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M-Banking and M-Payments Services in the Developing World: Complements or Substitutes for Trust and Social Capital?

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Abstract

Recently, a variety of initiatives have been launched around the globe, which seek to use the mobile phone to provide financial services to the "unbanked". These services take a variety of forms—from long-distance remittances of large sums of money, to micropayments, to alternative currencies where the stored minutes (or credits) in a handset replace or augment cash holdings and transfers. Relatively little research has been conducted on the user-behaviors related to m-banking and m-payments systems in the developing world. This paper addresses some of the theoretical issues surrounding the use and impact of m-banking/m-payments systems, focusing on the intersections of financial and social networks, and considering how usage patterns may both reflect and alter the social and economic relationships within and between low-income individuals and households across the developing world. Thus the goals of the paper are twofold: on the one hand, it frames and identifies some issues germane to the design and deployment of mobile banking systems, to which the community of socio-technical/mobile phone researchers can provide a valuable input. On the other hand, it identifies m-banking/m-payments in the developing world as a fruitful domain for mobile research in general.

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Introduction

One of the most remarkable technology stories of the past decade has been the spread of mobile phones across the developing world. Fueled by prepay cards, inexpensive handsets, and significant expansions in mobile signal coverage, hundreds of millions of people have purchased the first telephones of their lives. The clearest benefits associated with this uptake are provided by the mobile's core functions—by allowing people to stay in touch, by voice call or simple SMS, mobiles help people overcome distance and coordinate their social and economic lives. And yet, many of these new mobile users in the developing world live in informal and/or cash economies, without access to bank accounts or lines of credit. Indeed, across the developing world, there are probably more people with mobile handsets than with bank accounts (Porteous, 2006). Hence the appeal and utility of mobile banking and mobile payments services for the developing world seems clear.

Recently, a variety of initiatives have been launched around the globe, which seek to use the mobile phone to provide financial services to the "unbanked". These services take a variety of forms—from long-distance remittances of large sums of money, to micropayments, to alternative currencies where the stored minutes (or credits) in a handset replace cash holdings and transfers. Many of these initiatives can no longer be considered pilots; in the Philippines, in South Africa, in Kenya, and elsewhere, some variant of these services are available to virtually any customer on a nationwide GSM network. While not as ubiquitous as voice calls, text messages, or even ring tones, m-banking and m-payments are on the cusp of becoming a fixture in the developing world.

Relatively little research has been conducted on the user-behaviors related to m-banking and m-payments systems in the developing world. Open questions include: With whom do people exchange funds? How do households integrate mobile finance into their economic portfolios? And, what are their impacts on household well-being or economic growth?

This paper will address some of the theoretical issues surrounding the use and impact of m-banking/m-payments systems, focusing on the intersections of financial and social/economic networks. For both and person-to-person transfers and customer-to-supplier payments it will identify key questions of trust that may emerge, and will consider how usage patterns may both reflect and alter the social and economic relationships within and between low-income individuals and households across the developing world. Thus the goals of the paper are twofold: on the one hand, it frames and identifies some issues germane to the design and deployment of mobile banking systems, to which the community of socio-technical/mobile phone researchers can provide a valuable input. On the other hand, it identifies m-

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banking/m-payments in the developing world as a fruitful domain for socio-technical mobile research in general. When the mobile begins to function as a wallet, and as a mediator of economic as well as social relationships, the significance of mobile communication itself may be altered, in ways that are of theoretical and practical importance to those who study it as a worldwide phenomenon.

