ARCHEOLOGY OF MOBILE BANKING IN AFRICA: THE IVORIAN MODEL IN FOCUS

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Abstract

The paper analyses how the initial form of mobile banking, which arose in the informal sector of the economy in Africa, triggered mobile phone transformation in the continent and contributed to the development of its mobile banking industry. Focussing on this specific marginal beginning of mobile banking in Côte d'Ivoire, the paper articulates how the principles it generated can inspire communication for development initiatives. However, there is also an attempt to suggest the concept of "proportional technologies" as a more productive theoretical framework to account for information and communication technology (ICT) practices in the developing world.

Keywords: Mobile banking, Côte d'Ivoire, Africa, Appropriation, Proportional technologies, ICT, Development

Introduction

The history of mobile telephony in Africa, although recent, is proving productive in understanding the innovation appropriation process in the developing world. Authentic local phone usages have inspired adjustment both to technology and to service providers' market strategies. Practices presenting some economic value and social potential have been incrementally introduced by developers and operators, and they have been systematized in society. These 'User-led innovations' (Donner, 2005) are occurring across every socially-active sector. The present paper discusses the trajectory of mobile banking in the Ivorian context with a focus on its unconventional beginning. In its report, *The Enabling Environment for Mobile Banking in Africa* (2006, p. 13), the Department for International Development (DFID) suggests 4 stages for market entrants:

 (i) *The pioneer phase* when a few early entrants launch and test out their products and start to find success;

(ii) *The breakout phase* when the success of the pioneers is noticed, leading to the rapid entry of new firms and to the expansion of the market;

(iii) *A consolidation phase* when a shakeout of firms occurs due to increased competition or external factors such as regulation, although the number of customers continues to grow but at a diminishing rate;

(iv) A final *maturity phase* when the number of firms in the industry and its norms and rules have been settled, and the market grows at a steady, natural rate.

These steps can be observed in the Ivorian context where the mobile phone operator, Orange, which launched its mobile banking activities at the end of 2008, was alone on the market for a few years before being joined by others. Today, mobile banking in Côte d'Ivoire is considered the most dominant mobile banking market in the West African sub-region. However, the above report focuses on a formal market of mobile banking and, therefore, overlooks the basic initial practice which emerged in the informal sector of the economy in various African countries. My focus is on this specific marginal beginning of mobile banking in Côte d'Ivoire. From it can be drawn some basic principles that shed light on the technology adoption process. I will argue that, in the mobile industry's quest to expand its service offers, these principles have informed the transformation of the mobile phone itself.

This work uses the theoretical framework of "proportional technologies" (Kamga & Cishahayo, 2013) which is an attempt to articulate two theoretical frameworks in the research field of technology and society: appropriation and social-constructivism. The underlying assumption is that *"technological artefacts are to be understood as social constructs"* (Pinch & Bijker, 1984, p. 399), and appropriation is a contextual process with variable dynamics.

The objective here is to analyse how the initial form of mobile banking, which is money transfer through mobile networks, triggered mobile phone transformation in the continent and contributed to the development of its mobile banking industry. The paper first draws attention to some of the previous research on mobile phones in Africa, which discussion underlines the insufficiency of "appropriation" as a theoretical framework to analyse mobile phone practices in Africa. Then, I will discuss what I understand by mobile banking. Such understanding legitimates why the primitive forms of money transactions with mobile phone should be considered mobile banking. The later part of the paper will describe how this form of mobile banking worked, as well as how the principles they generated can inspire communication for development initiatives.

Previous Research on Mobile Phones in Africa

When I first started to research mobile phone practices in Africa early in 2000, there was hardly any substantial study on the topic, but there were a growing number of news reports regarding operators' market strategies as well as users' behaviours. My objective then was to understand these behaviours. As Jonathan Donner (2007) later indicated in his review of mobile phone studies in the developing world, the articulating concept in my research was that of 'tactics' (de Certeau, 1991), that is, users' abilities, thanks to their ingenuity and creativity, to find alternatives within the dominant structures framing their action. Such circumstances, Boulou de B'béri (2008: 200) refers to as 'marronage', a signifier designating the oxymoron reality of resistance to and seduction by structures of determination. In the Côte d'Ivoire where my field research was undertaken, I tried to analyse the innovative mobile uses stemming from the articulation of both a strong attraction toward mobile phones among the people and a strong resistance toward the norms and regulations accompanying these technologies.

