

Finclusion to Fintech

Fintech Product Development
for Low-Income Markets



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August 2017

About the *Helix*

The [Agent Network Accelerator \(ANA\)](#) project is funded by the Bill and Melinda Gates Foundation, the United Nations Capital Development Fund (UNCDF), Financial Sector Deepening – Uganda (FSDU), Karandaaz Pakistan and managed by [MicroSave](#). It was designed to distil the most salient aspects of strategic operations in agent network management for the DFS industry.

[The Helix Institute of Digital Finance](#) launched the project in 2013 and since then has conducted over 31,500 agent interviews in 11 countries, providing assessments to over 40 leading agent networks around the world. While our research is aimed primarily at delivering business intelligence to individual DFS providers on a confidential basis, another major objective is to provide the industry with rigorous quantitative data, which allow a more precise understanding of best practices and benchmarks for building and managing agent networks across the globe.

For each country where we conduct research, we publish a [country report](#), which contains essential information about the performance of the agents and the providers who manage them. We also maintain a [blog](#), where we provide strategic and operational insights for the industry. We contribute to thought leadership through our publications:

- »» [Redesigning Big Data for Digital Finance](#) This paper suggests important strategies that digital finance providers (mobile network operators [MNOs], banks and third parties) should adopt to manage the influx of fintech (technology firms) players into the developing world. We believe that to compete or collaborate with fintech players, providers need to augment their customer data.
- »» [Designing Successful Distribution Strategies for Digital Money](#) This paper helps providers understand their goals for building an agent network. It subsequently helps them think through the model of building an agent network that best fits their needs.
- »» [Successful Agent Networks](#) builds on the understanding that networks are the channel providers used to deliver distinct value propositions to different customer target groups. It lays out a comprehensive analytical framework for analysing agent network success along several key dimensions.
- »» [Agents Count: The True Size of Agent Networks in Leading Digital Finance Countries](#) This paper lays out a framework for understanding agent network size, drawing the distinction between agent tills and agent outlets. It also discusses agent activity rates and calculates customer to agent outlet ratios, providing updated benchmarks for the industry.
- »» [OTC: A Digital Stepping Stone or a Dead End Path?](#) discusses the pros and cons of Over the Counter (OTC) transactions and argues that they should be seen as a stepping stone to mobile money account adoption and use.

Our research powers the curriculum for the world-class training offered by [The Helix Institute of Digital Finance](#). This training covers a wide range of topics and is supported by the Bill and Melinda Gates Foundation, the United Nations Capital Development Fund (UNCDF), the International Finance Corporation (IFC) and the Financial Sector Deepening Trust (Africa). Our research also informs the work of other [MicroSave](#) teams working on [digital financial services](#) across the globe.

[The Helix's research and training workshops](#) combine classroom instruction with hands-on field visits, case studies and conversations with the practitioners who have built some of the most impressive roll-outs in the world. These courses are tailored to local markets and are offered in either English or French.

Our deep industry knowledge and our close partnerships with industry practitioners have enabled us to bring fresh perspectives and creative thinking to the operational challenges most providers face in the market place.

Beyond training, [MicroSave](#) also provides on-site advisory and technical assistance to diverse range of actors serving the mass market, and driving financial and social inclusion. This helps these players implement lessons learnt and to overcome internal and external constraints to delivering quality services in over 40 countries.

Abstract

This paper is designed to help fintech innovators understand the unique money management strategies used by low-income people in the developing world. The paper is aimed to serve as a tool to help fintech providers design appropriate financial products that underserved individuals will want to use on a regular basis. In order to understand the needs and desires of low-income people, the paper presents detailed insights from 15 years of financial inclusion research, along with the latest industry data. In addition, through illustrative examples, informal money management techniques are compared to formal techniques used by high-income people. This comparison demonstrates why many informal financial tools are still the first choice for people in developing markets even where formal finance is available. The paper concludes by looking at some cutting-edge technological innovation in the fintech industry, and highlighting those that could better serve developing world markets.

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Introduction

“The purpose of this paper is to assist fintech innovators to garner a working understanding of how low-income people manage their money so that they can design technological improvements for them.”



Just over a decade ago, advancements in mobile technology led to the development of mobile money and agent banking (referred to as digital finance¹). Digital finance provided a revolutionary new method for delivering financial services to the mass markets² of the developing world.

While the development of digital finance has provided access to financial services to hundreds of millions of new customers, only a small fraction of that population has actually chosen to use it. At the end of 2016, only 21% of the 556 million globally registered mobile money accounts were active on a 30-day basis.³ Further, within this small proportion of adopters, use is infrequent and limited to some very specific activities. On average, active mobile money users conduct only 11 transactions per month.⁴

The problem here is that, while a completely new paradigm has been developed to deliver financial services⁵, for the most part, the services themselves have not evolved. With a focus on supply rather than demand, the financial services offered through these new channels were not redesigned with an understanding and appreciation of the unique money management strategies used by low-income people in the developing world. As a result, they are only useful for a small sub-set of money management needs, and rarely become the central tools that financial inclusion enthusiasts hope that they will.