M-Banking, M-Payments, M-Finance (in) M-Commerce

The terms *m-banking, m-payments* and *m-finance* refer collectively to a set of m-commerce applications which enable people to use their mobile telephones to manipulate their bank accounts, store value on an account linked to their handset, transfer funds to people or merchants, or even access loans or insurance products. This paper will use the compound term "m-banking/m-payments systems" to refer to the most common features. The first targets for these applications were consumers in the developed world, for whom the mobile is usually an additional channel for these activities, complementing services offered by bricks-and-mortar financial institutions, checkbooks, ATMs, voicemail/landline interfaces, smart cards, point-of-sale networks, and, of course, internet resources. In these cases, it may be the *convenience* of the mobile as a platform for these transactions which is most appealing (Karjaluoto, 2002). For users in the developing world, on the other hand, the significance and appeal of these m-banking/m-payments systems are like the appeal of mobiles versus landlines (Hamilton, 2003)—less about convenience and more about *accessibility and affordability* (Cracknell, 2004; infoDEV, 2006). Financial institutions have had difficulty providing services through traditional channels to poor clients, particularly since branches are so expensive to maintain. On the other hand, mobile phone providers have identified m-banking/m-payments systems as a potential service to offer customers, increasing loyalty while generating fees and text-message charges (infoDEV, 2006). A dance of sorts is underway, between banks, mobile carriers, technology firms, regulatory agencies, donors, hardware and software providers, and, of course, users themselves, to determine the shape of m-banking/m-payments services in the developing world (infoDEV, 2006; Ivatury, 2004; Ivatury & Pickens, 2006; Porteous, 2006).

There are many models currently under development. At the broadest level, some of the variability stems from differences in the alignment of institutions involved in the provision of services. A recent report by Porteous (2006) is a good overview; it details how some m-banking/m-payments systems are offered entirely by banks, others are offered entirely by telecommunications providers, still others involve a partnership between a bank and a telecommunications provider, where the mobile carrier provides the interface for the services (often including the sales and branding), and the bank provides the clearing and storage facilities, and links to other formal financial mechanisms, often required by regulatory agencies. Some of the notable applications currently on offer include Wizzit ("the Bank in

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Your Pocket") in South Africa (Ivatury & Pickens, 2006), G-Cash and Smart Money, offered by the Philippines' two largest GSM companies, Globe and Smart, (infoDEV, 2006; Smith, 2004), and m-pesa[1], offered by Safaricom in Kenya.

Keeping in mind that there is some variability in the exact customer experience between countries and providers, we can nevertheless describe an archetypal (aggregated) example of a user's interaction with an m-banking/m-payments system:

> Joseph works in a mining town, hundreds of miles from his family in his home village. At the end of each month at the mine, Joseph generally gets paid in cash, and always manages to put some aside, which he wants to send back to his family. So, Joseph visits a local participating mobile shop, perhaps where he bought his mobile to begin with, and signs up for the m-banking/m-payments service on offer by his GSM provider. After signing a few forms, showing some ID (but perhaps not), and executing a few steps on the handset, his account is up and ready to go, but is empty. To "cash In", Joseph hands the money he has set aside to the shop keeper, who takes a small fee, and deposits the rest in Joseph's new m-banking/m-payments account. Joseph is allowed to store and send a certain amount in the account linked to his handset, due to banking and anti-money-laundering restrictions, it would not be enough to pay for a car or a home, but he could probably keep a couple weeks' wages in the account.
>
> Sending money to his family is then lightning fast, as long as his family is on the same GSM Network. He selects an amount and his mom's mobile number, and using only the handset, enters his PIN; the system accepts his transaction and instantaneously sends a SMS alert to his mom's handset in the village. Joseph's mom can go to *her* participating corner mobile phone vendor, show the alert SMS, and for a small fee, set up her own m-banking/m-payments account, enter her PIN and "cash out" Joseph's transaction. She can elect to keep some of Joseph's transfer on her stored value account, and use it to pay bills, send on to other people, or perhaps by airtime down the road. She decides to cash out most of Joseph's money (the shopkeeper in the village takes a small percent commission), but saves a little bit, which she uses the next day, to pay her electricity bill.

This vignette has elements of the key elements of m-banking/m-payments systems in the developing world; most of which use various methods to enable three things:

The storage of value (currency) in an account accessible via the handset. If the user already has a bank account, this is generally a question of linking to a bank account. If the user does not have an account, then the process involves either creating a bank account for her, or creating a pseudo bank

[1] http://www.safaricom.co.ke/m-pesa/ Safaricom is partly owned by Vodafone

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account, held by a third party or the user's mobile GSM provider.