In Africa, such tension appeared constitutive to the mobile adoption and adaptation process, where 'adjustment to the technical object' (Vidal, 2012) often leads to unpredictable practices. I looked at the ways in which Ivorian people were using their mobile phones within the context of a specific economic structure largely made of informal businesses, a legal framework often ignored by users, as well as specific forms of social ties and cultural practices, to respond to their economic and affective needs (Kamga, 2006). Two assumptions underlined my work then and, more generally, my research on ICT usages in Africa. The first: that Africans were mere consumers of western technologies, not participants in its development; and the second: that technological devices reach Africa already in their 'stabilized' (Pinch, Bijker, 1984) form. Such assumptions are clearly challenged today by mobile phone developments in the continent.

Increasing number of hi-tech companies are opening offices in Africa with the stated goal to understand the needs of African consumers better and to ease the development of local applications. In May 2014, Nokia Solutions and Networks, already present in Nairobi in Kenya since 2008, opened a new office in Lagos, Nigeria. In November 2014, Motorola Solutions, already present in Cairo since 2011, opened a new office in Nairobi, Kenya. As for Samsung, it now has its Electronics Engineering Academy in various African capitals. In 2002, the number of mobile phone subscribers was a little over a million in Côte d'Ivoire, with two main operators sharing the market. Some 12 years later, the fleet of mobile phone subscribers in the country had risen to about 21 millions and counting, with 5 operators competing for the market (ARTIC, 2014). For Africa as a whole, there were 778 million mobile phone

subscriptions at the end of June 2013 and the continent's mobile-subscription count was projected to reach one billion by 2015 (Informa Telecoms & Media 2013, p. 8). [It should be noted that the high cost of inter-connexion charged by operators forces many costumers to subscribe with two or even three operators to reduce their communication cost. Such phenomenon, which affects the mobile penetration rate in the continent, is not often underlined in reports.] The phenomenal mobile telephony growth has been accompanied by the creation of innovative services and applications affecting various sectors of socioeconomic life. And, as a result, an increasing body of scholarly work, especially in the field of ICT for development, has appeared, discussing either the impact of mobile phone in social activities and social ties or the "interrelationship between mobile technologies and users" (Donner, 2008).

Aggregating concepts as mobile banking, mobile agriculture, mobile learning, and even mobile health, have emerged and have being used to account for mobile phone practices in Africa. Some works have been devoted to understanding patterns of phone use, for example, the practice of beeping so prevalent in mobile users' communication strategies (Donner, 2005, 2007; Wamala, 2013). Many studies have concentrated on the impact of mobile phone in various sectors of socioeconomic life. Mehta, Maretzki and Semali (2011), for example, analysed the impact of mobile phones in social networking for economic and agro-entrepreneurial purposes. Education and youth, livelihoods (especially around the notion of empowerment) and poverty alleviation, healthcare and rural life are among the topics frequently investigated (see for instance Donner, 2005, 2008; Aker and Mbiti, 2010; Etzo, Collender, 2010; Porter, 2012; Wamala, 2012).

A growing number of studies have especially been looking into mobile banking practices, addressing money transfer (Fall, 2011; McGovern, 2011) or exploring "the main channels through which mobile phones can effect economic outcomes and appraise current evidence of its potential to improve economic development" (Mbiti, 2010, p. 207). These works focus on how mobile phones can be or have already been socially and culturally redefined, that is, used by Africans for purposes unanticipated by their developers and promoters. Most studies of mobile practices in Africa carry the uses and gratification perspective, which many consider as "one of the most appropriate perspectives for investigating why audiences choose to deal with different technologies" (North & Johnston & Ophoff, 2014, p. 116). Such works are undertaken within the broad framework of appropriation, where mobile usages are discussed in terms of "domestication" (Silverstone & Haddon, 1996) or the transformation that occurs in a given community as new usage patterns of a technology become prevalent.

