CGAP

Money, Decisions, and Control

Building Digital Financial Services That Help Poor Customers Cope and Strategize

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WORKING PAPER

MONEY, DECISIONS, AND CONTROL

Sending and receiving money via your phone has become a part of life in Kenya. M-Pesa makes financial transactions easy; you can send payments at any time from your own basic phone and you can cash in and cash out at tens of thousands of outlets spread throughout the country. M-Pesa's biggest contribution is its sense of immediacy and convenience while making payments, which has proven to be empowering and impactful for low-income customers.[1]

Despite this progress, there is little evidence that digital financial services (DFS) such as M-Pesa are relevant beyond making payments either remotely (e.g., to send money home, to pay a bill) or while on the move (e.g., travelers, works on house calls).[2] People tend to cash in just the amount they need to transfer, and the received digital money is typically withdrawn immediately and in full. Despites efforts to digitize merchants and other points of service, most digital accounts are empty, meaning that we are digitizing payments but not money itself.

We can do more. The continued proliferation of digital technologies, in combination with the increased availability of data, offer an opportunity to go beyond simply reducing time and costs in payments. We can potentially redefine the entire customer proposition and support customers in aspects of their finance beyond payments. The need to send a payment doesn't start the moment a customer pulls cash from their pocket at the mobile money outlet. The question is: How does that money get there? What other needs did it displace? When did the customer commit the money to this purpose, and how did they build the necessary resolve to store it? What would they have done if there had been a shortfall?

FINANCIAL SERVICES FOR DECISIONS AND CONTROL

Beyond payments, finance is also about day-to-day money management,[3] decision-making,[4] and coping strategies that end in individual payments and transactions. We are beginning to see new digital tools, such as **Flexipay** and **MChanga,** that help low-income customers leverage social networks to bridge temporary gaps in cash flows. Other services, such as Paygo Solar, leverage digital payments to more effectively deliver other value-added services, such as solar home systems, to low-income customers living in remote areas (Waldron 2016). To generate greater use of financial services among low-income customers, DFS providers need to build services that support financial decision-making (help me focus and prioritize) and day-to-day money management (help me adjust and cope).

What are financial decision-making, coping strategies, and money management about? Financial decision-making is derived from our experiences, from what our family taught us about saving and spending, or from the informal borrowing habits in our communities. If our lives are uncertain, we are often guided by a series of "if-this-then-that" rules. "If the rainfall is poor, and the crops are affected, I will go to the neighboring city during the festival season to make extra money." Or, "If business is slow at my juice stall, I can ask my fruit supplier to delay my payments to him for a few months."

These patterns reflect the wisdom in our communities—they are the trust in our networks. They work like **default coping strategies that play out in the ways that we act, but can often hardly explain conceptually.** In the face of constant uncertainty and adverse conditions, these rules-of-thumb help to minimize the stress of making decisions all the time. When these strategies work, we have a sense of control over our finances.[5] While the desire to gain control of our finances is universal, the coping strategies differ by our individual circumstances and experiences.

Money management represents applications of coping strategies, through financial transactions and actions. Asking a family member for a loan to tide you over when you have cash-flow issues, or breaking a term-deposit to pay for a sudden illness, or working an extra job on weekends to save for a new motorbike are all examples of money management.

Prevailing financial services are largely designed to support the decision-making, coping strategies, and money management of the privileged few. Think of a desire that someone earning a regular salary in a managerial job may have: "I think I need to put away part of my predictable income today to earn a regular income in my old age." Well, here is a pension account. Or, "I need to borrow money for a new house that I can pay back over 30 years in slowly increasing rates to suit my rising career profile." Here is a 30-year adjustable rate mortgage loan.

The persistence of dormant accounts and infrequent use of DFS among low-income customers show us that current services do not support their financial activity. Their coping strategies occur beyond the remit of current services. We need to design DFS that are relevant to their needs, help them deploy the coping strategies that work for their circumstances, and thereby enable them to gain greater control of their financial lives.

In this paper, we present a model of human decision-making that can be used to design future financial services.[6] The purpose of our model is to collate a wide variety of observed financial practices of the privileged and the poor into a common framework that can be applied in different contexts. Think of it as a vocabulary with which to organize our financial behavior and a set of design principles for financial services that can accommodate and facilitate this behavior. Such services will offer greater control to customers and will generate greater value for the businesses serving them.

This paper is intended for financial services providers that are looking to re-invent their offerings and achieve broader relevance, innovative new entrants who want to propose entirely new financial services concepts, and those targeting the mass of the population in developing countries.

The paper is divided into two sections. We first describe the model for financial decision-making. We then use the model to assess the present state of financial services and offer a series of design principles and recommendations emerging from the model. These applications and principles are useful for financial services providers, and indeed any innovators of the future, who want to design financial services that are intuitive and adaptive to a wide variety of customer segments, and especially the low-income majority who are currently underserved.

NOTES

1. See Suri and Jack (2016).
2. Only 33 percent of these registered accounts are actively used (at least once in 90 days). While active customers transact around 11 times per month on average, 66 percent of transactions are airtime top-ups. Person-to-person transfers make up almost 72 percent of the total value of transactions (GSMA 2015).
3. Money management denotes the short-term transactions that smooth day-to-day consumption.
4. The ideas on decision-making in this paper are related to the field of Judgment and Decision Making (JDM), which is an interdisciplinary study of normative, descriptive, and prescriptive theories of judgments and decisions. JDM relates to psychology, economics, organizational research, decision analysis, and behavioral research. This paper presents a model of JDM for the financial lives of the poor to influence financial services providers and innovators seeking to build high-impact DFS for this segment. For an example of related work see Knoll (2010).
5. The idea of "control" in finance is more deeply fleshed out in Koning and Murthy (2017), where choice, respect, voice, and control are the four key drivers to nurture a sense of empowerment in low-income customers' interaction with financial services. Control in personal finance is defined as the ability to access suitable tools to manage your money and achieve your monetary goals. We argue that low-income people do not often feel a sense of control with current financial services accessible to them.
6. The intent in this paper strikes us as not dissimilar to that of the emerging field of emotional finance, which draws on psychoanalytic understanding to describe how unconscious processes can drive financial decisions. So far, it has mainly been applied to decision-making by professional investors. See Taffler and Tuckett (2011).

BOX 1
EVIDENCE PRESENTED IN THIS PAPER

The model presented in this paper was tested with low-income customers of Eko India Financial Services in Delhi in summer 2016.[a] Most customers belonged to low-income, migrant households and possessed a smartphone. Wherever relevant, their decision-making patterns and other evidence are presented as quotes and comparisons. The project also involved building a prototype of a mobile money application that would reflect ideas derived from the model and customer research. We have used illustrations of this prototype where relevant. For more details, see Annex I

a. Eko India Financial Services is a FinTech developer and e-wallet and payments services provider.

1. THE MODEL: MONEY, DECISIONS, AND CONTROL

1.1. THE PRIVILEGED FEW AND THE INFORMAL MAJORITY

We perceive our future through the lens of our current circumstances. We determine how much certainty and influence we have on events to come, based on our control over the present. Each of the two graphs in Figure 1 displays the passage of time along the horizontal axis and the quality of outcomes, relative to the present, along the vertical axis. The shaded areas represent the likely range of outcomes at different points in time.

The graph to the left represents an optimistic existence where positive outcomes across time can be expected to continue unabated, and the risks of bad outcomes are quite limited. This is a group we call the privileged few, who live in a secure world of opportunity, where one's circumstances (wealth, education, class, etc.) permit effective management of both opportunities and risks. Here, good education, wealth, and one's socioeconomic class affords many opportunities, and the financial situation feels well under control—a feeling that only a privileged few have on a global basis.

