

Money Resolutions, Digital Simulations

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Ignacio Mas¹



¹ The author is Senior Fellow at the Fletcher School's Council on Emerging Market Enterprises at Tufts University, a Senior Research Fellow at the Saïd Business School at the University of Oxford, and an independent consultant. This paper has been written for, and with the support, of CGAP. The author would like to thank Monique Cohen and Antonique Koning of CGAP for all the encouragement, conversations, and comments they provided.

Abstract: *This paper explores how the broad financial decision-making practices commonly employed by poor people (as depicted in the companion paper “Money Resolutions, A Sketchbook”) could be supported through a digital financial service platform. We focus on two particular practices: money animation and liquidity farming. We frame these solutions in the context of a broader discussion of what it means to be customer-centric in a digital service context.*

Introduction

The digital financial service environment presents unique opportunities to empower customers, mainly through its potential for *(i)* engaging with customers in two-way communication more frequently and possibly more meaningfully; *(ii)* offering higher levels of service targeting and personalization and faster product development; and *(iii)* conveying a greater sense of service availability and convenience. This paper explores how digital financial services can create greater engagement of customers with service providers along their customer journey.

The paper focuses particularly on service creation, rather than on customer management. Most digital financial services offered today on mobile or branchless banking channels are in fact legacies of the nondigital age; they treat the digital platform fundamentally as a channel. But digital delivery can fundamentally alter the nature of the services that are offered on them, especially as regards to how customers perceive and use them. Digital services need to be designed in a way that takes advantage of the inherent characteristics of the new channels. There is also a flip side in terms of the risk of exclusion of populations without adequate access to digital technologies, as well as unique customer protection issues raised by digital services that are well documented elsewhere.²

This is not necessarily a call to make financial services more sophisticated. On the contrary, digital services are able to replicate what people already do informally, in everyday life, much more closely than standard bank products delivered over brick-and-mortar channels can ever achieve. In so doing, digital services can be empowering in the additional sense of supporting what people do, rather than feeling like a foreign imposition on them.

Being customer-centric in the digital age

We begin by exploring how the idea of customer-centricity shifts in a digital service provision environment, relative to what we are used to in a brick-and-mortar delivery

² Abusive practices by providers in a digital domain may include *(i)* misselling services, given the lower level of disclosures and contract signing protocols that typically apply *de facto* if not *de jure*; *(ii)* misusing customer data, including inappropriate use for marketing purposes and unauthorized disclosure to third parties; and *(iii)* having insufficient investments in mechanisms for dealing with customer queries or complaints. See Dias and McKee (2010).

setting. There are intrinsic advantages and disadvantages to each, so it is important that whichever is chosen it be designed in a way that optimizes the customer experience for that kind of service environment. In Table 1, we describe the unique characteristics of each.

Table 1. Optimizing the customer experience	
... in a digital service delivery setting	... in a physical service delivery setting
<p>The goal is to maximize the number and duration of customer interactions. Customer interactions happen through a remote channel and are not generally mediated by a human agent. Therefore, they can be handled by scalable digital platforms that tend to make the cost of each interaction vanishingly small. At the same time, there is positive information value associated with every customer interaction, as each interaction is an opportunity to learn something about the customer and about the service offering itself. This information is ingested digitally, making it easy to process. Value can accrete to both customers and providers as this information is translated into more intuitive and streamlined user experiences, better customer segmentation and targeting of suggestions, and incorporation of contextual cues to enhance relevance. This can in turn enhance customer stickiness and loyalty.</p>	<p>There is a need to carefully regulate customer flow. In a physical world, there are non-negligible costs associated with each customer interaction, as they happen within a defined physical space and are usually mediated by humans. These costs can take the form of tying up the time of a sales representative or teller, deteriorating the image of the locale (e.g., through the appearance of queues), delaying service time for more valued customers, depleting inventory, etc. The costs of many interactions can easily outweigh the benefits to the provider in terms of customer intelligence gathering and stickiness. Thus, customer flow needs to be managed carefully, to discourage frequency of contact by less valued customers and to achieve a more even distribution of customer contacts across time. Often this results in favoring customer contacts relating to sales over service.</p>
<p>Brands stretch over fuzzier but deeper-seated needs. Successful mass-market digital services are rarely constructed around narrow, precise, clearly articulated customer needs and benefits. They tend to tap into more profound desires that derive into many possible justifications for and experiences in use. They carry a sense of</p>	<p>Need to focus brands on concrete customer benefits and needs. Brick-and-mortar marketing is generally premised on having very few and short-lived opportunities to communicate product benefits to prospective customers (given brief and infrequent customer visits to channel outlets, and competition for attention in mass media). Accordingly,</p>

empowerment—the ability to take action, any action—rather than prescription. Creating a broader brand promise and proposition allows customers to *discover* new functionalities and benefits in the course of normal usage, rather than as a discretized upselling or cross-selling decision. That creates the impression in customers’ minds that the service grows with them, and creates a dynamic of customer entanglement that leads to customer stickiness.