Because most of these works are based on the underlying assumption that mobile phones reach African environment already mature, in other words, in their stabilized form, insufficient attention has been paid to the contextual changing nature of the device itself. As a result, new applications designed by and for Africans are overlooked. Such applications are never articulated as fundamentally transforming the technological device itself, or providing new functionalities to address specific local challenges. For a farmer, a mobile phone is not longer just a phone; with applications that help him watch the weather, the fluctuations of commodities prices on the market or the level of inventories in his clients' depots, etc. A mobile phone becomes an essential part of his agricultural toolbox. For a mobile bank user, a mobile phone is more than a bank account; it is also a means to receive or transfer money, to make payments, to manage a financial portfolio, as well as a window on the stock market. For some patients, a mobile phone has become a quick access to medical help, and for medical professionals a means to provide care at a distance. With the technological device itself being constantly reshaped by contextual realities and local practices, appropriation becomes insufficient as an articulating paradigm.

The Framework of Proportional Technologies

A mobile phone in Africa well illustrates the notion that technologies do not "evolve in a vacuum,' but that "they participate in the social world, being shaped by it and shaping it" (Law, 2004, p. 12). We have seen the development of scores of new mobile applications in the continent, dealing with every sector of socioeconomic life, from agriculture and finance to education, health-care, transportation, legislation, environmental conservation, business, to the pharmacy sector with an app like *Pharmacy & Poisons Board (PPB)* in Kenya. The socio-religious sector has developed *Halal Kenya,* for example, an app which provides a listing of Halal-certified establishments and their locations, allows users to review these, and enables them to report to the Kenya Halal Bureau establishments that infringe Halal rules.

Such mutual influences between technology and society have long been articulated by socio-constructivist theorists, especially since the works of Pinch and Bijker (1984). True, the limits of Pinch and Bijker's works have since been exposed. Klein and Kleinman (2002) devoted a paper to review criticisms the socio-constructivist approach to technology has faced since Pinch and Bijker. So, it is not my aim here to re-problematize socio-constructivism. What matters to me is the acknowledgement that 1) a technology developer is not a *deus ex machine,* one who emerges out of nowhere to solve social problems and 2) the recognition that a technological device is the result of negotiations between various relevant social actors.

Moreover, as exemplified by the mobile phone, a device can evolve as people's need evolves. Taking this view into account, we suggested the concept of 'proportional technologies'. Such a concept is close to that of 'appropriate technology' (Schumacher, 1973; Darrow & Saxenian, 1986; van Reijswoud, 2009), which suggests a people-centered and culture-conscious approach to technology. But it goes further by adding a diachronic dimension to appropriation, as it considers technologies themselves as subject to transformations over time. The concept of proportional technologies "entails the recognition that a technological practice may change trajectory in an evolving social system, as well as the suggestion that both (the practice and the system) have to remain in constant adequacy for tangible results to be sustainably produced" (Kamga & Cishahayo, 2013, p. 123).

Mobile Banking: An Open Signifier

The topic of mobile banking has aroused the interests of scholars since the early 2000s. Furthermore, there is a sustained effort to understand the diffusion and adoption process of mobile banking services (Suoranta & Mattila, 2004; Hernandez & Mazzon, 2007). What mobile banking entails, though, has evolved over time, and some services that were only anticipated in earlier studies, such as the systematization of mobile payment and investment (Herzberg, 2003) or custom messaging (Riivari, 2005), have since become trivial realities. On the one hand, as I discussed earlier, mobile technology is in constant transformation; on the other hand, banking services keep multiplying. These combined realities make mobile banking itself not a given but a process, a work in progress. Robert Siciliano (2013) observed that: "The earliest mobile banking services were offered over SMS, but with the introduction of smartphones and the Apple iOS and Google Android operating systems, mobile banking is now primarily offered through applications." He then predicted: "Eventually, mobile phones may even replace automated teller machines (ATMs) and credit cards" (Siciliano, 2013). Thus, if mobile banking today entails account security, reminders alerts, account balances, updates, history, customer service via mobile, branch or ATM location information, mobile payments, funds transfers, transaction verification, mortgage alerts, and mobile commerce (MMA, 2009), its future developments remain fairly open. The Global Head of Mobile Banking and Asia Pacific Head of eBusiness & Direct Banking, Rajesh Yohannan, was quoted as saying:

We are working to make Citi Mobile more than a tool for bills payments, transfers, locating ATMs and merchants and rewards redemptions. Our pipeline of mobile capabilities will make it possible for clients to trade stocks, apply for credit cards, purchase goods and services and even make person-to-person transfers anytime they choose (Citi, 2012).

Today, mobile banking has evolved in multiple directions in Africa. We have mobile money which allows users to deposit money into an account associated with their mobile number and then access a range of services, including domestic and international transfer of money, bill payment and phone credit purchase; mobile insurance which provides microinsurance services to those unbanked; and mobile credit or savings which provides credit and saving services to the unbanked. In December 2014, the Savings Bank of Côte d'Ivoire and the mobile operator MTN officially launched a service which allows the use of automatic teller machines (ATM) to withdraw cash from an MTN mobile money account. Therefore, the concept of mobile banking will keep broadening to encompass new services made available thanks to emerging applications. We thus understand mobile banking as a process by which banking operations and services are increasingly handled through mobile telephone services.

Such an understanding makes it clear that mobile banking entails the articulation of services from two different sectors of activities, the financial sector and the mobile telephony sector. This also reflects the reality of mobile banking in Africa and elsewhere in the developing world, which pulls together institutions from those two different sectors. In South Africa, for example, where only financial institution are allowed to receive deposits, the mobile operator *MTN* joined the *Standard Bank* to put in place *MTN Banking*, whereas Vodacom and Netbank teamed up to offer money transfer services via mobile phones. In Ghana, Hollard Insurance and Mobile Financial Services Africa joined MTN to launch Mid-Life Service, a "micro-insurance" run through mobile phones; whereas Ecobank established a national mobile money transfer network through a partnership with the four mobile operators in the country. Similar phenomena are observed in the Asia-Pacific region where mobile banking is flourishing. For example, as noted in the *Daily Times* (2014), "cellular mobile companies and financial institutions in Pakistan have introduced some of the best m-payment models as over last three years, cellular mobile companies have actively engaged in joint ventures with commercial banks for provision of such services." The significant growth of mobile banking in the developing world has moved some to predict "the end of banking as we know it" (Businesshi-Lite, 2012).

How Did Mobile Banking Begin in Côte d'Ivoire

As stated earlier, the focus in this paper is on the initial form of mobile banking in Côte d'Ivoire. In 2009, the French issue of the online paper *Balancing Act* (No 117 September) featured an article entitled: "Les cabines mobiles s'essaient aux transactions en Côte d'Ivoire" or as I translate it, "Mobile booths are trying out transactions in Côte d'Ivoire." Mobile booths are small informal structures set up on street corners here and there to

retail airtime (See Kamga, 2006 for more details). How were these informal structures, at the edge of legality, able to transfer money? The transaction was made between two mobile booth vendors, one at the sending end, and the other at the receiving end. The basic principle was the use of airtime bought from mobile operators as currency: the first mobile booth vendor uses the money to be sent to credit the mobile booth vendor's phone at the receiving end, who then gives the equivalent amount to the end money recipient. So, mobile operators, unwittingly through their networks, were facilitating a financial activity.