The graph to the right represents life for the majority who live in a precarious, insecure world. Here, the likelihood of negative outcomes is higher. Social and environmental shocks are sudden, and without the crutches of a good education, wealth, and socioeconomic class, the chances of remaining in the status quo or slipping into a worsened future are high. There is very little chance of breakaway success. Risks loom larger than opportunities. People in this group often work in the informal sector or seek services such as health and finance from the informal sector. We therefore call them the informal majority; the group includes the majority of the world's poor.[7] With such a pessimistic perspective on the future, the informal majority are more likely to rely on shorter planning horizons and to look for greater flexibility in their money management. The lack of appropriate services to deal with this situation adds to the complexity.

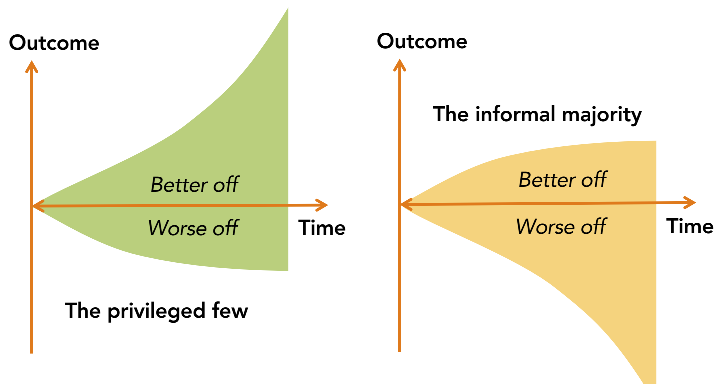


FIGURE 1. View of the future

1.2. UNIVERSAL FINANCIAL CONCERNS

What are the key financial concerns in our lives? We can broadly identify three main concerns or sources of anxiety that are universal in their dominance, but that become less pressing as we move along the spectrum from the informal majority to the privileged few, due to existing safety nets and availability of appropriate financial services.

Where will my next dollar come from? Dealing with the erratic nature of income is a key concern for the informal majority, who often work temporary or seasonal jobs. Much of the anxiety comes from insufficient clarity and control over the stability of cash inflows when they are needed. Significant attention goes into scrambling for new and often different sources of income or liquidity.

How can I keep on? An equal concern is being able to stick to certain regular financial routines. In a world that is uncertain and unstable, the ability to maintain regularity in financial transactions actually represents progress. Concerns range from "How can I keep on sending my children to school and paying the monthly fees?" to "How do I put meat on the table once a week, or pay regular dues at the temple?"

FIGURE 2. The triangle of financial concerns

And what if? Even if near-term income sources are clarified and stabilized, even if routine expenditures are guaranteed, a big adverse shock can overwhelm one´s income and available buffers. Concerns can be "What if my daughter gets sick and I need to pay for an operation at the hospital?" or "What if I break a leg and can´t work for a month?"

We all may have these concerns, but for the informal majority who have fewer safeguards, these concerns are particularly pressing. (See Figure 2.)

1.3. INTUITIVE DECISION-MAKING: ON AUTOPILOT, FOR GOOD REASONS

With these looming concerns, how do we manage our financial lives? Our financial decision-making is shaped by our context. Figure 3 illustrates a decision-making funnel, where our experiences and expectations—the lens through which we view our future—are at the top of the funnel. The parts of our life that we have an ability to predict are labeled as knowns or, more accurately in mathematical terms, as risks. Those things that we do not feel we have any basis for predictability are labeled as unknowns or uncertainties.

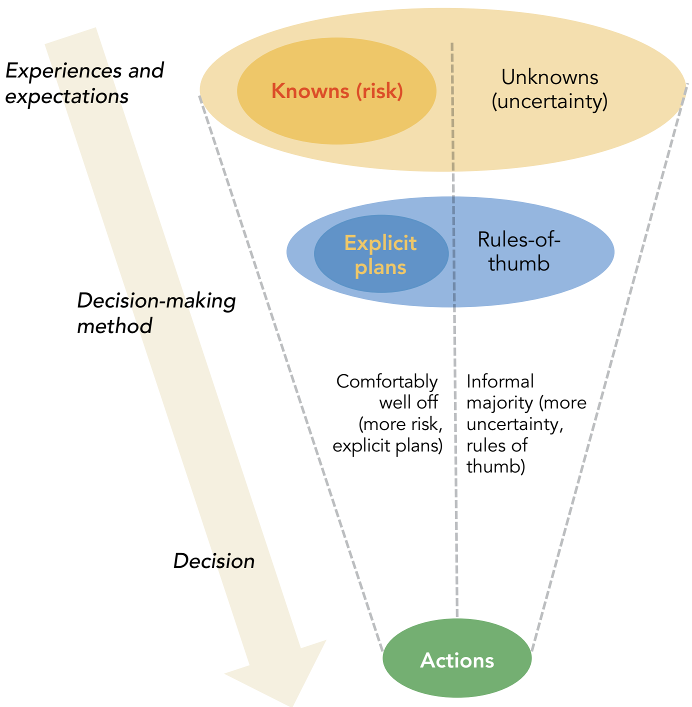


FIGURE 3. Decision-making funnel

The informal majority has a greater exposure to uncertainty relative to the privileged few. A salaried person among the privileged few may lose her job, but this is a low-probability event that is linked to things such as the sales track record of her company, the general state of the economy, and her own motivation—all things she has some visibility of. Even when things do go wrong, the privileged few are likely to have safety nets in the form of social welfare and retraining benefits, accumulated wealth, and a good education that will eventually bring them back into the workforce.

On the other hand, the income of a farm laborer who is part of the informal majority is likely to be more uncertain. He may lack the information with which to assess the likelihood or impact of adverse weather conditions or fluctuations in world market prices. Health emergencies and accidents hit fully here, while the salaried may have medical insurance sick leave, or may be covered by a daily income that is less dependent on direct effort exercised that day.[8]

Whatever the mixture of risks and uncertainties we face, we need to take constant actions to prepare ourselves for the future. And so, the middle layer of the decision-making funnel shows two kinds methods we choose in the face of risk or uncertainty: an implicit rule-of-thumb method or an explicit analytical method.[9] The rule-of-thumb method jumps to an answer based on only few information points, and is appropriate under conditions of uncertainty, where we cannot know underlying probabilities.[10] The analytical method takes as much data as possible to reach the right decision, and is appropriate in the presence of risk, where the underlying probability functions are reasonably known. (See Figure 4.)

It would seem appropriate for the privileged few, to plan their finances through a documented plan or budget, which may be done quarterly or even annually, because circumstances are predictable and slow to change. Why revisit yesterday´s broad financial decisions today, if your circumstances have not changed that much? Predictability and more information allows the privileged few to think about their finances more holistically, and hence establish more fully defined and articulated financial plans with a longer time horizon. The privileged few can often talk through their decisions in a way that seems quite deliberate and rational.

On the other hand, with both variable and uncertain income flows, the informal majority encounter new information every time they touch money. Today has been a good day, there is a surplus: there is a decision to be made as to what to do with that surplus. And that decision will be affected by whether

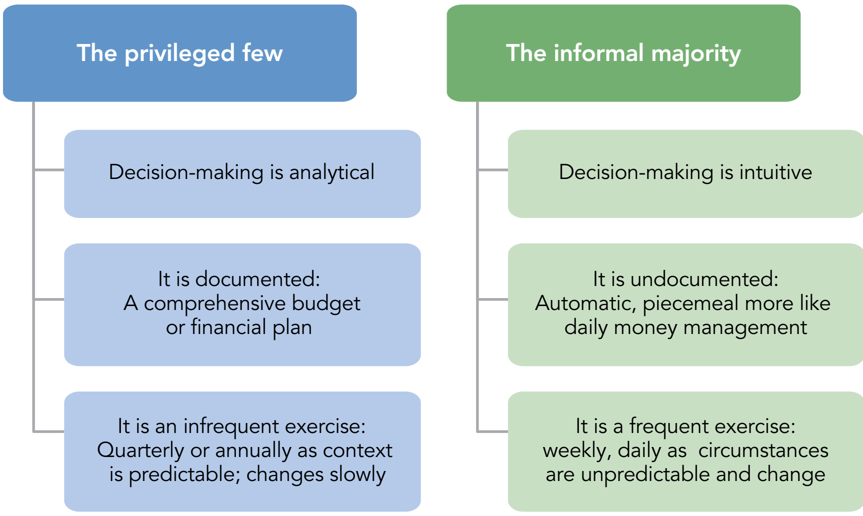


FIGURE 4. Differences in decision-making approaches

yesterday was a good day. Therefore, money allocation decisions tend to be done piece-meal, and rarely in the context of fully worked out budget plans. When viewed externally, their financial decision-making is more frequent, more intuitive, and more automatic.[11] The informal majority are often not explicitly aware of how they are making their decisions, as if they´d put their financial lives on autopilot, in order to cope with their circumstances.