The ability to easily convert cash in and out of the stored value account. If the account is linked to a bank account, then users can visit banks to cash-in and cash-out. But in many cases, users can also visit the GSM provider's offices and stores. In the most flexible and convenient incarnation, a user can walk up to a corner kiosk or grocery store, a place where they might buy their mobile prepay card, plunk down the equivalent of couple of dollars on the counter of the merchant, and have the merchant handle the transfer of those funds into the users mobile account (for a small fee).

The ability to transfer stored value between accounts. The formal financial sector offers checks, electronic/online transfers, money orders, and credit card transactions take care of most of this. Pawn shops, money transfer firms and post offices also offer services. The informal sector includes transnational offerings like halawa and flying money. M-banking/m-payments systems add a new option, allowing people can generally transfer funds between accounts linked to two mobile phones, by using a set of SMS messages and PIN numbers.

There are some experiments underway to use the mobile channel to service credit or loans, but these are not as prevalent or as well-tested. Rather, most systems revolve around stored value, cash-in and cash-out[2], and the facilitation of transactions and transfers. All three of these elements may seem straightforward, but for those without access to a formal bank account, let alone a credit card, they can be powerful new tools indeed. The line between a mobile phone and a wallet is more blurry than ever.

At this point, it is important to describe a related, though less formalized, approach to some of the problems m-banking/m-payments systems are designed to address. Even in the absence of stored value functions or links to actual bank accounts, some users are finding that cash-in/cash-out and person-to-person transfers can be supported through the exchange of airtime or minutes. These services exist on GSM networks in South Africa, Egypt, the Democratic Republic of the Congo, and elsewhere, and were

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[2] One can argue that the cash-in and cash-out functions emerged almost by accident, as an adaptation of a technology developed for a different purpose. In the Philippines, Smart telecom had created their 'smart load' system, which removed the need for vendors to supply physical prepay cards with airtime to their users; instead, Smart set up the infrastructure to allow merchants to take cash, and directly transfer that into airtime on the account. With thousands of participating merchants, the switch to facilitate the reception of money into the mobile stored value system was made easier than it otherwise might have been (infoDEV, 2006).

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intended to let families or friends share minutes between multiple prepay SIM cards. Though the overall evidence is still anecdotal and far from solid, (Batchelor, Scott, & Hearn, 2007; Porteous, 2006), there are markets like Nigeria where informal practices have developed which have adopted these transfer features to treat minutes/airtime as a quasi-currency onto itself, one which can be converted from and back into hard cash, or simply stored for later use on a call, or can be re-bartered (Ray, 2007). For example, Chipchase and Tulusan (2007) describe the informal "Sente" system of airtime exchange in Uganda, where would-be senders can top-off the airtime accounts middlemen (prepaid airtime resellers), who will take rather sizable commission and give the rest of the value to the intended recipient of the money. Like the practice of beeping/flashing, which allows users to send messages via missed calls (Donner, 2005), or perhaps like text messages themselves, which were originally designed to be used by engineers in the employ of the GSM providers (A. Taylor & Vincent, 2005) users have demonstrated their creativity in adapting a technology to use in the way that is most useful to them (Edgerton, 2007)

Returning to the more formal systems—those designed specifically for m-banking/m-payments—the most excitement may be around their potential to reduce the cost and increase the reliability of sending remittances, both across and within national borders (UK Remittance Working Group, 2007). Remittance flows from the world's diasporas back to developing countries are enormously important to households and national economies alike, and are second to only Foreign Direct Investment as a source of economic transfer between the rich and poor worlds. The U.N. estimated 2005's remittance flows at US$232 billion (The Economist, 2006); the GSM association argues it is currently $320 billion, involving 200 million diaspora workers (GSM Association, 2007). Various channels exist, including formal bank transfers, Western Union and other specialized remittance firms, informal systems like Hawala in the Islamic world, and the physical movement of hard currency or convertible assets like gold jewelry across borders. The cost of sending a few hundred dollars home has traditionally been high; the consultancy Gamos estimates that in 2003, the average remittance cost its sender 12% (Batchelor, Scott, & Hearn, 2007).