This activity predates 2009 in Côte d'Ivoire. Though there is no unanimity as to when exactly it started, 2005 seems to be a recurrent starting point in discussions we have had with a sample of mobile booth managers. Therefore, it is even before Mpesa, launched in 2007 in Kenya by the mobile operator Vodafone in partnership with Safaricom, an African commercial bank and Faula, a local microfinance organization. Just like the mobile booth itself in Côte d'Ivoire, mobile banking when it began operated outside of any legal framework. This is a typical user-led innovative practice. By 2009, the practice had reached all districts of Abidjan, the capital city of Côte d'Ivoire. The phenomenon then prompted **Euclide** Okolou (2009), an Ivorian blogger, to make the following comment: "mobile operators and the regulator need to review their business model, because facing them, customers are happy to transfer money without additional cost." Such a practice was not unique to the Côte d'Ivoire. It was observed in other West-African countries. For instance, Papa Oumar Fall (2011) discusses the Senegalese context where Seddo and Izi services, originally created by mobile telephone operators to retail telephone credit refill, eventually came to be used by vendors as money transfer services.

From the discussions I have had in the field with mobile booth vendors and their customers, the reason for the people's interest in this basic form of money transfer appeared to be multifold:

1) Costs. The transaction had no cost for the customer, contrary to Western Union, MoneyGram or other official financial structures whose services had fees.
2) Proximity. The ubiquity of mobile booths made access to money transfer easier for the population. No need to look for a financial institution office often situated downtown or in some remote business agglomeration.
3) Simplicity. No need to fill out a form with the potential to make mistakes in the name or to deal with a transfer confirmation number to be communicated to the recipient.
4) Flexibility. Not subjected to rigid hours of operation and therefore could accommodate customers in situations of emergency.

5) Universality. Reached more people, even in the remotest areas, provided the area is mobile phone serviced. And more importantly, no need to show identification. Therefore, even those without identification, a significant percentage of the population in some areas, could send or receive money.

Apps developed in the formal sector of mobile banking appear to be influenced by some of these principles. One example is the person to person (P2P) app developed to facilitate money transfers between two mobile bank customers. It lowers costs and reduces the role of the middle man in a technological operation. The same can be said with person to commerce (P2C) and commerce to commerce (C2C). Regulations are flexible enough to allow banks to use mobile agents as banking agents. These can then provide services currently available at bank branches, such as deposits and withdrawals or even account opening. Such flexibility favors an increased presence of banking structures in the community. In sum, it appears that mobile operators, banks, and the regulator are reviewing their business models to catch up with user-led innovations in the banking sector.

Concluding remarks

In her discussion of modes of appropriation of mobile phones in Africa, Annie Chéneau-Loquay (2010, p. 4) suggests that the goal in studying mobile phone practices should be to help design useful applications and services adapted both to meet African population needs and ensure the profitability of developers. Many works seem to echo such a functionalist approach to research. For example, Gerard Tchouassi (2012, p. 70) clearly states that his paper "aims to discuss how mobile phones can be used to extend banking services to the unbanked, poor and vulnerable population." Likewise, Dina Porter (2012, p. 241) focuses on "the potential of widespread access to mobile phones for improving the lives of poor people: the opportunities that mobile phones have already provided, or may soon present, for enhancing their material well-being." And van Reijswoud (2009, p. 5) suggests the need for a research approach to technology concerned with "effective community-embedded ICT that will be appreciated and used by the potential end-users." As well, research reports identify mobile "best practices", "emerging opportunities" and "challenges" and make recommendations (Rao, 2012).

The present paper has also adopted a functionalist stance towards research in looking for some principles that can be useful for Information and Communication Technologies (ICT) for development initiatives. What stands out here is that 1) the practice has to emerge from users; 2) its concrete usefulness should clearly be perceived over time; 3) it should present the potential to become universal, thanks to its affordability, its

availability, and its simplicity; 4) the industry and the regulator have to work together to set up a framework that takes into account these principles.