Financial services today are not calibrated for frequent financial decision making, they assume stable financial plans. Think about the traditional fixed-term deposit and the life insurance policy, which are usually hard to reconfigure once the terms are set.

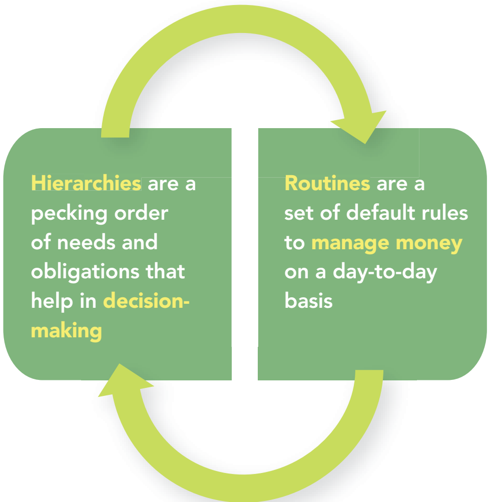


FIGURE 5. Hierarchies and routines

1.4. INTUITIVE DECISION-MAKING: HIERARCHIES AND ROUTINES

Since their context changes often, the informal majority need to come up with a series of "if-this-then-that" rules that they can quickly apply when situations arise. Maybe they earned half of their weekly wages because of a poor crop season. Or, an illness in the family requires them to put together a large sum of money for an urgent operation. These rules are generally intuitive and more applicable in sudden situations, yet paradoxically, they perhaps become the edifice on which one can build self-discipline. Rules are of two kinds: hierarchies and routines. (See Figure 5.)

Hierarchies establish a pecking order among financial needs and obligations, which set clear priorities in financial decision-making. They help answer a variety of questions: Which kinds of expenditures should I prioritize for most future gain? Which income sources are more important? Which savings are more easily raided if a particular need/want comes up? Which assets are more easily pawned or sellable in case of need? Which debts should be repaid first? Which relatives can be asked for help first in case of need? Conversely, who must be repaid first (for a compendium of reasons)?

> **"I had to give money to my mother-in-law. I couldn't refuse because it would have harmed our relationship."**

Hierarchies thus constitute a decision-tree that might be quickly run through when a particular situation arises. They can express themselves as hard-and-fast rules about which type of money goes with which type of purpose, or permit a more nuanced decision for other contexts.

> **"My husband wasn't well and the private hospital expenses were very high. I wanted to use money from my savings, but my daughter refused and said that we will go to a (cheaper) government hospital without using our savings. Once I start using that money."**

"I help my neighbors in need. If they, in return, are not able to help me out, then I know they would help my children in the future."

Routines are a set of defaults for managing our money and can be of two kinds: spending routines, for how much to spend weekly on food or how often to have a family day out; or savings routines, through regular participation in a group savings scheme and engaging in calendared social activities to build up your social reputation.

When routines are in balance (both inflows and outflows), you have a sense of financial control. When income flows fall short of expenditure routines, we go back to our hierarchies to prioritize and deprioritize certain spending. When income flows begin exceeding expenditure routines on a regular basis, we may choose to add a new expenditure routine. We may, for instance, decide to buy a bigger-ticket asset such as a TV on credit, which forces us to commit to a certain subsequent repayment pattern.

The budgeting that the privileged few do also uses hierarchies and routines: there are clearly defined priorities and commitments to predefined routines. But explicit budgeting—with all the quantification and specificity it implies—is possible only when there is clarity on foreseeable income and expenditures. In the absence of that, hierarchies and routines for the informal majority are intuitive, automatic, and undocumented. As a result, DFS providers may take them less seriously and impose hierarchies and routines more suited to privileged lives through financial literacy and training programs. This does not always work. (See Figure 6.)

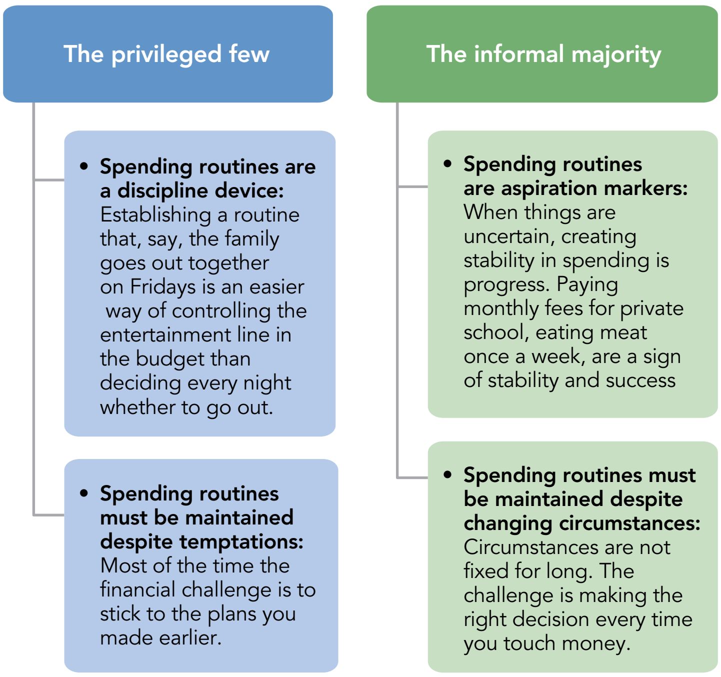


FIGURE 6. Contrasts in spending routines

1.5. COPING STRATEGIES: DEALING WITH UNCERTAINTY

The informal majority combine hierarchies and routines to create coping strategies. Three broad coping strategies—animating money, income shaping, and liquidity farming—are articulated in Mas (2015) and illustrated in Figure 7.

Income shaping involves managing the scheduled flow of your income, so that the right amount of money arrives with the right frequency to match your expenditure. Routine income must flow in to match routine expenditures, and there must be some periodic windfall to match larger occasional expenditures. If these income and expenditure flows line up perfectly, there is no need for financial planning. The need for income shaping arises when there are limitations in the ability to schedule liquidity by appropriately shaping your income. Income shaping is integral for the informal majority because they are often employed in temporary jobs or casual labor.

Financial services today *do* focus on income shaping. Think about pension plans and life insurance policies, and even simple term deposits that offer discipline today for greater income tomorrow. But the definition of tomorrow is pretty rigid and is tied firmly to the business model for this particular offering. In times of distress, these services require customers to jump complex hoops before they can access their money.

Liquidity farming involves nurturing social and business relationships so that they can be called on in a moment of financial need. The people in your entirely virtual liquidity farm represent liquidity options at your disposal. They require attention and cultivation by investing time and resources in them (contributing to social events or helping someone out when they are in need), but can hopefully be harvested when you need access to immediate liquidity. People´s liquidity farms

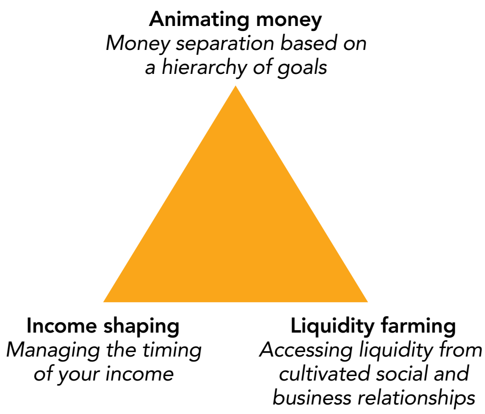


FIGURE 7. Coping strategies

are built on notions of reciprocity and mutual support.