Design for experiences rather than products.

Digital service delivery is a product leveler, because customer choice and empowerment is inimical with the notion of product, understood as a prepackaging of functionalities and benefits. When services are available anytime, anywhere on a *digital tap* rather than on physical shelves, the value is in integration rather than fragmentation of experiences.

Customers are given substantial leeway in crafting their own experiences.

Providers have an opportunity to enable experiences *pulled* together by users. Providers offer up a collection of tools presented within a consistent, easy-to-use framework, and users make of it what they will. Helping users to make the service their own induces a stronger sense of customer affinity and service relevance.

Distinctions among channel, product, and even customers become blurred.

In a digital setting, there is no experiential distinction between the digital service proposition and the digital channel, since the customer experiences both at the same time. A website or app is both the

there is a pressing need to express product features and customer benefits as vividly and succinctly as possible. Brands are meant to convey specific functional and emotional associations. When a single product can support multiple customer benefits, often a multi-brand strategy is employed for essentially the same product, with each brand trained on a different primary benefit (e.g., distinct toothpaste brands that emphasize whitening, breath odor, and dental health).

Design products as discrete packages of functionalities.

The need to express clear benefits and to rely on third-party sales channels leads marketers to break up their product range into discrete products or service packages, each aiming for a very precise customer benefit, often on a highly segmented basis. This is generally all expressed very clearly in the box packaging and communication style.

The customer journey is understood in terms of a purchase history.

Companies attempt to tap into broader customer needs by positioning a product range, rather than by creating a single product that is able to meet all customer needs. The range can be expressed as multiple products that can be consumed side by side, or as a set of product upgrades under a *managed obsolescence* framework.

Channels take on a critical importance in their own right.

Product, branding, and channels take on distinct meanings in a physical world: these are the *what*, *why*, and *how*, respectively, in purchase decisions. Building channels is about devoting own resources and building

service itself and the channel for accessing it. Also, customers themselves can become valuable awareness-raising channels for the service, through viral marketing.

Customer loyalty is about repeated use.

The biggest loyalty hurdles tend to occur very early on, after 1–3 uses, as it is very easy for customers to drop the service if it does not immediately meet expectations. Pricing promotions and social networking linkages play an important role in getting customers over this hurdle. Beyond that, there is continuous offer evolution to increase customer entanglement.

Customer-centricity tends to focus on customer control.

It follows from the above that customer-centricity is about giving customers the tools they need to feel in control over a certain slice of their lives and aspirations.

third-party relationships with the purpose of attracting customers’ attention, communicating the brand promise, and delivering physical products.

Customer loyalty is about repeat buying.

Once a product is bought, customers are more *stuck* with it. Hence, loyalty is less about getting customers to use the product and more about repeat buying. Customer acquisition costs tend to be higher, so it is difficult to make a rapidly churning customer base profitable. Customers are often locked in through incompatible product features or service elements.

Customer-centricity tends to focus on service quality.

Customer-centricity is typically understood as delivering on a certain set of promises made to the customer, which are expressed both in the brand and the product.

Table 1 focuses on the unique advantages of each type of delivery model. Of course, the relative advantages of one are the relative disadvantages of the other. In general, physical service delivery environments are able to grant users a lesser role in constructing their own service propositions (i.e., they tend to have less scope for *co-creation*), while digital service environments are able to offer more limited support to customers who need extra help and attention (i.e., they tend to have a *lower touch*). In practice, providers would seek ways to blend the two so as to balance the relative advantages and costs.

Digitizing people’s financial practices

This paper seeks to illustrate how these principles for constructing digital customer experiences may be applied to the financial inclusion space. It delves purely on the digital side and, therefore, leaves out issues having to do with account opening (and the attendant proof-of-identity and other documentation requirements) and cash in/out (the simultaneous exchange of digital and physical money). This is not to underestimate the critical importance of these two aspects in the overall customer experience: entirely digital mobile money or banking propositions cannot be conceived while most transactions remain cash-based and while regulators see financial controls as a key element of law enforcement.

So it is more accurate to say that this paper focuses on the purely digital subcomponent of the service.

Moreover, the focus is on the customer value proposition and service offer. I highlight specific operational or business model implications wherever relevant, but there is no systematic treatment of the business case, IT system or other capital investments, and operational implementation requirements.

This work is very much focused on people who are currently not connected to electronic banking or digital money platforms,³ or who are but use them strictly for real-time payments (sending money home, paying a bill, topping up their airtime, etc.). To put it in rough and crude terms, this includes the half of the world's adults who are unbanked, the half of the banked who are entirely inactive, as well as the half of the active whose accounts are empty and who use it only to make or receive a payment from time to time. So this is about people who see themselves as outsiders to the formal banking system.