The importance of ICT for poverty alleviation is a given with international institutions concerned with development. The 2001 United Nations Development Programme (UNDP) annual report focussed on the role of information and communication technologies in improving lives. Today, mobile banking is considered a key part of the equation, as countless reports by the World Bank and other development organizations indicate. One of the key issues mobile money is facing is that of interoperability. The solution will entail negotiations among Mobile network operators as well as with financial institutions and regulators, governments and other international partners. Mobile banking mobilizes the mobile communication industry, the banking sector, national and international regulators, as well as sovereign states. One interesting area of investigation will be to understand what factors influence, when and how each of these categories of actors gets involved in an emerging social practice. I call this the psychology of involvement: or what causes players in a given industry to determine that it is the time to jump on the bandwagon?

References:
AKER, Jenny C. and MBITI, Isaac M. (2010), "Mobile Phones and Economic Development in Africa,' in *Journal of Economic Perspectives*, (24:3) 207–232.
AR   TCI   (2014),   "Abonnés   -   Téléphonie   Mobile,' http://www.artci.ci/index.php/Telephonie-mobile/abonnes-service-mobile.html .
B'BÉRI EBANDA (de), Boulou (2008), "Africanicity in Black Cinema: A Conjunctural Ground for New Expressions of Identity" in *Cultural Studies in Africa/African Cultural Studies*. CULTURAL STUDIES. (22:2) 188-202.
BUSINESSHI-LITE   (2012),   "The   end   of   banking   as   we   know it," http://www.businesshi-lite.co.za/the-end-of-banking-as-we-know-it.
CHÉNEAU-LOQUAY, Annie (2010), *Modes d'appropriation innovants du téléphone mobile en Afrique*, Union internationale des télécommunications (UIT), Genève & Ministères des Affaires étrangères et européennes (MAEE).
CITI (2012), "Citi Mobile Clients Top 1 Million Mark in Asia Pacific," http://www.citigroup.com/citi/news/2012/121009a.htm.
DAILY TIMES (2014), "M-banking: an innovative service flourishing to facilitate   unserved,   reduce   poverty," http://www.dailytimes.com.pk/business/10-Mar-2014/m-banking-an-innovative-service-flourishing-to-facilitate-unserved-reduce-poverty.

DARROW Ken; SAXENIAN, Mike (1986), *The Complete Appropriate Technology Sourcebook*. http://www.villageearth.org/atnetwork/atsourcebook/index.htm.

DONNER, Jonathan (2008), **"**Research Approaches to Mobile Use in the Developing World: A Review of the Literature," in *The Information Society*, (24:3) 140-159.

DONNER, Jonathan (2005), "User-led innovations in mobile use in sub-Saharan Africa," in *Receiver,* (14), 100-106.

DONNER, Jonathan (2005), *The rules of beeping: Exchanging messages using missed calls on mobile phones in sub-Saharan Africa*. Paper presented at the 55th Annual Conference of the International Communication Association, New York, NY. Retrieved from https://blog.itu.dk/DMKS-E2008/files/2008/10/donner-rules-of-beeping-ica.pdf.

DONNER, Jonathan (2007), "The rules of beeping: Exchanging messages via intentional 'Missed calls' on mobile phones," in *Journal of Computer-Mediated Communication*, *13,* Retrieved from http://jcmc.indiana.edu/vol13/issue1/donner.html.

ETZO, Sebastiana, & COLLENDER, Guy (2010), "The mobile phone 'revolution' in Africa: Rhetoric or reality?" *African Affairs, 109* (437) 659–668.

FALL, Papa Oumar (2011), *Les services de transfert d'argent : approche comparative des services offerts*, Université de Thiès - Licence en sciences économiques et sociales option banque-finance. http://www.memoireonline.com/10/13/7573/Les-services-de-transfert-d-argent-approche-comparative-des-services-offerts.html.

HERZBERG, Amir (2003), "Payments and banking with mobile personal devices," *Communications of the ACM*, 46 (5).

HERNANDEZ, José M.; MAZZON, José A. (2007), "Adoption of internet banking: proposition and implementation of an integrated methodology approach," *International Journal of Bank Marketing*, 25 (2).

INFORMA TELECOMS & MEDIA (2013), *Africa Telecoms Outlook 2014 Maximizing digital service opportunities,* http://files.informatandm.com/uploads/2013/11/Africa_Telecoms_Outlook_Low_resolution.pdf .