"My friend asked me for money for his sister's wedding; she is like my sister also. I know he will give the money back, but I will not ask him; it doesn't look good."

Liquidity farming is integral for the informal majority, and money matters tend to have social significance. Friends and family constitute a vital social safety net that needs to be continuously cultivated. When support is given to others in need, you expect it is noted, but there is usually only a very loose expectation that the money will be returned. It is more often staged as a gift than a loan. But there is a sense of reciprocity that the support will be returned when fortunes turn. The size of the reciprocal gift will be based on the means and needs of the parties at the time, rather than on the size of the original gift. Moreover, "if I help you when you are in need, my expectation is that you will help others when they are in need, even if I don´t ever require your help." This creates a communal, rather than just bilateral, sense of reciprocity.

These social linkages are often local and based on a history of community interactions. It helps explain the severe stress that comes with migration of low-income people to urban areas, because they need to leave past networks behind. But CGAP´s research with low-income urban migrants in Delhi showed that, over time, they may manage to build networks in new communities, around their livelihoods, or in the neighborhoods where they live and in the business-related supply chains they are a part of.[12]

"My last employer asked me for money, he hasn't returned it yet. I know whenever I will ask him he will give it back to me. But I will ask him only when I need money."

Think of liquidity farming as a strategy of building options today for sourcing liquidity in the future. In the world of the privileged few, the future is secured by directing residual income toward asset building. However, for the informal majority, asset accumulation may not always be possible or predictable. They overcome this gap with a strong social component to their financial practices—or, rather, a strong financial component to their social relationships.

The reliance on liquidity farming generally wanes with gains in financial privilege. As we gain wealth, we depend less on others for survival, and finances tend to be handled privately. People may occasionally help others more in need, but there is a presumption of unequal relationships when giving this support. Such support may be an act of generosity or altruism, in which case it is characterized as a gift. Or it may be justified as temporary assistance, in which case it will be given explicitly as a loan. Either way, the terms tend to be quite clear. Excessive or ostentatious gifts between friends and family can even be seen as inappropriate, because they signal an imbalance in the relationship.

As a result, the privileged few prefer their financial dealings to be private and individually determined. The informal majority rely on a social safety net and, therefore, desire a communal approach to their finances, especially when helping someone out or fulfilling social obligations (think community-sourced loans from mChanga or socially driven credit ratings). How can financial services providers build tools that accommodate and expand a sense of community and networks?

Animating money entails storing or bottling liquidity in a way that protects it from unwarranted uses. The essence of discipline in savings is money separation: assigning different broad purposes, and even representing different moral values, to different pots of money.

"At the start of the month my wife keeps a portion of my income to save for pilgrimage. We use that money only for that purpose and nothing else."

This separation is easier to sustain if each pot of money is vested with a certain personality, even a moral character, to signify the kind of money it is. Animated money is storied money: creating a direct connection between where and how it was obtained and when and what it may be used for. This could take different forms such as, "Inheritance money is for when my children get married" or "Gambling earnings are to have fun with my friends." These stories then become the standard by which I will decide whether a particular need justifies using those funds or not.

The privileged few also animate their money, but they do so by investing in separate portfolios. They maintain a discipline portfolio with strong lock-in (or illiquidity) features and a separate liquid portfolio with full accessibility. As a part of their financial planning, they calibrate how much money they need to invest in each portfolio. The informal majority cannot afford to specialize their portfolios. Every dollar needs to be doing multiple duty: they will assign it a purpose to build discipline, but the funds can be raided on short notice. The school fees jar is also an emergency fund in case you need to take your daughter to the hospital. The informal majority tend to build discipline through psychological devices (such as mental labeling) than by locking their money into illiquid assets.

During immersion research with customers in Delhi, we met Kiran,[13] a domestic helper who worked at five households and offices in the city and earned $180 a month. Kiran was a money animator. She shared three goals with us: a wedding for each of her two daughters and an addition of two rooms to her *jhopdi* (house). Each goal had a timeline and a level of priority (see Table 1).

TABLE 1. Kiran's animation for her financial goals

GOAL	ELDER DAUGHTER'S WEDDING	HOME IMPROVEMENT	YOUNGER DAUGHTER'S WEDDING
Timeline	5 years	7 years approximately, but not fixed	10 years
Classification	Important and inevitable expense, non-negotiable and urgent timing	Semi-important, negotiable timing	Important and inevitable expense, non-negotiable, but distant timing
Strategy	Save part of fixed income, every month with trusted employer	Save part of fixed income, every month with trusted employer	Same strategy as elder daughter's wedding, but start in 5 years

The elder daughter's wedding was highest priority and needed disciplined savings. Kiran relied on her most trusted employer to help her save. She decided not to collect her salary from this employer and instead to store it with her for safekeeping. When it was time for her daughter's wedding, she would take the lump sum amount for her expenses. She could give us concrete figures for how close she was to her goal. It wasn't simply trust that made Kiran save with this employer, she also was cultivating a liquidity farm. This employer had lent her small sums of money in the past, which she had diligently returned. She knew that she could rely on the employer to fill any minor gaps in her savings for the wedding, if the need arose. Money for the house expansion was collected in a piggybank at home, where she saved when she could. She had a vague sense of how close she was to her goal. The younger daughter's wedding could wait and followed a similar plan to the first wedding.

For Kiran, her daughters' weddings were concrete goals for which she needed plans. She had to get them married at the right age. But she was less determined about her home improvement goal. She said she thought about it less, and saved with less regularity. The informal majority know they will achieve only a few goals. So, why lock in a few specific goals prematurely, and concede defeat on the rest? Making goals broad and fuzzy is better because you know that in the end you will be able to fulfill only a few of your dreams. You concretize only when the real possibility exists.

All three coping strategies have hierarchies and routines. Each strategy is based on hierarchies: on the importance of income sources based on their amount, timing, and certainty (*income shaping*); on the level of cultivation needed with a relationship that we might call on in case of need (*liquidity farming*); and on the moral quality of savings and assets we build up (*animating money*). Routines are embedded in the three coping strategies: around regular separation of savings (e.g., keeping a set of jars), knowing when to diversify income sources, and on what occasions to reinforce social relationships and status. (See Figure 8.)

These coping strategies apply as much to the privileged few as they do to the informal majority. They just implement them differently. The privileged few animate their money in a concrete budget, or by maintaining separate accounts (e.g., for retirement). They have replaced their friends and families with formal financial institutions in their liquidity farm, which has become a monocrop with their credit score within it. They shape their income primarily by getting a formal job and, secondarily, by automatically siphoning off a certain amount of their salary into a second account.

NOTES

7. The graphs for the privileged few and the informal majority show two extremes. You may recognize that many of us live somewhere between these extremes. If people have opportunities for upward mobility, they may move further away from the reality of the informal majority and toward the reality of the privileged few, and vice versa.
8. We present a binary distinction of solely the informal majority facing uncertainties and solely the privileged few facing risks to highlight the major differences in their context. But we acknowledge that most people face a combination of risks and uncertainties.
9. These are Kahneman´s fast system and slow system, respectively. Kahneman (2011) exposes a range of cognitive biases, and relates them to the dichotomy between two modes of thought: "system 1," which is fast, instinctive, and emotional, and "system 2," which is slower, more deliberative, and more logical.
10. http://www.centerforfinancialinclusion.org/publications-a-resources/browse-publications/723-innovations-in-financial-capabilityns-in-financial-capability
11. For more on the argument that fast and data-frugal decisions are often superior to decisions based on detailed reflection in situations of uncertainty, see Gigerenzer (2008). Taffler and Tuckett (2011) also refer to the "emotional consequences of uncertainty."
12. Interviews with customers of Eko IndiaFinancial Services in Delhi, July 2016. Most Eko customers are low-income migrants to the city. For more information see the annex.
13. Name changed to protect identity.