There are two obvious starting points for developing a digital value proposition. The approach we take in this paper is to observe what people already do today and find ways of replicating or accommodating that behavior digitally in a way that is more convenient, safer, and more satisfying for them. The alternative approach, which I have not felt brave enough to explore, is to find something they are *not* doing today, but which, if only it could be supported digitally, would make a significant difference in their lives. These two approaches would naturally tend to converge over time, as tools for digitizing current behaviors have a way of gradually leading people to modify their behaviors and practices, filling gaps that we didn't know existed—much in the same way as using search engines to seek answers to questions online rather than in printed encyclopedias has transformed how we learn things. But the starting point is entirely different.

The starting point for this paper is, specifically, the depiction of broad behaviors and mental ideas that commonly underpin poor people's money management practices in [Money Resolutions, A Sketchbook](#). Of the six financial decision-making mechanisms described therein, two are particularly relevant to what financial service providers normally do: animation of money and liquidity farming. A third mechanism, income shaping, is only generally indirectly actionable by financial service providers, through money animation and liquidity farming strategies that help people exploit new business or employment opportunities. The remaining three—concentrating goals, managing spending triages, and creating spending routines—are likely to remain firmly in people's minds, and largely outside of what providers can help them with.

³ We make no distinction among the different types of digital financial service providers, whether they are banks, telecommunications companies authorized to operate mobile money schemes, or other licensed electronic money issuers. We call all of these, generically, *providers*.

Digital money animation and digital liquidity farming are therefore at the core of the digital financial service experiences we will explore through the rest of this paper. The next two sections describe how digital platforms can provide useful and engaging mechanisms for each separately, and the following section develops more powerful service concepts that span across both. These propositions are developed in a way that demonstrates the digital customer centricity principles laid out in the first section.

Digital money animation

The opportunity and the challenges

Money animation is the mental process by which people project different moral character, emotions, or purpose to different pots of money. Underpinning it is therefore the notion of *separating* money, with the intent of making money less fungible, less infinitely divisible, less hastily spendable. While money animation is fundamentally a mental process, it is often played out in physical or virtual reality, by placing each kind of earmarked money in separate savings vehicles or digital accounts that reinforce the mental idea behind that particular type of money.

Moreover, money animation generally incorporates some basic moral principles that establish a *hierarchical* relationship between the separated money pots. Money can be animated in a variety of ways: through cultural and religious taboos and rituals, through the various stories (or dreams) people build up in their own minds and tell themselves and each other, or through pen-on-paper budgeting exercises. These all induce one-way flows of money between the pots: from the less purposeful to the more goal-based, from the shorter to the longer time horizon, from the smaller to the lumpier. Only in stress situations would people feel justified in reversing this natural flow of money.

Money animation is therefore a personal money organization (or regulation) system. If money in its pure form is seen as undifferentiated liquidity, animation seeks to differentially *harden* various pots of money.

Digitizing money animation—creating a digital repository for hierarchically separated money—presents several challenges:

- *User interface.* Multiple money pots need to be handled and visualized in simple terms, on small-screen devices. This has to feel as real and intuitive as allocating money across various jars on a table. The user interface implements the basic operation of a money separation scheme.
- *Labeling.* The set of available digital money pots needs to invite users to project distinct mental stories and moral codes intuitively onto them. Each pot needs to be referenced with a label that conjures an appropriate idea in users' minds. The labels on the pots cannot be so abstract that they do not elicit emotional connections with

one's money animation scheme, nor can they be so concrete that they feel overly restrictive and prescriptive.

- *Illiquidity features.* The various available pots must also feel distinct from each other in so far as each embodies different forms of *money hardening*. This has to be as real and intuitive as the differences among the glass jar (easily accessible money), the metal lock box (need to get the key to access money), the mudbank (must break clay pot to access money), the jewel (cannot extract fractional amounts of value), or a newly hatched chick (must wait before its value can be fully realized).

Many financial service providers have positioned different types of accounts with their customers as a way to allow for and even encourage money separation. The classic separation between a current account, a savings account, and a time deposit achieves this. In addition, some banks offer named accounts for very specific purposes, such as Equity Bank's [School Fees Account](#) in Kenya and Grameen Bank's [Deposit Pension Scheme](#) in Bangladesh. Digital banks are now offering user-defined goal-based accounts, such as ICICI's [iWish](#) account in India. Many mobile money providers invite their customers to link their transactional mobile money account to separate bank-based accounts, such as [M-Shwari](#) in Kenya, which allows for both unrestricted and "locked" savings.

However, most fail to constitute an intuitive money animation basis for people for many reasons. The multiple accounts may be unwieldy to manage, needing to be opened, kept active, and closed individually. The process for moving money between accounts is often cumbersome, expressed in sterile language (*which account do you want to move money from... which account do you want to move money to*), and does not play up to people's conceptualized money animation. The distinct illiquidity features embedded within each account (e.g., minimum withdrawal amount, maximum number of withdrawals per month, lock-in period, etc.) are not intuitive and can be inferred only by reading the key account terms or, worse, the small print. The names given to the accounts may correspond only by coincidence to people's money separation purposes. Many types of accounts are marketed in a way that may feel patronizing (*save for your children's education!*), and their use may make people feel exposed to judgment by the bank (*so you are not saving much for your children's education...*).