In many cases, digital finance systems in the developing world are delivering services designed for relatively high-income people with salaries, to people with some very different financial needs. Therefore, these formal financial services remain uncompetitive with many of the informal money management techniques that have been used by the mass market for generations. This is a major reason why access has failed to translate into widespread usage.

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of the 556 million globally registered mobile money accounts were active on a 30-day basis.

1. For a brief overview of digital finance, see Appendix I.
 2. We use the term “mass market” to refer to the general populations of countries that are of age to register for and use formal financial services (commonly 15 years old and above). This paper discusses mass markets in the developing world, focusing on the low-income and working-class adult sub-demographic.
 3. GSMA. (2017). State of the Industry Report on Mobile Money: Decade Edition: 2006-2016. Available at: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSMA_State-of-the-Industry-Report-on-Mobile-Money_Final-27-Feb.pdf
 4. Ibid
 5. This paper uses the terms “financial services” and “financial products” interchangeably.

The result is a giant market opportunity. Digital service delivery is still waiting for more appropriate services designed for mass market customers. Innovation is on the horizon, and our bet is that it will not be the banks and telecoms that will bring the next innovation in digital financial services, but technology firms in the fintech industry⁶ that have innovation embedded in every strand of their DNA. To date, fintech companies have mainly been focused on the developed and BRIC markets. However, with digital connectivity and smartphone penetration increasing in the developing world, fintech companies are already expanding into these markets as well.

The purpose of this paper is to assist fintech innovators to garner a working understanding of how low-income people⁷ manage their money, so that they can design technological improvements for them. To do this, we present selected insights from 15 years of financial inclusion research, along with the latest industry data, so that readers can understand the financial needs of low-income people. Additionally, we provide illustrative examples of informal money management techniques in the developing world used to fulfil these needs, and show how they differ from those of high-income people.

These examples will help the reader understand why so many of these informal financial tools are still the first choice for people living in places where formal finance⁸ is already available, and why it is so important to understand informal finance when designing new financial products. We conclude by looking at some of the technological developments that are already occurring in the fintech industry, noting which ones look like they already have promise to better serve developing world markets.

Our bet is that it will not be the banks and telecoms that will bring the next innovation in digital financial services, but technology firms in the fintech industry that have innovation embedded in every strand of their DNA.

6. Generally, we define the digital finance industry as banks and telecoms in the developing world using telecommunications networks to offer retail finance to the mass market. Conversely, we define fintech companies as technology companies designing solutions for the finance industry, generally based in the developed world or a BRIC country. For a deeper understanding of the distinction we are making between digital finance and fintech, please read the accompanying paper titled: Redesigning Digital Finance for Big Data. Available at: <http://www.helix-institute.com/data-and-insights/redesigning-dfs-big-data>

7. While there are certainly many differences between low-income people across countries, as well as those in the same country with different standards of living, gender, ethnicity or age, research does show some common denominators across these demographics, which are important to understand. While the authors recognise that there are low-income people in the developed world, and that mass markets of the developing world also include growing numbers of middle and upper-class families, the focus of this paper is on low-income adults in the developing world.

8. Formal finance refers to financial services offered by a regulated financial service provider. Informal services are not regulated, and are often not offered by a registered company.

01

Access to formal finance has often not led to usage

“*Low-income people have more volatile incomes and expenditures, and therefore more variable financial needs that require complex financial management techniques. Such techniques are hard to standardise, and generally have only managed to scale informally.*”

Companies, financial inclusion experts, and governmental policy makers have all focused on buttressing the growth of formal finance because it has important advantages in comparison to informal services. Specifically, formal finance is easier to scale than informal financial services, and therefore more conducive to economies of scale and regulation to protect consumer interests.⁹ This makes them useful for mass payment systems like retail purchases, employers dispensing wages, safe storage of value and regulated lending.

Most formal finance services were designed generations ago, before digital systems were developed to deliver them, and at a time when the main focus of retail finance was on salaried workers.



However, most formal finance services were designed generations ago, before digital systems were developed to deliver them,¹⁰ and at a time when the main focus of retail finance was on salaried workers. The constraints of these antiquated systems has meant that scaling has required standardising them into generic products. This served the masses of salaried workers well, given their predictable incomes and expenditures, and their overall financial objectives of safely storing accumulated wealth and building assets.

Low-income people, on the other hand, have more volatile incomes and expenditures, and therefore more variable financial needs that require complex financial management techniques. Such techniques are hard to standardise, and generally have only managed to scale informally. Enormous public programmes have been designed to help low-income people manage their money, by extending financial access to include bank accounts and mobile money accounts to this “unbanked” population.

