the distribution strategy of a large multinational company. One might ask which activity is closer to the entrepreneurial discourse of the GoR.

The government needs reliable Internet connectivity and a higher uptake of ICTs and mobile money among those at the BOP if Rwanda is to become an ICT hub. For this reason, it has been convenient to allow telecommunication companies to deploy informal labour arrangements and the GoR has therefore made it possible. However, while telecommunication companies are benefitting from the long-term development of a service distribution and data accumulation system, the street sellers are only temporary beneficiaries of the scheme. We might ask what kinds of economic plans can be developed to incorporate these kinds of people into the ‘knowledge-based economy’ in the long term. What kinds of financial support systems, training and social networks can be provided to make their visions of the future also possible? Most importantly, any strategies should allow them to leave behind the day-to-day bustle of street survival for long-term productivity and security. It is these kinds of debates that this paper hopes to incite within the country.

Conclusion: a developmental patrimonialism for whom?

The use of informal labour within formal multinational corporations is becoming more and more common across Africa. For example, in a 2005 study of informal and formal contracts in Nairobi, Kenya, Philippe Bocquier found that ‘most of the employees of the so-called informal sector [were] actually informally contracted by large, medium or small-scale enterprises’ (Bocquier 2005, 17). In fact, he found that seven out of eight workers were employed by formal companies on informal contracts. This state of affairs is becoming so inconspicuous that the international labour organisation (ILO) has re-classified the ‘informal sector’ as the ‘informal economy’ to account for informally contracted workers operating in the formal economy (ILO 2009).

Once a nuisance for economic planners, informal economies are now viewed as a source of flexibility and as a means of making the illegible and risky ‘black spots’ of Africa accessible to foreign direct investment and government interventions (Elyachar 2005, 2012; Dolan 2013; Mann 2013; Meagher 2013). The blurring of formal and informal economies of course has a longer historical precedent, with the use of informal, temporary and often exploited labourers on colonial schemes (Wolpe 1972; Shenton and Freund 1978; Bernal 1991; El-Battahani 2009). What is new, however, is the celebration of these practices as ‘ethical’ and ‘socially responsible’ and as a means of achieving inclusive economic development at ‘the BOP’.

The pressing question is not whether the ‘BOP’ has created jobs and opportunities, but what kinds of opportunities. The sellers discussed in this article earn relatively high wages, as compared with workers in other parts of the economy. They have also been able to acquire some limited soft skills: familiarity with ICTs, general sales experience and expertise using mobile money systems and savings schemes. Some of them have managed to save small amounts to invest in future activities. As mentioned above, it is also likely that these groups will find informal or formal ways of inserting themselves into banking, saving and insurance programmes in future. However when it comes to the economic plans currently being envisioned and implemented by the GoR, there is limited scope for them to be included in higher value activities or to find employment in more formally contracted careers. Their employment has not exposed them to the kinds of skills and training that would allow them to take advantage of the higher end possibilities currently being built behind the scenes, nor has their formal education been advantageous to them as informal street sellers. Attempts to police ‘informal’ entrepreneurship further diminish the likelihood of sustainable livelihoods.

While Booth and Golooba-Mutebi focus on the developmental state from the perspective of elite coalitions, one might push them to consider the long-term sustainability of the model. The collaboration of the GoR with multinational companies allows it to develop the physical infrastructure of the economy and to create export earnings, but this is a very top-down style of growth. In spite of the discourse surrounding SME development and youth entrepreneurship, Gathani and Stoelinga have shown that 80% of the output from Rwanda’s 47 manufacturing and agribusiness firms comes from large groups (i.e. companies that have business interests in more than 3 companies) (2013). As Gathani and Stoelinga write,

in the current business environment of Rwanda’s manufacturing and agribusiness sectors, smaller firms owned by individual investors find it difficult to compete. As long as long-term finance, skills, sourcing and transportation constraints remain binding, smaller firms in the manufacturing sector are likely to be outperformed by firms owned by larger groups. (2013, 51)

The legitimacy of the current developmental model rests on its developmental outcomes, the extent to which ordinary people benefit from the GoR’s plans. Following calls by Elyachar (2012), Dolan (2012) and Meagher (2013), this article therefore stresses that planners and researchers need to think more critically about value chains at the BOP, not just in terms of

how informal networks can be used as temporary appendages to further the reach of formal corporations (Hart and London 2005; Prahalad 2005), but also how these new kinds of chains and networks can be re-engineered to provide permanent and sustainable livelihoods to workers and business owners at the BOP.