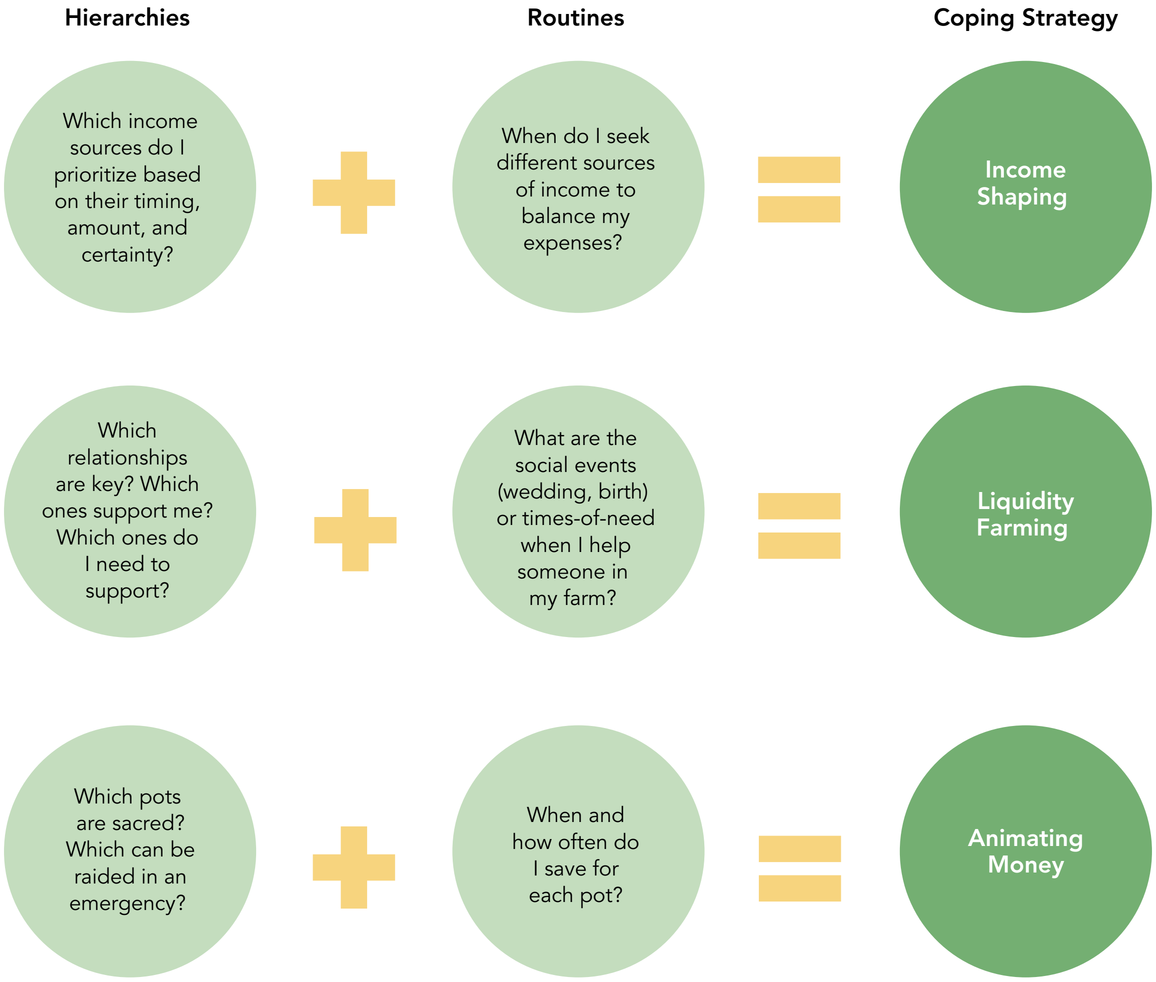


FIGURE 8. Coping strategies, and their relationship to hierarchies and routines

2. THE MODEL AT WORK: APPLICATIONS AND EMERGING DESIGN PRINCIPLES

2.1. A SAMPLE TRAJECTORY

Now we take the three coping strategies and superimpose them on the key money concerns triangle as in Figure 9. Certain strategies are more appropriate for coping with certain concerns. Where will my next dollar come from? Well, either from a scheduled liquidity (income shaping) or from a source of liquidity-on-demand (liquidity farm). What if there is a big hospital bill tomorrow? I´ll either raid an appropriate animated money pot or I´ll harvest some liquidity from relationships I´ve cultivated. And how can I keep on paying for school fees every month? Either by ensuring that I get enough monthly income or by building up a liquidity pool that I can draw on at the end of the month.

Modeling customer journeys and financial instruments

We ought to be able to map everyone on this triangle, regardless of whether they are the privileged few or the informal majority, based on their mix of financial concerns and the coping strategies that they use to address them. Moreover, we can map their financial journey as their circumstances change, and as their concerns and coping strategies evolve. The following (Figure 10) is a likely trajectory of a person as she charts a path out of poverty and into affluence (i.e., moves from the informal majority toward the privileged few):

- **Point A:** When someone is in abject poverty, the question of where their next dollar will come from is most urgent. They have no expectation of expenditures beyond sheer survival, and they cannot afford to worry about hypotheticals—the present is bad enough. They constantly scramble for liquidity: working more odd jobs when they can, and reaching out to friends for help when they cannot.
- **Point B:** As their lot improves somewhat, they begin setting some expectations around certain routine expenditures because this is what gives them a sense of succeeding in life, even beyond earning a higher income. They will seek to protect those routine expenditures. They stop living hand-to-mouth and start managing their own buffers.
- **Point C:** As they emerge out of poverty, their main concern is not falling back into it. They have been able to maintain a decent level of routine expenditures, but still feel vulnerable and need to protect themselves against downsides. Given their success, their social capital in their network is good, and they can continue building their own buffers, if things go wrong.
- **Point D:** As they continue to emerge from poverty, and risks appear small and insurable. They are likely to acquire a whole new lifestyle and focus solely on

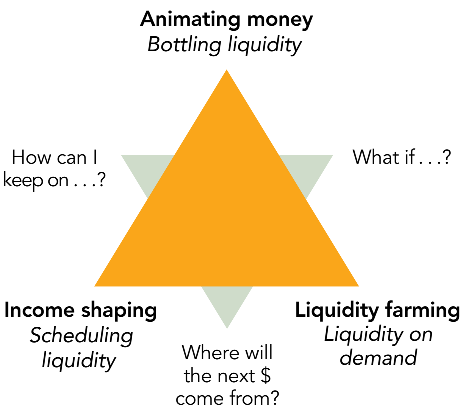


FIGURE 9. Layering strategies and concerns

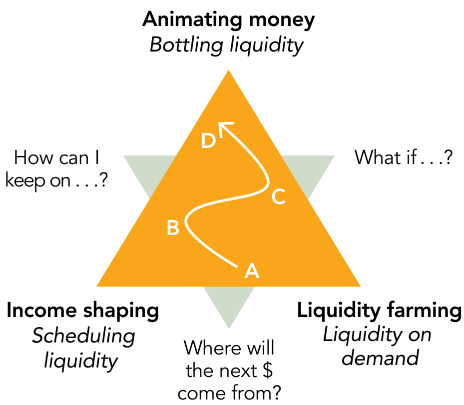


FIGURE 10. Mapping a person´s journey

diversifying their portfolio for their future goals. They may let go of friends as a financial resource.