KAMGA, Osée (2006), « Mobile phone in Côte d'Ivoire: Uses and Self-fulfilment », in *Proceedings of the 2006 International Conference on Information and Communication Technologies and Development*, Berkeley, CA.

KAMGA, Osée and CISHAHAYO Fabien (2013), "Information and Communication Technologies for African Development: Proportional Technologies and an Ethics of Uses," in Jan Servaes (ed.), *Sustainable*

Development and Green Communication: Asian and African Perspectives, Palgrave Macmillan, 2013, p. 113-129.

KLEIN, Hans K. and KLEINMAN, Daniel L. (2002), "The social construction of technology: Structural considerations. *Science, Technology, & Human Values*," (27:1) 28–52.

LAW, John (2004), *After Method: Mess in Social Science Research*. New York, NY: Routledge.

MEHTA, Khanjan and MARETZKI, Audrey and SEMALI, Ladi (2011), "Trust, Cell Phones, Social Networks And Agricultural Entrepreneurship In East Africa: A Dynamic Interdependence," in *AJFAND*. (11:6) 5373-5388.

MMA (NA) (2009), *Mobile Banking Overview*, http://www.mmaglobal.com/files/mbankingoverview.pdf .

NORTH, David, JOHNSTON, Kevin, and OPHOFF, Jacques (2014), "The use of mobile phones by South African university students," *Issues in Informing Science and Information Technology*, (11) 115-138. Retrieved from http://iisit.org/Vol11/IISITv11p115-138North0469.pdf.

OKOLOU, **Euclide** (2009), http://okibat.afrikblog.com/archives/2009/09/24/15182829.html.

PINCH, Trevor & BIJKER, Wiebe (1984), "The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other," *Social Studies of Science*, (14:3) **399-441.**

PORTER, Gina (2012), "Mobile Phones, Livelihoods and the Poor in Sub-Saharan Africa: Review and Prospect," *Geography Compass*, (6:5) 241-259.

REIJSWOUD (van), Victor (2009), "Appropriate ICT as A Tool to Increase Effectiveness in ICT4D: Theoretical Considerations and Illustrating Cases," in *EJISDC*, (38:9) 1-18.

RIIVARI, Jukka (2005), "Mobile Banking: a powerful new marketing and CRM tool for financial services companies all over Europe," *Journal of Financial Services Marketing*, 10 (1).

SICILIANO, Robert (2013), "What is Mobile Banking? Is it Safe?" http://www.huffingtonpost.com/robert-siciliano/what-is-mobile-banking-is_b_3652771.html.

SILVERSTONE, Roger and HADDON, Leslie (1996), 'Design and the Domestication of Information and Communication Technologies: Technical Change and Everyday Life," in Silverstone, R. and Mansell, R (eds) *Communication by Design. The Politics of Information and Communication Technologies*, Oxford University Press, Oxford.

SUORANTA, Mari & MATTILA, Minna (2004), "Mobile banking and consumer behaviour: New insights into the diffusion pattern," *Journal of Financial Services Marketing,* (8) 354–366.

SCHUMACHER, Ernst Friedrich (1973), *Small is Beautiful: Economics as if People Mattered,* London, Blond and Briggs.

TCHOUASSI, Gérard (2012), "Can Mobile Phones Really Work to Extend Banking Services to the Unbanked? Empirical Lessons from Selected Sub-Saharan Africa Countries," in *International Journal of Developing Societies,* (1:2) 70-81.

VIDAL, Geneviève (2012), (dir), *La sociologie des usages : continuités et transformations*, Cachan, Lavoisier.

WAMALA, Caroline (2012), *Empowering Women Through ICT,* Stockholm, Spider ICT4D Series, no. 4.

WAMALA, Caroline (2013), "I Have to Give an 'I Can' Attitude: Gender Patterns in Beeping Practices," in SAGE Open, 3: DOI: 10.1177/2158244013477101.

http://sgo.sagepub.com/content/3/1/2158244013477101.