Judging the level of success of these programmes is a complex task, and the subject of continued debate within the industry. This paper argues that while there has been some success with formal financial products, such success has generally seen limited uptake and usage. If these services were redesigned to account for the methods low-income people use to manage their money, they would arguably be much more useful.

Measuring uptake and usage of these services once they are made available has also been difficult. Once a telecommunications company activates mobile money services for its customers, they all technically have access to it, but practically, they might not know that or might not have an agent near them, which would make the service convenient enough to use. This makes it difficult to determine whether the differential between access and uptake¹¹ is a function of the service not being appropriate for the needs of the customer, or a result of the service not actually reaching them in practical terms.

9. We also acknowledge that while these traits of formal finance are true in theory, there are often implementation issues. These commonly include: (1) that savings from economies of scale are not always passed down to customers (2) formal financial systems have grown so large in some countries that they are deemed “too big to fail”, therefore placing restrictions on the tools regulators have to control them (3) technology is developing very quickly, making it difficult for regulators to stay abreast of developments with appropriate regulations. The classic example is M-PESA in Kenya that was not regulated until its seventh year of operations, at which point it was already serving over ten million customers.

10. This has begun to change already, but in the developing world the first generation of these products seem more targeted at garnering short term profits, than solving long-term money management issues for customers. While digital financial product development has a lot to offer, it also needs to be carefully regulated. For a good discussion on digital credit products in Kenya see: <http://www.cgap.org/blog/digital-credit-kenya-time-celebration-or-concern>

11. “Access” refers to the availability of a product, while “uptake” refers to a person’s decision to register for it, and “usage” describes the person’s subsequent interaction with it (transactions on it).

Unfortunately, there is not a lot of data available on this issue. As mentioned above, it is difficult to determine what constitutes “practical access” to finance. In Appendix II, we analyse the body of data in financial inclusion to gauge the uptake and usage of formal finance in the developing world. We present the latest data, illustrating the magnitude of the gaps between access, uptake and usage, which leads us to believe that there are more drivers than just a lack of practical access at play here. To strengthen this argument, we analyse customers who have already registered for services, as there is a much weaker argument for them not having practical access.

We show that there is an enormous number of inactive customers, leading us to assert that many formal products are poorly designed for the mass market. Further, those customers that are active, do not make use of the systems very often, and when they do, it is usually just for very specific needs. When customers do start using formal finance, they often adopt it to use it in addition to the informal strategies they are already using, rather than as a replacement for them.¹² While there are many potential reasons for this, we argue that the most important one is that, often, these formal products simply do not compete well with the existing informal solutions.

Finally, we present statistics on the proportion of financial transactions that are still done informally (well above 90%), even in places like Kenya, to illustrate the size of the opportunity available to fintech product designers. Astute fintech product designers will not vie for market share with other formal finance providers serving less than 10% of the market, but instead strive to make improvements to the informal money management techniques still being used, given that it is a much larger market, with little to no formal competition.

That being said, this process will not be easy. Informal finance is very sophisticated and has been developed by low-income people to deal with the array of issues they themselves face daily. Nonetheless, informal finance also has many weaknesses, and has scope for substantial improvement. For the next generation of financial products, we consider this to be the best foundation we have.¹³

The following section focuses on building our understanding of how low-income people manage their money and how this differs from the strategies employed by high-income people. This will serve as a foundation for understanding why some current products are so rarely used, and which future products might serve unmet demand.

Well above
90%
of financial
transactions
are still done
informally



12. This is also a major finding of the Making Access Possible (MAP) project, as described in Focus Note 3 (2016), Homefield Advantage. Available at: <http://cenfri.org/documents/MAP/2016/Insight%20Note%203%20-%20Homefield%20advantage.pdf>