The trajectory shows how the triangles of key financial concerns and coping mechanisms apply to everyone: rich and poor, as well as someone making their way from poverty to affluence. The model not only provides a lens with which to understand the unique requirements of low-income customers, but establishes a logical link with the financial lives of the more affluent.

2.2. MAPPING FINANCIAL INSTRUMENTS

The model can be used to transform current offerings and build DFS that are more relevant to the poor. To do that, it is useful to map various financial instruments—whether formal products or informal practices—onto this triangle as well, based on what financial concerns they can address and how they operate. The following is a mapping of three savings instruments as shown in Figure 11.

Rotating savings and credit associations (ROSCAs) or other forms of basic group savings: ROSCAs are most often talked about as a savings mechanism—one that enables the creation of lump sums.[14] It can, of course, support purposeful savings or, in other words, money animation. But its use may sometimes be more aligned with income shaping: for instance, to convert daily income into monthly income. Since it is an instrument based on forming groups, it is also a mechanism that serves to build social capital or, in other words, liquidity farming among the group participating in ROSCAs. ROSCAs, therefore, operate over the entire triangle. Their widespread existence and longevity globally may, in fact, be due to its ability to support all three coping mechanisms—at the same time. Money in a ROSCA may be doing triple duty.

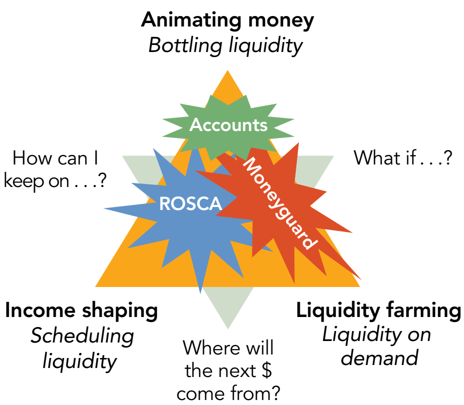


FIGURE 11. Mapping financial instruments

The moneyguard: The informal majority often park some money with a friend or with someone they trust, also known as a moneyguard. This is most often talked about as a savings mechanism—as a way of building discipline by putting distance between you and your money. It would seem to be excellent at animating money, as one would naturally tend to associate the type of money in one's mind with the nature and character of the moneyguard one has selected for it. A moneyguard whom we admire would likely get money with a higher moral value than a moneyguard who is fun and rambunctious. Parking money with a moneyguard also represents some liquidity farming. In case of need, you know you can recover your own money from the moneyguard but also hopefully some more. After all, you will have selected a successful, likely richer person as your moneyguard, and you have been demonstrating your discipline to him, so why wouldn´t he loan you some of his own money as well? The moneyguard does double duty.

The savings account: Traditional bank products tend to be specialized. They sit at the vertices of the triangle, especially at the top. It is no coincidence that that's where the privileged few are situated, too. Most bank products tend to be planted at the vertices of the triangle: savings accounts at the top, credit products at the bottom right, and annuity-type products at the bottom left. Unlike the informal instruments mentioned, they are single-purpose. The savings account, as it is offered today, is not only limited in its ostensible purpose, but it is hard to animate, too.

General-purpose savings accounts have limited ability to associate money stored in them with particular feelings or stories, and specific-purpose accounts (such as school fees accounts) lack the flexibility to accommodate money with fuzzier goals or goals that span multiple duties. As a result, the bank account will, at best, capture one type of money and will fail to become a central framework for money management for those without explicit budgets or financial plans.

In general, informal financial instruments and practices work because they tend to span large areas of the triangle. If a service spans more than one coping strategy, you can continue using the same mechanisms as your circumstances change, just for different reasons.

2.3. INNOVATORS WANTED: DESIGN PRINCIPLES FOR FUTURE FINANCIAL SERVICES

When financial services help us mitigate our concerns using coping strategies that work for us, we feel a greater sense of control over our financial lives. In other words, we are empowered. In our industry's focus on financial access, we may have left the informal majority out of such a sense of empowerment. While the feeling of empowerment must come from within, there is much that financial institutions can do by creating services for the informal majority that don't just include, but also empower.[15] Here are three principles emerging from the model that can guide you toward the creation of such services.

Principle 1: Relevance trumps simplicity

For most people, including the informal majority, money is, to a large degree, virtual: certainly the entire liquidity farm is, and some money animations are as well. Remember that people maintain potential liquidity pools and do not store actual liquidity. So there is no reason to think that they have trouble grasping nontangible concepts of money, such as digital money. What they are more likely not grasping is how your services can help them—it´s a question of relevance. And so . . .

When services are not used, do no conclude that people are attached to the physicality of money. Most often, the problem is that they don't understand your services.

We are often told that services need to be simple to be useful to the poor. But, in fact, there is nothing simple about many of the informal instruments that the informal majority have devised and use regularly (the variety of community-based savings groups, the gifting and reciprocity that creates a complex web of obligations). But they have an intuitive sense how all of these work. Why should financial services be simple, when there is nothing simple about the financial lives of the informal majority? Simplicity in product design is a last resort, a card to be used when you´ve failed to trigger intuition.

Don´t settle for simplicity: aim for intuition instead.

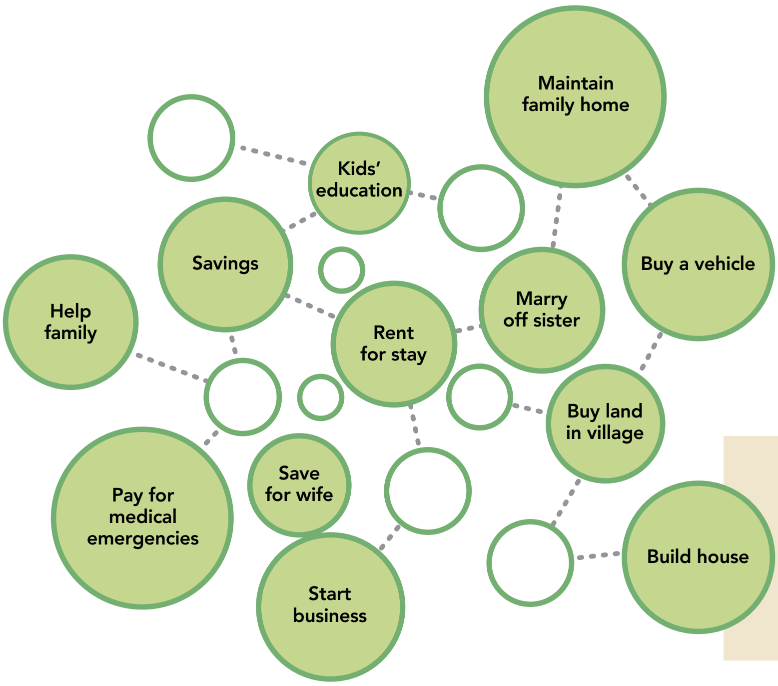
Financial discipline is about maintaining a logical (not always physical) separation of money. People attach stories to their money, relating to where it came from, how it´s being stored, and what it might be used for. To be relevant, financial services should keep these stories alive as much as possible—from the moment the money enters the system to the moment it is used up. This opens up opportunities to offer money management tools that are fun and engaging to use. Using digital interfaces, can you assign colors to money to signify its urgency? Could the picture of a new car on your screen help you focus on your goal (which may or may not be the car itself)? Could an application remind you to send money to your sister in the village with a simulated call from her?

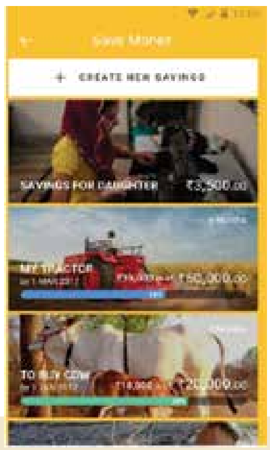
Be relevant. Preserve people´s money stories, keep it personal and lively.

