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Virtual currency as an inclusive monetary innovation for the unbanked poor

Mike Chipere

University of Pretoria, Human Economy Program, Pretoria, South Africa

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ABSTRACT

The narrative about the future of money in developing countries is dominated by *international financial institutions* (IFIs) and their affiliates, multinational payment service providers, mobile network operators and academia. Most have reduced the future of money or monetary needs of the unbanked to the eradication of cash by digitization. In contrast to this techno-centric narrative, in this article, I situate the future of money in a new sociotechnical model which I refer to as the *quantity, quality and public authority deficit* (QPAD) *hypothesis*. It recognizes three disadvantages (or deficits) from the use of money: *quantitative limits*, which relates to the fact that its capacity to act as medium of exchange, is conditional on its availability; a *qualitative deficit*, involving the failure to embody attributes of transacting parties (identity, reputation etc.); and a *public authority deficit*, represented by weak central authority involvement in addressing the monetary needs of the unbanked poor. On this basis, any future inclusive monetary innovations which do not address these three deficits will most likely be unsuccessful. These ideas are based on findings from a participatory ethnographic study that draws on a *sociology of scientific knowledge framework* (Mackenzie, 1996; Pinch and Bijker, 1984; Spinardi, 2008) to evaluate technological properties of the Edinburgh *local exchange trading scheme* (LETS)-issued virtual currency. This currency is compared and contrasted with the properties of government-issued money.

1. Introduction

This study redefines the problems towards which future monetary innovations for the unbanked poor should be geared, by contributing answers to a simple but complex question: What are the monetary needs of the unbanked poor in developing countries and what is the role of *information and computer technology* (ICT) in addressing them?

These are relevant questions because a deep understanding of user needs and the definition of the key problem are necessary in the critical first stage of most innovation models (Abernathy and Utterback, 1978; Rogers, 1983; Urban and von Hippel, 1989). *International financial institutions* have reduced the monetary needs of the unbanked poor to their supposed need for bank-sourced money, while mobile network operators, international payment providers, and academic researchers speculatively situate them with respect to digital money or mobile money.

In contrast to these top-down, supply-driven approaches, I situate the future of money for the unbanked poor in a new sociotechnical model, which I refer to as the *quantity, quality and public authority deficit* (QPAD) *hypothesis*. It recognizes three disadvantages or deficits from the use of money (M0).[1] They include: *quantitative limits*, which relates to the fact that money's capacity to act as a *medium of exchange* is conditional on its availability; a *qualitative deficit*, or money's failure to embody the attributes of the transacting parties, including identity and reputation; and a *public authority deficit*, which is created by weak central authority involvement in addressing the monetary needs of the unbanked-poor. On this basis, I argue that any future inclusive monetary innovations which do not address these deficits will likely be unsuccessful.

This study broadly fits into post-2015 development informatics research priorities based on the work of Heeks (2014), who identified gaps at the convergence of *ICT and developmental finance* (ICTDF). More specifically, my study responds to criticisms by Duncombe and Boateng (2009) that research projects at the intersection of ICTDF lack contributions by researchers from developing countries, and that they are commercially-driven and thus lack sufficiently deep community needs assessment.

[1] The unbanked poor have been confined to use of fiat currency, notes and coins, which circulates outside banking institutions.

E-mail addresses: mikechipere@gmail.com, mike.chipere@up.ac.za

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First, I am offering this article as a designer of web and mobile payment systems for international remittances, with an academic background in Finance, Financial Information Systems and Science and Technology Studies but currently working as a researcher for an Africa-based academic institution.

Second, I also respond to the criticism about the predominance of commercially-driven ICTDF research projects. As a result, this research article is based on a case study of a grassroots initiative related to a non-government-driven virtual currency, issued by an Edinburgh-based *Local Exchange Trading Scheme* (LETS).

Third, a strong community needs assessment is developed via the inductive part of the *sociology of scientific knowledge analytical framework* (SSK) (Mackenzie, 1996; Pinch and Bijker, 1984; Spinardi, 2008).[2] I draw on it to evaluate the technological properties of a virtual currency, and compare and contract them with the properties of government-issued money (M0).[3] My goal is to draw lessons upon which future monetary innovations in developing countries could be based. This is the origin of the QPAD hypothesis. I have also set a research agenda which spotlights the materiality of government-issued money, especially cash and coins as a credible unit of analysis. This often-overlooked and mundane technological artefact is the dominant form of government-issued money that is accessible to the unbanked poor. Thus, its examination cannot be separated from the monetary practices and needs of the unbanked poor.