Remarkably, some of these m-banking/m-payments systems now work internationally, and offer a remittance channel with lower costs to users than the existing alternatives Smart and Globe, based in the Philippines where a notably high proportion of the population works overseas, have led the way in this effort, and have set up agents overseas to receive workers money, which is then transferred to family in the Philippines via the Smart Money and G-Gash systems. But others have followed serve other diaspora markets; 2007 saw the announcement of a coalition of 19 GSM providers, representing 100 countries, with MasterCard as a partner, to streamline these remittance flows (GSM Association, 2007). Within-

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country remittances, like the example of Joseph and his mother in the village used above, are harder to quantify and track, but are certainly also an attractive venue for the introduction of m- banking/m-payment systems.

Applying a Social Networks Lens to M-Banking/M-Payments Systems

Indeed, these advances have been interesting, and the uptake has been strong in the Philippines, where three million customers are using Smart and Globe's (infoDEV, 2006) m-banking/m-payments systems, and in South Africa, were 50,000 people are using WIZZIT (Ivatury & Pickens, 2006). However, the enthusiasm for the technology within the economic development community may have outpaced that of those end users—the unbanked—about whom the economic development community is most interested (Batchelor, Scott, & Hearn, 2007; Ivatury & Pickens, 2006). Blogs may say that mobile banking will "change the world"[3]. The practitioner community will exchange ideas on a web site called Transformational M-payments[4], and the popular press, like the Economist (2006) may write about a "leap from the world of cash to cellular banking". Although m-banking/m-payments systems have the potential to be one of the great new innovations in telecommunications for the developing world, there remains a need for detailed user level research around this new and rapidly changing technology.[5] The systems may "change the world" but the magnitude and shape of that change remain open questions— ones in which researchers focused on the role of mobile telephony in society should take an interest.

A myriad of socio-technical questions sit at the intersection of financial transactions and mobile phones in the developing world; and historically, the social sciences have been a value source of theoretical understanding of the dynamics of adoption and use of such technologies. For example, Brown, Cajee, Davies and Stroebel (2003) used a model combining elements of the theories of diffusion of innovation (Rogers, 1983) and of planned behavior (S. Taylor & Todd, 1995) to predict mobile

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[3] http://blog.foreignpolicy.com/node/3131

[4] www.m-payments.org, visited April 2007 but currently offline

[5] Some user-level studies have emerged from within the development community, with more surely to follow. For example, Ivatury and Pickens (2006) examined Wizzit users in South Africa, finding a slightly more educated and prosperous group than perhaps had been expected. A report by Bachelor, Scott and Hearn (2007) on potential users in Senegal found 13% of households in the population with a formal bank account, 17% receiving remittances, and 17% sending remittances. Getting cash in and cash out conveniently, using a broad network of agents, was perceived as a major barrier for pickup in Senegal.

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banking take-up in South Africa, finding high levels of perceived risk to be a major barrier to further adoption. However, to date, it is one of the few evaluations of an m-banking/m-payments system in the developing world to explicitly apply a theoretical lens.

In accordance with the theme of this workshop, the remainder of this paper will focus on the relational structures which m-banking/m-payments systems may support and/or alter. There is a strong tradition of examining economic transactions in their social context, not as discrete acts, but rather as markers and reinforcements of a set of inter related responsibilities, roles, and transactional networks (Burt, 1992; Geertz, 1978; Granovetter, 1985); often these transactions are seen as either structured by or creating a form of 'social capital' (Coleman, 1988; Fafchamps & Minten, 2002; Woolcock, 1998). Strong, too, is the research tradition exploring the role of social capital (and/or interrelated networks of actors) in the shape of financial/economic transactions across mediated communication networks (Castells, 1989; Sawyer, Crowston, Wigand, & Allbritton, 2003). From the mobile phone arena, Horst and Miller's analysis of the practice of "link up" (using the mobile to accelerate the process of building and maintaining a loose network of possible resources for future assistance or monetary loans) is one example (Horst & Miller, 2006). Our understanding of the evolution and function of formal m-banking/m-payments systems could benefit from an application of the social capital lens, but none has been attempted so far. Broadly speaking, then, we now take up the question of m-banking/m-payment systems and social capital.