There are pitfalls everywhere, and the result has been that most success cases in banking the poor have derived from a process of *simplifying* the offer, and never from fragmenting it in hopes of making it richer with more differentiated products. This creates a *dilemma*: sophisticate the offer to make it more useful, but simplify it to make it more sellable.

The way out of this dilemma is to use digital systems as a *platform* for personalized money animation rather than as a channel for delivering a discrete set of predefined, differentiated *products*. We can then rephrase the challenge as defining the minimum set of *tools* that people need to play out their own money animations digitally.

Digitizing the animation concepts

To begin with, the platform needs to expose not *accounts* but rather *concepts* that people can easily associate their mental money categories with. These concepts must be expressed and labeled so as to satisfy two requirements: *(i)* they need to be intuitively suggestive of purpose, so that people can easily determine whether there is any correspondence into their own mental money animation scheme; and *(ii)* they also need to be intuitively suggestive of any illiquidity characteristics that they may embody, so that the concepts are seen to have a well-defined, consistent meaning. A set of money separation concepts that achieve both requirements is likely to be directly relevant to people.

Here are some examples of concepts that may prove useful as a basis for digital money separation:

- *Date-based money.* I park some money to the first of every month, to pay for my rent. I also park some to 15 November, because that's when I need to pay school fees for the next term. As a trader, I know I need to repay my line of credit by 3 April, so I try to accumulate some money for that date. I am also building up a December pot for Christmas gifts I'll need to buy. I understand that these moneys can be used only on the specified date (or the entire month if no specific date is chosen).
- *Days-of-week.* I have some Friday money (which I use to go out celebrating with my friends), some Monday money (out of which I pay wages to my employees), some Wednesday money (to pay my weekly ROSCA contribution), and some Sunday money (to indulge in a nice shared family moment). Every time I get paid, I have an opportunity to *top up* some money on these days to ensure that I have what I need for each occasion. It is clear to me that Friday money is available only on Fridays—so I can't use it to celebrate with friends any time I like.
- *Animals.* I have some chicken money, which I can deposit and withdraw only in 300 shilling increments, because that's what a chicken costs; I use it for short-term needs. I have some turtle money; it is very slow so I need to give 24-hour notice before I can withdraw any money. I have some cow money, and I can access it only on an all-or-nothing basis; I like using it for longer-term things. I have some hippo money, and before I can touch it, my little birdie (a designated savings buddy) needs to agree.
- *Colors.* I have some red-hot money, which I am accumulating for an exciting, or maybe more naughty, purpose. I have some ocean-blue money, which I like to forget about because that's some inheritance money I once got and will use when I am old. I have some banana-yellow money, and that one is a secret of mine. Colors don't convey a strong sense of illiquidity, so maybe these moneys are always available—they are locked up only psychologically by creating a strong emotional link to a

purpose. If you don't like colors, replace them with musical bands or styles (rap money vs. Beatles money), cars (my Ferrari money vs. my Subaru money), or whatever.

- *People you know and respect.* There is an entrenched informal practice everywhere of saving with a *money guard*, i.e., parking money with someone you trust. That money is likely to be associated with a higher purpose, since you feel you need to put more distance between you and your money, and the type of money it is probably correlates with the kind of person you leave it with—probably an older, successful, respected member of the community. Mobile money users can do this digitally themselves by transferring money to their designated money guards. A digital service could create greater trust around this practice by defining a restricted money transfer service that, unlike normal person-to-person (P2P) transfers, does not entitle the recipient (i.e., the money guard) to use or cash out the money; all he can do is return it to the original sender.
- *People you know and want to support.* A variant on the above case would be to allow customers to digitally instruct the provider to make their savings balance available to a specific individual or business that they want to support. In this fashion, savers would have the opportunity to influence the borrowers that get to use the funds, rather than just feeding a general loan pool.⁴ This would help animate the money based on whom it's helping and why.
- *Budget categories.* Some people who are more structured, with more certainty of income (and maybe less imagination!) might prefer organizing their money by strict budget categories: rent money, food money, schooling money, etc. Or they might use more stylized spending items that have a more clearly stereotyped usage pattern to represent different purposes. For instance, I have rice money that I can use daily, for anything I like (not just rice); cooking oil money that I can tap into once a week; soap money that I can access only monthly; and shirt money that I can access quarterly for less frequent things.

These are examples of standard concepts that, if they can be made sufficiently rich, intuitive, and diverse, can lead to a highly personalized banking experience. Clients can make these standard concepts their own because they are mere hooks into their mental models. The provider's challenge is simply to position a sufficiently broad and intuitive range of concepts to cover most people's needs.