One possible concern about this research is about how an Edinburgh-based case study can contribute towards the design and development of inclusive monetary innovations in developing countries? The arguments against simplistic ideas – that western innovations and technologies can be effortlessly transferred to developing countries – are credible. However, at the outset, I am not on a grand mission to find a generally applicable blueprint designs. Instead, there are perils with expecting that knowledge and technologies from the west can be flawlessly transferred to developing countries (Korten, 1980). Any contributions that I may be able to make on future monetary innovations for the unbanked will be partial and incomplete. A new paradigm-shifting, free-standing inclusive monetary technology may emerge from this, but only with small incremental shifts.

The origins of popular technologies, such as computers, email messaging, text editing software packages and most mobile phones were in Europe, yet many of them now are fully integrated in many developing countries. My case study shares some of the contextual realities faced by the unbanked poor there. For example, currency schemes like LETS operate on meagre financial resources, and have little access to sophisticated technologies or technological know-whow. Most participants in these schemes are socially excluded, and they experience severe poverty and deprivation. These are realities facing the unbanked poor in developing countries today. Their payment system shares similarities with developing countries non-monetary exchanges, which are more relational and culturally rich, including reciprocal exchanges, and the so-called primitive currencies (Abdul-Rahman and Hailes, 1997; Misztal, 2013; Adler, 2001; Ben-porath, 1980). Further, the virtual currency used by LETS is reliant on social capital, which for centuries has been the cornerstone of the oldest forms of currencies in developing countries (Szreter, 2002; Valeri, 2011).

My findings are targeted at developers and promoters of bottom-up user driven innovations. These can be explained by the recent financial disintermediation of the market for debtors and creditors by non-experts. This has attracted new participants who are introducing collaborative approaches centered on humanistic concerns more than profit (Belk, 2014; Flannery, 2007). Examples include peer-to-peer lending models, where donors in developed countries lend as little as US$25 to borrowers in developing countries with no interest charges. Leading players in this sector include Kiva, Prosper, Zopa, GlobalGiving, and many others (Kauffman and Riggins, 2012).

These innovations do not develop in a linear way. Their emergence is subject to luck, serendipity, accidents, success and partial success, failure, and other factors (Akrich, 1992; Christensen, 2013). Thus, the complexity around the development of new technologies requires experimentation and the flexibility to accept uncertainty. Furthermore, the rationality for choosing an analytical framework which privileges materiality of a technology is that where these properties are transferred to a different context, its more complex constituents such as social, organizational and political components will only be reinstituted by the new contextualy environment. For example, countries that adopted the U.S. dollar as their national currency due to the instability of their own currencies would have found it impossible to do so if the precondition was to wholly adopt the U.S.'s monetary policy in its existing form. Some may find it difficult to picture any parallels with my own study because it is based on a virtual currency, while a U.S. dollar bill is tangible and can be shipped to another country.

2. Methodology

This study examines the technological properties of a *non-government issued virtual currency* issued by a Local Exchange Trading scheme (LETS). To participate in it, I paid a £5 membership fee in December 2012. A few weeks after that in January 2013, I was elected to be a technology lead committee member and continued to participate in the scheme for close to 18 months. I took part in committee and annual general meetings which became a valuable source of primary data. Additional sources of primary data included participant observation during trading fairs held every 1 or 2 months, and through online ethnography, through which I virtually observed member interactions and trading activities on the Edinburgh LETS online portal at least once per week. Secondary sources of data included committee and annual general meeting minutes document analysis.

I next provide the rationale for evaluating the materiality of an intangible virtual currency and tangible (cash) technological artefacts, over social constructivist approaches for studying technology and money. This is followed by a brief history of LETS to provide background on the domain in which my study is based. My research findings are divided into several subsections which provide an account of how the QPAD hypothesis and the neocommodity economic theory of money emerged, before I conclude.

3. The materiality of technological artefacts

By choosing the SSK framework, the materiality of technological artefacts is applied, instead of the more common social constructivist approaches centered on technology as socially-constructed and shaped. This choice may attract criticism from social scientists from technology studies and anthropologists from economic anthropology that I may be over-estimating the instrumental and the functional attributes of government-issued money and virtual currencies. Studies which narrow the focus on the physical properties of an artefact tend to be dismissed as *technological determinism*

[2] According to Mackenzie (1996), knowledge about a technological artefact is acquired through three processes: *via authoritative claims* made by experts; *by induction* though testing and using the artefact), and *by deduction* with extrapolation from expert claims, models or theories)

[3] Ilargely relied on the inductive part of the SSK framework to make comparisons. I also drew on the deductive part, via government monetary authorities' expertise that money is a medium of exchange, unit of account, and a means to store value.