The embeddedness and inertia of m-transactions

A possibility which has remained unexplored in the initial literature on m-banking/m-payments systems in the developing world is that a large proportion of the volume of m-transactions may accounted for by existing transactional relationships which have shifted over to the new m-channels. This is not to say that a shift is not itself valuable—compared to informal and formal alterative systems, there are significant benefits of cost, reliability, safety, flexibility, and immediacy associated with m-banking/m-payments systems. However, it is important for the industry, for researchers, and for policymakers, to understand and design for the structure of the transactional networks and behaviors that already exist already. Indeed, the structure of these preexisting transactional networks will be an important influence on whom the m-banking/m-payments systems will be used to transact with, where users will see value, and on how analysts and policymakers should assess 'impact'.

An antecedent to this argument comes from the microfinance sector. Arguing that "it is no longer acceptable for prospective providers not to inform themselves of what their future clients are already

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doing and what services they appear to need", Ruthven (2002, p. 269) identifies a broad array of "money mosaics" operating in Delhi slum, prior to the arrival of formal microfinance lending institutions. While granting that the poor lack access to savings accounts, she identifies a web of at least six kinds of financial relationships which result in the capacity to secure credit: social security relations, relationships of shared origin and circumstance, patron-sponsor relations, formal family relations, tight economic relations, professional relations. Further, she argues that "financial relations are frequently embedded in other social relations which reflect the diversity of social, security, and economic needs which people have. It highlights the relatively small role of commercial transactions in people's financial lives, and the importance, extent and diversity of personal networks (2002, p. 267).

Ruthven's argument maps nicely to the analysis of m-banking/m-payments systems; we need to look to the social shape of the existing transactional networks to understand the role and impact of these systems will be. As a preliminary step, this paper does so in two parts, first considering person to person transfers, followed by customer to supplier transactions.

One note before proceeding: this discussion is limited to stored-value systems, where all balances are positive (cash is placed in the system, and then moved electronically to a target). The introduction of credit into the mix brings another set of risks and mechanisms required to ensure (or replace) trust. These credit systems may be of interest and micro-finance institutions, who are considering ways to facilitate either loan making or loan repayments over mobile channels, but as of early 2007 these remain in the pilot stages.

Person to person transfers

A great deal of the enthusiasm around m-banking/m-payments systems in the developing world hinges on person to person transfers, particularly as 'remittances' over distances, both internationally and between the rural and urban areas. Cutting the costs and increasing the reliability of moving money over distances will undoubtedly help many poor families, particularly those for whom a primary the source of income is located far away from where the family lives. But at the same time, it borders on common sense that the likelihood of long-distance remittances going to new family members is relatively low compared to remittances going to the same family members through different channel. It is possible that families might elect to stay away from home longer, perhaps go away more easily, knowing that it is becoming easier and less costly to send money home; but for the time being, we have no data on that. In other words, m-banking/m-payments systems may do more to increase the volume, speed, and frequency of remittance flows than to alter the target and structure of those flows; research should be undertaken which

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explores exactly this.

Pre-existing social and economic relationships (i.e., strong family ties) play a greater role in structuring the shape, trajectory, and magnitude of remittance transfers than do the availability or relative cost of one channel vs. another. Nevertheless, there are social capital or trust issues involved with a possible switch to m-banking/m-payments systems; remitters need to have confidence that the system that they elect to use will deliver their money (all their money) in a timely way to the remittance target. Users can trust systems independent of the people involved in the systems—the Islamic Hawala system relies on unknown third parties to deliver money safely using a series of intermediaries. Similarly, Chipchase and Tulusan (2007) were surprised at the extent to which people were comfortable topping up invisible (remote) third party middle men to cash out airtime on their behalf in the *sente* system in Uganda. At the same time, other research suggests that users would feel more comfortable with at least some face-to-face contact and assistance (if only for reassurance) while using an m-banking/m-payments system like Wizzit (Ivatury & Pickens, 2006).

What about transactions with weaker ties—with friends or neighbors, rather than with tight family members? I recently conducted a focus group with 10 lower-income urban users of Smart Money and G-Cash in Manila in May 2007. My preliminary impression from that group is that users see a great distinction between sending money to family members, inside a web of familial relationships and obligations, and loaning money to (local) friends, which they considered to be more a business transaction. Indeed, one of the women in the groups explained that she was using the m-banking/m-payments system to run a small money lending business on the side of her normal job.