⁴ From a risk point of view, this is financially equivalent to the saver giving a personal guarantee on a bank loan to the recipient of the funds, since his own savings are on the line if the recipient doesn't return the funds. The bank could, of course, choose to partially underwrite the risk of the borrower, so that the saver and the bank would become partners in the success of the borrower.

The above list is merely intended as a starting point from which providers would pick the ones that resonate best with their customers, based on some market research. It would be important to keep it simple by using only the most relevant ones in each market, or perhaps exposing different ones to different customer segments.

These concepts are positioned halfway between the IT-speak of the bank (accounts and subaccounts, each with particular rulebooks) and the mental-speak of the customer (money animations and goals). The concepts work when customers know how to relate them to their own mental models, and the provider knows how to code these concepts into account rules.

It could be argued that this is a low level of personalization: why not simply allow customers to label the various pots and attach illiquidity rules to them however they wish? Why meet halfway? Shouldn't it be an aspiration of the bank to fully accommodate customers' mental models on their terms? There are three arguments against that. First, if we are talking about financial inclusion, the system ought to work for people who have less time, interest, or capacity to be entering text and specifying options on their money pots; there should be a version that works on simple mobile phones on which data entry is not problematic. Second, an overly flexible service that requires customers to specify and configure too many things upfront may discourage adoption. Third, customers may find a system that provokes their imagination (how to relate Friday money and hippo money to their mental model) more engaging than one that feels like a blank canvas you have to fill.

Customers should be allowed to configure their system to their liking, but that should be optional, not a point of departure. The system could, for instance, let users annotate a purpose or thought next to each of these standard concepts with a text string or possibly an image (that motorcycle you so desire!) or even a ringtone (such as *Friday is for lovers*). Users may also be offered the opportunity to change the default liquidity configurations on each concept (e.g., make the minimum deposit/withdraw amount 1000 shillings on my chicken money). They might be given an option to staple money concepts together (e.g., Friday chicken money, which would be available only in certain sizes and only on Fridays). And, yes, there may be room for blank concepts that customers can fill in as they wish (with their own name and illiquidity rules).

Digitizing the operation

All this deals with the basis *for* separation of money, not the mechanics *of* separation. The view I have argued elsewhere is to use the *send money* rather than *interaccount transfer* logic to move money between the various pots. First, because it unnecessarily complicates things for users to think that they operate multiple accounts with the bank; instead, they should be made to think that they have a single account, within which there are earmarks or monies with different flavors. Second, there is no intrinsic difference among the notions of sending money, transferring money, or even paying money. Sending money home or paying

a bill is a transfer over space. Sending money to Fridays or to 15 November is a transfer (to yourself) over time. More generally, putting money into an animated money pot is about sending money to (or paying) a *virtual me*—that future me who will be so, so happy to convert the red-hot money into a motorcycle.

Implementing earmarks through a generalized *send money* capability has the advantage of simplifying the user interface, and hence all the required user education around that, because the same menu item and process can be used to enable any transfer of money. The logical steps in a generalized *send money* function might be as follows:

- *Select type of destination.* This could be someone else, as represented by a phone number (for mobile money), bank account number, PAN (i.e., 16-digit card) number, email address (for PayPal or such), etc. Or it could be yourself, as represented by a date, day-of-week, animal, color, etc.
- *Select or enter specific destination address.* This would be the actual phone number, email address, day-of-week, or animal that the user wants to send money to. It could draw on a list of preset favorites, frequently used addresses, or finite potential values (i.e., select from Monday to Sunday).
- Enter amount.
- Enter PIN to confirm.

In the above description of the money concepts that the bank presents to users, these concepts embodied some intrinsic and hopefully intuitive illiquidity features. This raises the question of whether users would be at all able to access their funds early in an emergency. There is of course a balancing act between providing discipline and flexibility. If animated money is allowed to *break out of character*, it may lose its effectiveness as a discipline mechanism; animations become less sharp. But those animations themselves are like characters in an evolving play, so they need to accommodate shifting circumstances; characters are not invariant to plot.

My view is that services that target poor, informally employed people with irregular and unpredictable incomes should operate under the principle of never denying people access to their own money. If no one is guaranteeing them anything, they should not be required to be guaranteeing balances to their bank. After all, the money animation is a mechanism for self-discipline and need not count on external discipline by the bank. So let people change their own stories—just don't make it too easy.

There are two ways of implementing early access to earmarked funds: *(i)* as an early withdrawal (under which the balance on the saved balance drops); or *(ii)* as an advance or loan on a saved balance (under which the gross balance on the saved balance stays the same, but the bank has given you a loan collateralized by your own savings). Both are financially equivalent for the bank, but are likely to be viewed very differently by users.

There is much evidence suggesting that customers would generally prefer structuring it as an advance. Say I want to draw on the red-hot money pot (= motorcycle for a happy *future-me*) to help pay for medicines that I need today. I sense that resolving today's illness has nothing to do with the aspiration of a future motorcycle. Don't touch my goal, don't mark it down, just give me a chance to recover where I was on the motorcycle goal by repaying the advance.