Too often, simple savings accounts are story killers because the accounts themselves have no hooks by which to link that money with the story in your own mind. Digital technologies can help bring these stories alive.

Principle 2: Tools, not products

It is tempting to equate creating relevant products with creating increasingly tailored and segment-focused products. Instead, you need to create the minimum set of tools that are useful to a wide variety of customers. Beyond differences between the rich and the poor, there are differences in context *within* low-income communities, too. If the tools are sufficiently intuitive, powerful, and flexible, people will tailor them to suit





Preserving stories: A sample story map of financial goals juxtaposed with a prototype of a mobile money application that allows you to create image-based saving wallets.

FIGURE 12. Sample story map

their own needs. Think about the variety of ways in which users use WhatsApp: for keeping in touch with spread-out family, for collecting wedding photos from all the guests, and, for those running small-businesses, for communicating with clients. (See Figure 13 for another example.)

Creating a set of tools allows you to focus your marketing less on how your service works, and more on use cases that illustrate *why* they might be used. All tools invite this kind of positioning. Consider a simple hammer: it´s a simple device that you can use to whack things, now let me tell you all the things you might want to whack!

Offer a range of useful tools, not overly tailored products. Don´t smother customers with rigid rules and precise labels. Invite them to engage their imaginations.

Instead of offering a nicely rounded, finished product that you expect people to take and use as is, give them the room to inject their own meaning into your offers and, thereby, make them their own. Think of Kiran's financial plan. It had plenty of complexity and meaning to propel her to act in a concerted way to achieve her goals. Her plan gave her a sense of control over her life. Let customers think of their money in their own way and make up their own rules.

Help people build their own discipline. . . but don't forget to always give them a way out.

Your job is not to discipline people. Instead, your job is to give people the tools that let them discipline themselves. The collection of tools you offer needs to incorporate a diverse set of *prods* (triggers for taking action, such as making a payment or setting money aside) and *locks* (frictions that inhibit people´s disposition of saved money). People in the informal majority for whom nothing is guaranteed, it is important to also build in outs: mechanisms to extract liquidity—if not breaking the locks—in cases of extreme need.[16]

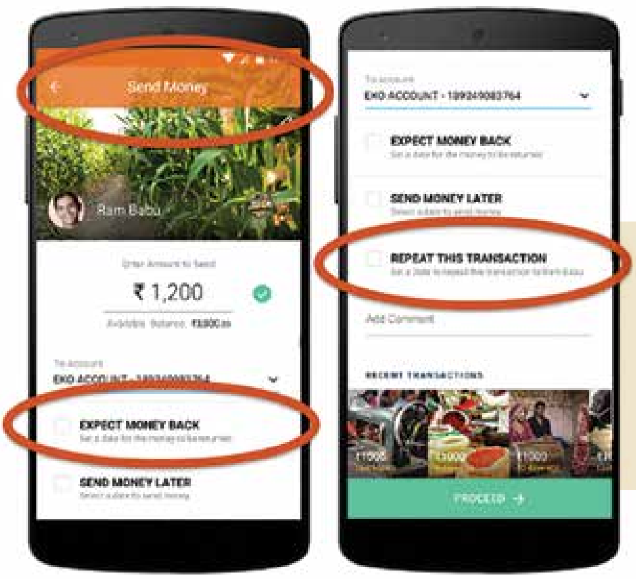
When your financial circumstances are uncertain, when no one is guaranteeing you anything, ambiguity is your friend. Having specific goals may not lead to more discipline, but it may well result in more frustration when the goals are not achieved. Poorer people tend to see their finances more as portfolios of (liquidity and expenditure) options than as portfolios of assets. Don´t force them to forego options, even under the guise of commitments and prepayments.

Don´t force people to make decisions sooner than they need to. Let them keep as many options open as they need.

Informal instruments are rarely single-purpose. They usually combine elements of savings, credit, and insurance. People feel money is working for them when it is doing multiple duty: remember the ROSCA, the savings mechanism that shapes income into stipulated chunks and, in the process, builds social capital and enhances future borrowing capacity?

Unfortunately, most formal financial products are designed with one objective in mind, and lead toward a specialized money portfolio that does not work for the informal majority. We are beginning to see some double-duty products—for instance, person-to-person (P2P) payment services that offer credit scoring for P2P loans, digital crowd-funded loans, etc.—but we have only scratched the surface here.

Avoid traditional pigeonholed financial services categories. Let your services do multiple duties for your customers instead.



Instead of products, focus on tasks and tools: In the sample screens to the left, a simple remittance becomes informal credit at the click of the button when you choose "expect money back". You can routinize this transaction with another click.

FIGURE 13. Sample screens from the Eko prototype showing tasks and tools

Principle 3:* *Finance is neither independent nor unchanging

Finance is a means to an end. It is closely connected to where we are and who we know. If we need to find a new income source during a poor crop season, we must consider our current geography and employment possibilities in this location or near it. When we migrate to a big city for work, we retain a sense of duty to our relatives back home, to whom we must send regular payments. Finance also relates to time, more specifically to our mental calendars and clocks. Remember Kiran's goal to save for her daughters' weddings? These goals and her strategy to save for them were strongly tied to her time horizons for the wedding.

As shown in Figure 14, each of these dimensions can serve as a disciplining mechanism. You can park or restrict your access to money for a time. You can build on peer pressure through relationships, for instance, by posting certain transactions on a social network, or by requiring that someone else (such as your spouse or a trusted friend) needs to approve your use of certain funds. You can tie the use of money to specific locations, for example, a pot of money that can be spent only when you are back in your village.

Of course, it is important to allow a certain degree of ambiguity or fuzziness in each of these dimensions. The time dimension, for instance, might entail a specific date (e.g., March 15) for one customer; it might mean multiple days on a recurring basis (e.g., Fridays, the first of the month) for another customer or a collection of dates (e.g., November, festival week) for other customers. But it could equally be expressed through looser notions that one correlates with the arrow of time in one´s own mind: using animals or objects that suggest a lifetime or lifecycle (e.g., chicken money vs. cow money) or using purely semantic categories, such as now, later, and much later.

Services must be malleable to a customers' changing circumstance

Despite rules-of-thumb and coping strategies, financial decision-making is not always fixed. Often there are competing interests that complicate decision-making, which we call tensions. Three tensions are described in the following and shown in Figure 15.

Digital technologies and data offer providers compelling tools to connect finance to customer lives more deeply. Think about a digital application on a phone that connects to a customer's Google Maps, her Facebook account, a calendar, and a clock to link financial services more strongly to her frequented locations, her most trusted friends, and her important planned events. Such services would be customized and greatly relevant.

Flexibility vs. discipline. How can you balance the need for discipline to protect bottled liquidity for future money needs, with the flexibility to cater to today´s unexpected needs? The informal majority cannot afford to split their money portfolios to cater to these two broad needs—all their money must do double duty. The cow is a good example of such a financial service. Yes, the cow is a financial service! There are many reasons why you won´t think of selling the cow on a whim, but if there is a real emergency you can indeed sell it. A pension account available in the market today cannot be easily withdrawn to cover for a festival expense. A customer must prove a grave condition or lose part of the money in taxes.

"I will rather put my money in a locker (than a bank) so that I can use it anytime I need."