Thus, both the physical distance between users and the strength/nature of the relationship between them influences the shape of person-to-person transfers over the mobile banking channel. For the most part, we should be expecting to see these transactions follow along well tried, pre-existing paths, rather than the system initiating a series of new economic transaction relationships. Indeed, in the small Manila focus group, of the 10 people using the system, only one had used it to trade with somebody that they had not previously traded with using another channel (western union, hand delivery, pawnshop, Parcel Post, etc) —that was the woman I mentioned above, who had started a money lending business.

Customer to Supplier

Much of the enthusiasm might be around person to person transactions, but transactions from customers to suppliers, whether the suppliers are individuals or other companies, are also facilitated by m-banking/m-payments services, and are worth the examination by the mobile phone research community.

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These payments come in two general forms, the first is bill payments to large centralized service providers like utilities. The second is more distributed, with smaller merchants from both the organized and unorganized sectors accepting mobile payments in lieu of cash. (Signing on such merchants to accept m-banking/m-transfers systems is ongoing problem of the chicken-and-egg genre)

As a way to understand the patterns of transactions between individuals (or small firms) and large companies, the social capital lens may not be particularly productive. Some people will trust the system, and will trade off in favor of sending an SMS rather than going down to the window and paying a bill in person. The utilities might be interested and the services as a way to increase efficiency and reduce malfeasance, but this is hardly a question of social capital or embedded transactions. But between individuals (or small firms) and smaller suppliers or merchants, particularly those closer to the fringes of the economy, real issues of trust may influence the choice to use this channel. The possibility for instantaneous, reliable transfers might ease arguments between suppliers and customers in the absence of social capital or trust, or might enable suppliers to manage the extension of informal credit to customers more effectively. The Cross-border barter arrangements described by Ray (2007) suggest that there is some appeal associated with m-banking/m-payments systems as a way to ease market inefficiencies and create a more secure trading environment.

Similarly, a lack of trust or confidence may be overcome when using m-banking/m-payments systems while ordering goods at a distance; it would be interesting and valuable to see whether people in rural areas or smaller towns, removed from a city's relative abundance of choice of goods, would be willing to engage in e-commerce over the mobile channel, relying on a payment delivered by SMS to secure the delivery of a good, maybe a cricket CD, or a new tool for the farm. Again, it may depend on the ability of people to switch from a form of trust based on interlocking and embedded relationships to one based more on the semi-anonymous process afforded by electronic commerce ((Zelizer, 1994) referencing (Coleman, 1990)). Or, it might be the case that individuals would be more comfortable with hybrid systems, where m-transactions were 'wrapped' or present by human agents interfacing between the customer and the distant suppliers. In either case, the broadening of the capacity of individuals and small firms to move money remotely, quickly, and reliably may be an important new contribution to getting in electronic commerce underway in the developing world. At the same time, this form of m-commerce may behave similarly to the e-commerce applications in the developing world so far, that have been tried, in that they would end up reinforcing ties between existing trading partners, rather than generating any new opportunities new suppliers and customers (Humphrey, Mansell, Paré, & Schmitz., 2003). Analyses of how small traders use mobile phones to reinforce existing relationships are beginning to emerge (Jagun,

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Whalley, & Ackerman, 2005; Molony, 2005), again signaling that the device may not be disruptive force to existing trading networks that many had expected.

In addition, some of the success of supplier to customer m-transactions in developing countries may hinge on where those transactions reside *vis-a-vis* the threshold between informal and formal economy. M-transactions will make some invisible transactions visible. This visibility has advantages and disadvantages for users, not least of which is taxation, and may in the long run evolve in ways that we cannot currently predict. On the other hand, we do see ways in which the existence of the services already do help ease people closer to the formal sector, whether it is by allowing them to acquire a bank account through first talking to their GSM vendor, or, in the case of the Philippines, even getting paid directly into a mobile banking account, rather than in cash. These are helpful developments not just for the individuals who gain greater access to other financial services as they join the formal systems, but to economies as a whole, as money that is stored and transferred electronically earns 'float', and can be a re-invested to the benefit of the country (infoDEV, 2006).