As the Rwandan government has shown time and time again, markets do not form naturally or automatically; they are built and shaped through linked interactions between foreign investors, local private companies and public bodies. When we acknowledge that markets are created, we can begin to create more stable and inclusive markets. As Rollason (2013) has suggested, informal economic arrangements such as the 'boss system' have provided real poverty reduction and social mobility for poor Rwandans by facilitating the transfer of wealth from the relatively well-off to the poor in processes that fit with the local socio-economic needs of the population. While the GoR has hereto committed itself to the formalization of informal economic systems and has taken steps to stamp down on unlicensed commercial activity, it might be wiser to look more closely at these existing arrangements and recognize their contribution to growth and poverty reduction.

The telecommunication sector and other 'BOP' opportunities have proved a great boon for African economies, but it is important to ask what kinds of social and institutional changes is emerging from this boom (Jerven 2010). Changing digital infrastructures are currently re-wiring the economies of Africa, allowing companies to outsource internal functions to domestic and international partners (Mann and Graham 2013) and allowing governments to better centralize rent management and to potentially control low-level corruption (Blair 2009; Alemika, Cheeseman, and LeBas 2011; Mutai 2013; TCS 2013). They are allowing international companies to insert themselves into modernization projects, automate old companies, re-engineer out-of-date government institutions, improve efficiency and create high-end, high-value jobs for some. These systems may also allow highly educated African software developers to build new applications and products for the mass market. Occasionally, the expansion of such infrastructure may require a flexible and unskilled labour force on hand to reach into new markets and distribute goods to 'black spots', but these opportunities must be seen for what they are: moments of capitalism that are likely to shift as companies change their needs and strategies. If e-government and payment systems are successfully pioneered, there will be limited scope for the kinds of informal value addition that drove the initial expansion of the mobile telephone network. While these solutions may allow governments to reduce low levels of corruption and to centralize rents at the top, informal (and sometimes illegal) arrangements also provide opportunities for poorer groups.

Discourses surrounding contemporary forms of globalization and modernization tend to phrase such change as progressive and irreversible, as forces that always move forward, expanding opportunities as diffusion spreads and integration occurs (Ohmae 1995; Krugman 1996). Similarly, proponents of BOP development suggest that inequality and poverty only occur when there are market distortions, but this approach fails to account for instances where markets are working well but work opportunities dry out. This paper has shown that inclusion and development come in fits and spurts, booms and busts, as production and distribution systems unfold across a bumpy landscape and as people on the ground find ways to insert themselves, formally and informally, into official plans.

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Daniel Bjorkegren, Timothy Williams and Samuel Rushworth for their help and insightful feedback during the fieldwork, analysis and writing up of this collaborative work.

Notes

1. The survey was modified from a previous survey used by Laura Mann for research on employment in Khartoum, Sudan. Advice was sought from Keith Hart in order to adapt this employment survey for self-employed and entrepreneurial respondents.
2. These statistics were produced by the National Statistics Office of Rwanda (NISR), quoted by World Bank (2013).
3. RITA has since been subsumed into the ICT department of the RDB.
4. K-Lab, Carnegie Mellon and BSC are all currently in the same building, the Telecom House, along with many small and medium ICT businesses. In 2014, the RDB hopes to start construction on a tech-nopole city to expand Carnegie Mellon and provide space for international and national tech and BPO companies.
5. It must be noted that while education is officially free, students still face a number of financial barriers. For example, there are disparities between official law and lower levels of policy. In addition, in many schools, students are expected to pay Parent Teacher Association (PTA) fees. If they are unable to contribute PTA fees, students are often excluded. For more information, please see: Williams (2013).
6. Although there are no reliable statistics on frequency of Internet use by users, all indicators suggest that these figures are very high relative to the rest of the population.
7. Digital buses are Internet-enabled buses that travel to rural areas and provide access to remote communities.
8. For an analysis of saving within the Rwandan population as a whole, please see NISR (2012).
9. As Rollason has indicated in his study of motorcycle drivers, Rwandan respondents from low socio-economic backgrounds have been found to under-report or exaggerate their earnings (2013). He found that responses to questions about earnings declined as respondents gained trust in the research team.
10. Mark Sommers conducted his fieldwork in 2006. Some researchers now estimate that diggers earn 500–800 Rwf per day. This number was provided Berry, a Sociology Ph.D. student from UCLA who has conducted more recent fieldwork in Rwanda. Please see Berry (forthcoming).
11. To calculate earnings per day, the annual salary was divided by 365. However, Rwandan schools currently have 32 weeks of term and another 13 days of exams. It is probable that teachers supplement this income during holidays through secondary employment. (*In2EastAfrica* 2012).
12. For gender, the probability value is $0.191 > 5\%$. So at 5% of level of significance, it can be surmised that the gender does not influence the income earned. For primary and secondary education, the p value is $0.319 > 5\%$. At 5% level of significance, it can be surmised that primary or secondary school does not affect how much profit phone credit sellers earn.

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