So borrowing against goals is a path to extracting liquidity out of a saved balance without having to surrender the goal, much like pawning is a path to extracting liquidity from a physical asset without having to notionally surrender the asset. It creates an asymmetry between the process for topping up a goal and the process for extracting liquidity out of it, which helps remind users that liquidity extraction is meant only in exceptional circumstances.

In summary, a digital banking platform should provide scaffolding for all the money stories people want to play out. Products should act as magnets not so much for money as for stories. The stories shouldn't come with the products themselves (*this is a school fees account*), but products need to be named and designed in a way that intuitively invites people to project their own stories into them. Banks should let this money retain and acquire new stories, unhampered by arbitrary product rules, and in this fashion users will make the financial products their own. The products have morphed into tools that people use to craft their own financial experiences.

Digital liquidity farming

The opportunity and the challenges

Liquidity farming is the practice of cultivating relationships that might possibly be of assistance to us financially in a moment of need. These relationships are largely social but may include one's employer, local shops, moneylenders, and other institutions. The support received from these relationships may come as a gift (often with an implicit but loose expectation of reciprocity) or a (often interest-free) loan. Relationships in the liquidity farm are cultivated through acts of generosity, offering support in moments of need (the element of reciprocity), engaging in behaviors that demonstrate and build trust, and showing commitment to community rituals and practices. Sometimes liquidity farming activities are organized through community action, for instance through savings groups, burial societies, or ad-hoc joint fund-raising activities.

Liquidity farming is therefore fundamentally about developing potential sources for on-demand liquidity in a case of need. It is about building option value through social capital. While money animation is concerned fundamentally with managing money you have (or plan to have), liquidity farming is basically about gaining access to money you don't have—

but may need. Liquidity farming is a constant preoccupation that helps reduce stressful anxiety about the future.

Attempting to digitize people's existing liquidity farm presents a complex information management problem. Unlike money animation, which is a game one plays largely with oneself, liquidity farming is a multi-player game. It requires tracking the liquidity potential, strength of relationship, and prior history of mutual support among many nodes on a social and business network.

In addition to the sheer complexity of supporting people's existing liquidity farms, banks have often seen those informal credit sources as their competition. It is not surprising, therefore, that banks have often sought more to displace than to enhance other relationships in their customers' liquidity farm. Below we first look at how financial service providers can become a distinct element in a customer's liquidity farm. We will then look at how they might act as a platform to support and extend customers' own informal liquidity farming activities and transactions, possibly providing credit enhancement on top.

Entering people's liquidity farm as a full, independent member

Financial service providers are, of course, one place people would go to for financial support to cover a need, if only they had access to them and were made to feel welcome. One can go to a bank for an occasional loan, or the relationship can be formalized with a stable preapproved credit facility in the form of a credit card, an overdraft, or a business line of credit. In so far as financial service providers open up options for their customers to secure credit in case of need, they could be understood to be full members of their customers' liquidity farms.

But banks are likely to sit somewhat awkwardly within their customers' liquidity farms because bank-client relationships are not premised on a principle of reciprocity, and hence there is an expectation that any obligations incurred must be extinguished in a predefined fashion. This is quite different to how the liquidity farm works between social relationships—which form the core of people's liquidity farms—where the general principle is that gifts and obligations should be interwoven and needn't be fully extinguished, so as to create a sense of ongoing mutual support and dependency. This gives people a greater sense of hope that they can get more unconditional, open-ended support in case of need.

Banks, on the other hand, convey a much more explicit sense of limitations—both in terms of the amount of credit that can be expected as well as on repayment speed. One is quite aware of how much the bank is good for in case of need. Banks therefore may not offer the same level of emotional comfort as other informal elements of the liquidity farm, which (individually or collectively) convey a more flexible or negotiable form of support. Informal moneylenders sit somewhere in between: they expect an extinguishing of obligations, but

offer much more leniency in terms of how fast the obligation is repaid; they seem more willing to hear about circumstances than banks do.

In addition, trying to become a full member of poor people's liquidity farm is hindered by their limited knowledge of and infrequent contact with ordinary people. Lack of history makes it very difficult for banks to conduct credit assessments efficiently. Worse still, banks are fully aware that while they sit at the fringes of people's liquidity farms, they rank very low in their repayment priorities, as people will first seek to satisfy other relationships on which they know they can rely. This makes penetrating those liquidity farms doubly difficult.

In the absence of sufficient available client information, lenders have typically priced the credit expensively to cover the high perceived credit risks, or compensate for the high cost of deploying roving loan officers to conduct on-the-spot credit evaluations and collections. Others have obviated the need for personal or business information by demanding collateral (e.g., by pawning assets). But these factors make them less desirable as liquidity farming relationships.