Implications for m-banking/m-payments systems

The main implication of this brief examination of some of conceptual linkages between social capital and the m-banking/m-payments systems in use in the developing world is that it that the systems may do more to amplify and improve existing transactional ties, than to create new ones. I have made a related argument elsewhere—that among microentrepreneurs in Rwanda, the mobile phone is used first as a way to amplify ties with existing friends and family members, and only secondarily as a way to find new business relationships (Donner, 2006). More broadly both arguments build on a broader observation by Harper (2003) that the mobile research community tends to attribute for instances of behavioral and social change to mobiles, rather than stability or amplification. Again, this is not to say that (a) a technology which amplifies existing relationships, by reducing costs and increasing efficiency and reliability is not something of significant importance, nor (b) that there will not be any opportunities for new transaction relationships to emerge out of the mobile banking technologies. However, researchers and practitioners looking at m-banking/m-payments systems in the developing world should remain aware of their amplification effects, in addition to any 'transformational' effects. This amplification lens might lend itself to better designs of messaging around these systems, about the regulatory environments that are created, and even about the design of the systems themselves.

At the same time, if one wants to pursue the 'transformational' thread – and to talk about the impact of the introduction of the m-banking/m-payments systems on the lives of the poor, then the social

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network/social capital/trust lens can help put a finer point on the conceptualization of impact; a continued focus on productivity and cost savings is merited, but so, to, are research designs which would allow us to identify (a) if there are new transactional partners in the networks of the poor (b) if so, the nature of these new ties, and (c) whether these new ties provide additional "social capital" and positional benefits to the users of the system.

Practitioners and policymakers are already concerned about validating transactions under conditions of sharing behavior (infoDEV, 2006), where two people use the same handset. On the other hand, others suggest that m-banking/m-payments systems may alter patterns of money sharing within families, by giving women greater autonomy and control over household savings (Victor von Reijswoud, 2007). A full examination of these issues will require a social-scientific lens, one which many readers of this paper may be in position to bring to bear.

Finally, the application of a broader, social-scientific lens to m-banking/m-payments systems may remind interested parties that the mobile already plays a role in remittance transfer. Paragas (2005) describes how overseas foreign workers in the Philippines use mobile phones to stay in touch with their families back home; Tall (2004) goes further, suggesting how many handsets in Senegalese villages were gifted by the people living outside the villages, and now are used to help coordinate the transfer of remittances through existing channels back to the village; the telephone call to the village from the émigré is the signal to the family member to go to the office to pick up the money. Similarly in the focus groups I recently convened in the Philippines, respondents described putting money into the hands of bus drivers, who could be trusted to drive the funds out to the villages on their normal routes. Family members in the villages knew when to wait for the proper bus, thanks to a text message, which included literally the license plate number of the bus carrying the remittance.

Implications for mobile theory

The emergence of m-banking/m-payments systems has implications for the more general set of discussions around the role of mobile telephony in the developing world. For example, it again underscores the way the device blurs and bridges the domestic and the productive spheres, the social and the transactional (Gant & Kiesler, 2001). Person-to-person financial transfers mediated by the mobiles are certainly rife with sociological significance, but even simpler transactions between people and institutions, between people with little standing in the informal economy and the utilities and the state, the access to credit, or even the provisioning of goods over long distances, all are influenced by (and reinforce) the structural position of people in broader informational networks (Castells, 1996). The latest

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case of m-banking/m-payments systems is a reminder that an understanding of role of the mobile in developing societies must include its role in mediating both social and economic transactions, sometimes simultaneously.

Conversely, the rising importance of the mobile in mediating economic transactions has, as I mentioned above, the capacity to make the invisible visible—to allow us to see economic transactions that previously were difficult to track. The opportunity exists, for example, by studying transaction logs, to get a fine grained sense of how people spend their money, with whom they share money, and how frequently these transactions occur.

For the most part, the emerging theory about the significance of mobile communications in the developing world has focused on the primary benefits of the phone, voice and text messaging. This is appropriate, but the emergence of mobile banking underscores how, occasionally, innovations emerge from unexpected places, and have the capability to reconfigure the significance of a technology to its users; our research and theory must keep pace, including mobile banking and these electronic transfers along with other communication and interactions enabled by this increasingly flexible technology.

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