Privacy vs. social display. This tension manifests in money animation: social display of your savings and wealth (e.g., in the form of cows) can have a disciplining effect through peer pressure, because you know

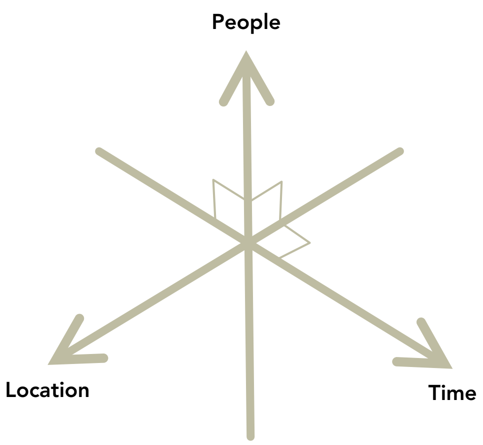


FIGURE 14. Finance across three dimensions

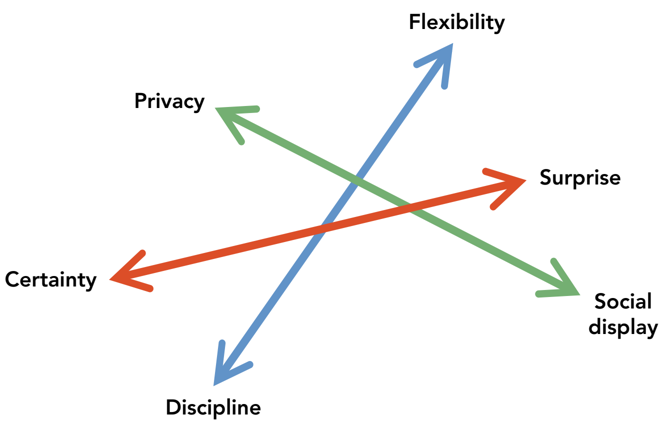


FIGURE 15. Tensions in managing money

that if you sell your cows everyone will infer that you had a moment of weakness or business failure. But it can also draw the attention of thieves.

Privacy:

"I don't want anyone to know how much money I have. If they ask me for money, I won't be able to refuse them."

Social display:

"If someone doesn't repay loans in our networks, we want all others to know about his unreliability."

Certainty vs. surprise. This tension is more subtle. Certainty is an important aspect of financial control. Receiving a fixed salary, paying fixed prices of daily goods, and earning fixed interests on term deposits exist to give us certainty. The informal majority crave this certainty, too. But just like shocks are uncertain, so are windfalls. Research in Delhi showed us that in some situations, low-income people set themselves up for surprise earnings. Think of the piggybank: the fact that you can´t see how much is in there is its key value proposition. You want to avoid the temptation to break it, and you want to surprise yourself with how much is in it when you do break it.

"I had a fair idea how much money I had in my piggybank at home, but when I broke it, I was happy to see more money than I expected."

It also explains why lottery-based savings rewards are usually attractive to people: they generally prefer the possibility of a large gain (a prize draw) to the certainty of a tiny one (regular interest).

During our research, we saw an interesting illustration of this tension with Sandeep, a personal driver for a family in Delhi:[17]

"My employer asked me to fix my overtime earnings [from driving], when I drive them late at night. But I disagreed. Often I receive less than I expect from older members of the family when I work after hours. But some generous, younger members of the family give me a lot more overtime cash when I drive them home from their parties, late at night. I prefer to leave the amount up to them, in the hope of earning more."

Sandeep thought of overtime earnings as a gamble. If he was unlucky, he would make less than he expected. But if he was lucky, he would make an unexpectedly high rate, giving him extra cash for expenses. When asked by his employer, Sandeep declined to fix an overtime rate.

Customers like Sandeep may need advice to navigate such tensions, but equally important they need financial services that give them the room to negotiate their own way through the various tensions. From a young age, their financial lives have prepared them to ascertain when they must modify their decisions.

Financial services of the future must allow customers to reaffirm or modify their intuitive choices as uncertainty turns to certainty or vice versa in the course of their daily life.

In conclusion, we are arguing for a deeper form of engagement of customers with your service than the immediacy or convenience of a payment. This type of engagement requires that customers find the service to be convenient, but also to be supportive of their coping strategies and empowering in their lives.

There is every reason to believe that the digital medium can deliver the kind of money management framework that people in the informal majority can intuitively relate to. Think about it: How can digital technologies fail to reproduce liquidity farming when they have proven to be so good at social networking? How can digital technologies fail to reproduce money animations with all the digital gaming experience that we have? And how can digital fail to help with income shaping and scheduling of liquidity with all the tasking and calendaring tools that exist? Digital platforms can create a hyper-reality of what people already think and do today. The digital platform can convey a stronger sense of security and privacy than if these activities are acted out in physical reality. Add the sense of immediacy that the mobile environment brings. How can all this *not* be enticing to everyone?

NOTES

14. Rutherford (2000) argues that people´s biggest financial need is to create "useful lump sums," i.e., to accumulate money in larger amounts that are meaningful in the light of potential expenditures.
15. The idea of "control" in finance is more deeply fleshed out in Koning and Murthy (2017), where choice, respect, voice, and control are the key drivers to nurture a sense of empowerment in low-income customers' interaction with financial services. Control in personal finance is defined as the ability to access suitable tools to manage your money and achieve your monetary goals. Low-income people do not often feel a sense of control with financial services accessible to them.
16. For instance, the locks might be based on a waiting period, in which case the tool needs to be suggestive of time (e.g., Friday money); or locks might be based on the notion of indivisibility, in which case the tool needs to be suggestive of size (e.g., peanut money vs. chicken money); or locks might be purely psychological, in which case the tool needs to be suggestive of how easily reversible the action is (e.g., gazelle money vs. elephant money).
17. Name changed to protect identity.

ANNEX 1. A NOTE ON RESEARCH AND EVIDENCE

This paper is the last in a series of three that conceptualize how poor people think about and resolve their money matters and illustrate how future DFS may be designed in a way that supports their mental models.

- "Money Resolutions, A Sketchbook" (Mas 2015a) describes a set of six financial decision-making patterns commonly employed by poor people. It introduces a new vocabulary and classification system with which to describe practices that recur in different markets and cultures.
- "Money Resolutions, Digital Simulations" (Mas 2015b) explores how two financial strategies depicted in the first paper (money animation and liquidity farming) might be supported through DFS. It frames such solutions in the context of a broader discussion of what it means to be customer-centric in a digital environment.
- In this paper, the objective was to build a holistic model for money management and decision-making that would serve as a basis for the design of financial services that can be equally relevant for the rich and poor, that can be built using digital platforms, and that can leverage customer data and insight more fully and create greater value for the customer and for businesses serving them. We focus on creating a greater sense of choice and control in financial services, thereby triggering customer empowerment for the informal majority.

This paper is also framed within the work on "Customer Empowerment in Finance" (Koning and Murthy 2017), which aims to build guidance for financial services providers to serve poor customers more effectively and to add value, both for these customers and for their business. The customer empowerment perspective lays out four drivers relevant for all customers in their interaction with financial services: choice, respect, voice, and control. The model presented in this paper closely resonates with and reflects the ideas of choice and control for poor customers.

In 2016, CGAP and Ignacio Mas collaborated with Eko India Financial Services to apply ideas presented in this model with low-income customers. The task was to test and build a workable prototype of a mobile-based financial service that would help low-income Eko customers keep their digital payments in the wallet and manage their money digitally with greater choice and control. We called it the Fill the Wallet project. Together with Dalberg Development Advisors and Moonraft, a design firm based in Bangalore, we tested tools that customers could use for money management, but be able to apply their own decision-making to, without a rigidity and discipline of other financial services.

Eko is a FinTech developer, e-wallet, and payments services provider, with more than 20 million client transactions. It is active across India with 20,000 agents. Most Eko customers are low-income migrants who live in large Indian cities. Between June and September 2016, we conducted six rounds of iterative user testing with Eko customers and potential customers and investigated concepts from this model with their financial lives and money-management methods. Insights emerging from testing the model with the customers form a vital piece of evidence for this paper. The evidence, quotes, and illustrations presented in this paper are based on the following customer interviews and user-testing sessions:

Number of sessions across 6 rounds of testing: 72 (approximately, 1 hour each)

Number of unique participants: 51

Gender breakdown: 18% Female (9) and 82% Male (42)

Average Income: INR 24,000 (approximately $360)

Neighborhoods: Nathupura and Bashapur in Gurgaon, Haryana

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