Banks that want to become fully entrenched in people's liquidity farms in their own right need to address the information gap head-on, so that they can offer credit more efficiently. Digitalization holds some promise in leveraging other digital information types and sources to develop a credit view on clients, in three ways. First, banks might try to piece together sufficient information on potential low-income customers directly, by assembling available data from disparate, nontraditional sources, such as their history of airtime top-ups and bill payment, or their activity on online business sites and social networks. Second, banks might use available neighborhood- or village-level sociodemographic data to segment customers into broader groups that embody known common characteristics and that in turn drive some aggregate predictability. Third, banks might interact with customers in ways that elicits useful information from them, for instance by administering selected psychometric questions that are known to correlate with repayment propensities, or conducting A/B tests with special offers.

Leveraging people's existing liquidity farm for credit decisions

Instead of seeking to build enough of an information profile on customers upfront to support credit decisions, an alternative approach is for the provider to embed the trust that people have in each other within their services. The idea is to leverage rather than displace informal elements in people's established liquidity farms

This is not unknown to banks; when they are not so sure about the credit quality of a given borrower, a common technique is to ask the borrower to come up with guarantors—i.e., to trawl their liquidity farm. Through the guarantee mechanism, the bank is able to transfer (at least some of) their trust from the borrower requesting the loan to someone else within

their liquidity farm on whom they have more data and with whom they have a stronger relationship. The bank enters the liquidity farm of a borrower whom it barely knows holding the hand of the guarantor.

This idea is still limiting, because it assumes that someone within a prospective borrower's liquidity farm is sufficiently known to the bank to be able to act as guarantor/hand-holder. The key insight of the group microcredit model developed by Muhammad Yunus is that the provider doesn't need to know much about prospective borrowers or their liquidity farming relationships as long as the borrowers have a sufficiently strong relationship with each other and have an incentive to discipline each other. By imposing a group guarantee—the notion that borrowers are collectively responsible for each other's loans—each borrowing member of the group has an incentive to carefully select who should be admitted into the group and monitor their situation and loan repayments. Part of the normal credit operations, especially screening and monitoring activities, can be delegated to borrowing groups themselves. It later turned out that these incentives for groups to perform could still operate without an explicit group guarantee, through sheer peer pressure.

Digital communication technologies have spawned a huge growth in what we now call social networking. This suggests that there should be many and diverse opportunities for supporting the liquidity farm digitally, in a way that avoids the pitfalls of guaranteed lending (which limits demand) and traditional group-based lending (which carry the inconvenience of having to attend physical meetings and the inflexibility of loan cycles).

[Vouch](#) in the United States is an online lender that bolts the guarantee model on top of a modern social networking platform. Through it, you can invite friends to vouch for you for certain amounts, starting at \$25, which they will have to pay to Vouch if you don't. It is therefore a convenient way for people to syndicate credit guarantees from their online social relationships.

Another possibility is for lenders to ask prospective borrowers to seek the endorsement (but not guarantee) of other clients to get loans larger than what their individual credit profile would allow. The provider could then observe over time which one of their clients have a track record of endorsing good lenders, and they would come to be known within the community as the people who the provider listens to. Those who fail to establish such a track record would come to be ignored by the provider in terms of their endorsement. The provider could provide a rating system so that people could promote within their liquidity networks how close they are to the bank, and create a reward system that incentivizes people to maintain a good rating. Through such a mechanism, providers could effectively develop an informal network of loan advisers organically drawn from their clients' own liquidity farms. Many of these would likely be local stores whose business would be helped if they could help extend credit to their more trustworthy customers.

The above are instances where a financial service provider leverages people's liquidity farms with the objective of positioning its own credit products. Its aim is to enter into people's liquidity farm through or with the support of other elements of the liquidity farm. This is a natural way in: one generally taps into other people's social networks by being introduced to them by people already in those networks. That's the whole principle behind [LinkedIn](#).

Supporting people's existing liquidity farm through transactional platforms

But there are things that a digital service provider can do to facilitate and support its clients' liquidity farming relationships without itself getting involved in credit extension. There are obvious opportunities to replicate through software how people come together socially to resolve financial problems. For instance, [ChamaSoft](#) in Kenya manages the process for savings groups to occur entirely virtually. [M-Changa](#), also in Kenya, allows people to come together to raise funds for a social occasion (a party, a wedding), or for someone in need within their community (a funeral, a hospitalization, etc.). Such digital services manage the end-to-end process of recruiting members, soliciting funds from members, accounting for moneys paid in and out, reporting out to members, etc.

These service concepts are specialized forms of crowdfunding or P2P lending platforms, which offer the possibility of direct funding between end-users. Rather than intermediating the relationship between a funder (depositor) and a recipient of funds (borrower), the service provider merely provides an online marketplace where the two parties can meet, negotiate terms, and transact directly. In the United States and United Kingdom, where these platforms are becoming increasingly popular, they are used mainly to provide funding to individuals or projects with whom the funder does not have a prior relationship. In a developing country context, it is possible that these platforms will tend toward channeling financial support between people with a prior relationship, i.e., powering existing digital farms.

These kinds of transactional platforms or financial marketplaces do not involve direct credit extension by a bank, and in fact they are often seen as directly challenging the bank's fundamental intermediation role. But banks may want to include them within their financial service offerings for several reasons. From a branding and customer engagement point of view, it could help the bank present itself as a more holistic facilitator of financial solutions to their low-income customers, rather than just as a credit pusher. The bank can begin to establish a relationship with and be relevant to those customers without sufficient credit scores by helping them locate funding within their social and business networks.

Over time, the bank would gain greater visibility of people's liquidity farming relationships and practices if the ensuing transactions occur through its platform. A provider equipped with appropriate network analysis tools would then be interested in promoting rather than displacing people's direct funding relationships and activities (albeit, in digital form), as this

would give them a unique window into people's financial profile and character. People could build up a credit score by operating their liquidity farm through the bank's digital platform.

Liquidity farming on money animation

Many of the informal financial practices commonly used by poor people involve elements of both money animation and liquidity farming. The most powerful digital financial services are likely to be those that combine elements of both as well.

Take, for instance, the common practice of saving with a *money guard*, described above. In your mind it may be appropriately animated money, but that may not be the only reason you gave it to the money guard; you are probably also wanting to nurture him within your liquidity farm. You will feel comfortable that you will be able to get your money back whenever you need it back, but you are probably hoping that you might be able to get some extra money from your money guard in case of urgent need. And why shouldn't you? You've been demonstrating your trust in him, he's seen how responsible you are, and you have created a stronger bond with him.

Or take the possibility of instructing the bank to assign your savings balance to fund a loan to someone you know. It would also serve to make the saver feel like his money is not sitting idle with the bank but working for someone he cares about. This would be feeding both the sense of money animation (if there is some association between the money and the person it's made available to) as well as liquidity farming (based on an expectation of reciprocity in the future). The saver might feel that he gets much more liquidity farming mileage from pushing his funds to the recipient, than from passively agreeing to guarantee her loan.

Customer reckoning

How do low-income customers reckon that banks may help them? How do they reckon they'll feel when they do transactions that they know are small for some but seem like a treasure to them? How do they reckon that banks will treat them if they ask for some understanding or forbearance when they encounter some hardship? Do they reckon that the bank is for people like them, or is it working for other, larger interests?

These reckonings can make a difference between the banking relationship feeling empowering or wearying for customers. Banking services need to be designed not only to be useful; they must feel valuable and exciting for customers. But it's not just about the offering: customers must be made to feel through each interaction that they are valued by the provider.

In a digital service environment there are some unique elements that ought to help greatly in this regard: offering flexible tools—rather than rigid products—that people feel they can make their own; introducing gaming elements so as to create more of a sense of a customer journey; keeping the offer fresh by learning about customers and maintaining regular upgrade cycles; and engaging in frequent interactive feedback.

For instance, with a digital service proposition based on what has been presented in this paper, customers might reckon the following:

It's my way There is a small set of simple tools that I can incorporate into my daily life in the way that I feel is most relevant to me. No one tells me how to use them, and equally no one needs to know what I use them for. These tools help me concentrate the money I need to buy things and make payments, not just to move the money once I have it. Sometimes it gets complicated because I have to juggle various types of moneys that are for different things or that I owe to different people, but these tools help me keep track of all that. With this service I can focus not only on the money I have, but also on the money that I need. I know this service is with a bank, but frankly I feel like I am my own banker.

It grows with me At the beginning I thought these tools could help me with a few simple things, but now I find myself relying on them more and more. There are some new tools that I have come to learn about over time, but mostly I just discover new tricks I can do with them. I know I am not the most responsible manager of money, so I like the service because it makes me stop and think about what I really want to do. It's like a friend that is getting to know about your plans and secrets, and counsels without arguing back. As I use the service more, I sense the bank is there to step in with a little loan when it's really important for me, it's almost like we are getting to know each other.

I can do it myself but I am not on my own I like the fact that I can do things on my own, whenever I like, without having to inconvenience anyone. Nobody needs to know what I am doing. At the beginning I did sometimes seek some help, but now it all seems very natural and I can sort out most things by myself. If there is some new tool I don't understand, I can ask that the bank call me on my mobile phone or I can go to the branch to talk about it, but mostly I ask friends what they use it for.

If financial services convey these three feelings, they can give users a much greater sense of control over their circumstances and progress. Though their use, customers can build confidence in themselves and in the financial service provider. Far from appearing unnatural, these services can become part of how people experience their financial realities.

It has been argued that the technologies that have advanced over the past 40 years or so, especially in information technology, are largely *technologies of simulation*—i.e., technologies that make imitations that are more realistic than the originals, creating a sort of *hyper-reality* (Graeber 2012). The thrust of this paper is clearly in this direction: how to create digital financial services that feel as real, and in fact also as *virtual*, as the money animations and liquidity farms that people construct in their daily lives and in their own minds today. Digital platforms have the potential to make what are now purely mental constructs more real by giving them a more tangible expression on a screen that people carry around with them.

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