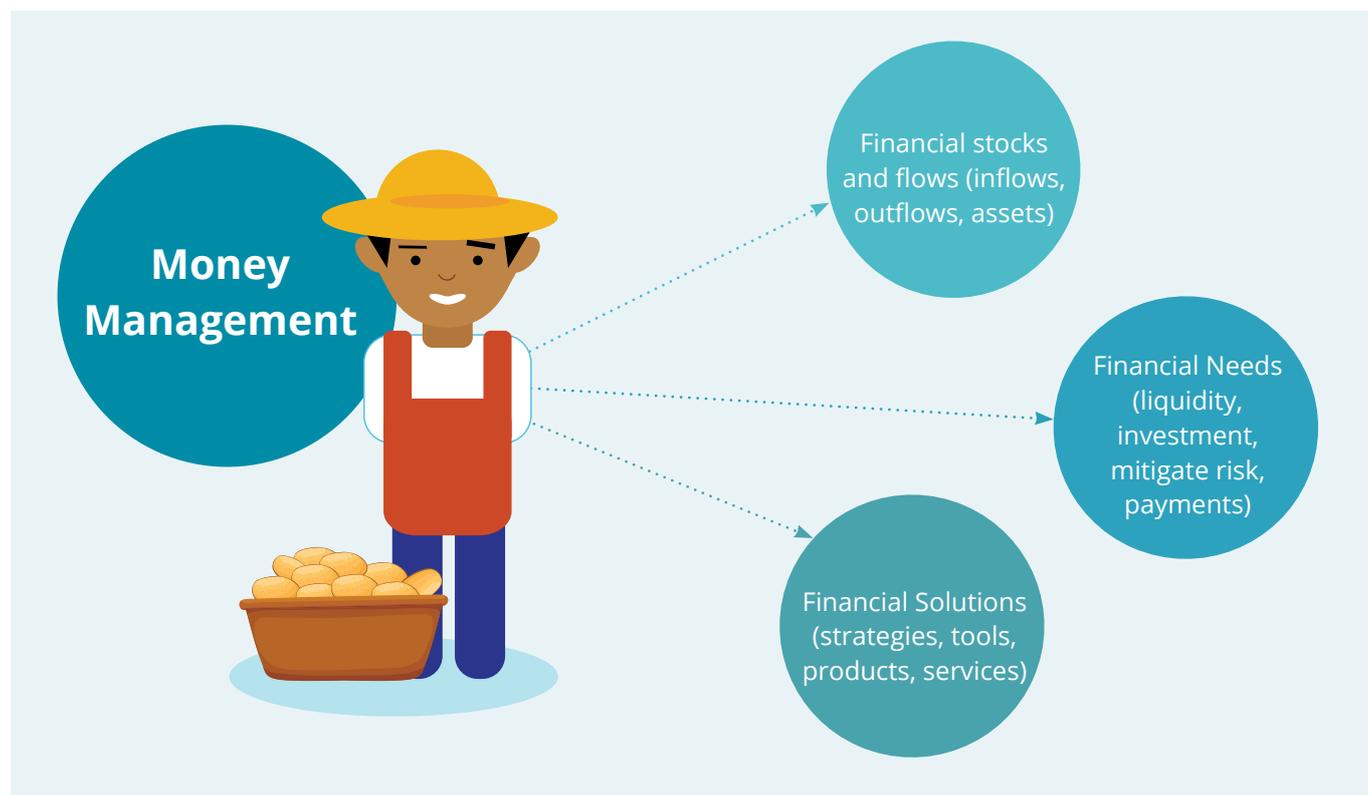
13. This is not meant to serve as a blanket statement, meaning that all informal practices are good foundations for building products. Some practises are simply the result of living in difficult circumstances with a lack of better options. Those practices are likely not to provide a solid foundation for product development. However, there are many informal practices which can be seen as superior to the formal alternatives they compete with, and therefore should serve as the benchmark for adding value to the sector.

02

Money management of high and low- income people

“ *The KFD (Kenyan Financial Diaries) offers a great deal of insight into how low-income households regularly select financial solutions to deal with the volatility of their inflows and outflows. Common practices to lower expenditures included: missing meals, pulling children out of school or taking on extra work.* ”

To build a model for understanding the difference between high and low-income people's money management, we start with the term **financial stocks and flows**. This refers to both inflows and outflows of money as well as any assets held. These are determined by how a person obtains money and the life choices and circumstances which determine its allocation.¹⁴ This is the basis for their **financial needs**, which include: liquidity, asset growth, risk management and payments. Finally, **financial solutions** are strategies, tools, products and services used to align the first two variables and produce the desired standard of living, given the resources available.



To understand the relationship between these concepts, we begin by analysing financial stocks and flows. There are three important differences between the financial stocks and flows of high and low-income people:

- Low-income people have **less flows of money** coming in, and usually as a result, **lower stocks of assets** than high-income people.
- Low-income people have many **more sources of income** than high-income people.
- Both inflows and outflows are relatively volatile and often **unpredictable in both their frequency and magnitude** for low-income people relative to high-income people.

14. This framework is inspired by one which looks at income, instruments and goals. For more on this model and to build more intuition on how life circumstances influence the selection of a financial solution, see: *MicroSave* in collaboration with Ignacio Mas, "Musings on Money - the what and why of the billions." Available at: http://www.microsave.net/files/pdf/Musings_on_Money.pdf

Financial inclusion research consistently points to these differences. The table below compares statistics from the literature to provide a practical understanding of the magnitude of these differences for inflows and outflows.

Table 1: Inflows and Outflows by Income Level¹⁵

	Adults in High-Income Countries	Adults in Low-Income Countries
Financial Inflows	Money is usually received from a small number of sources. Most commonly a paycheck given at a regular interval for a predetermined amount. The Findex (2014) shows 52% of adults in high-income countries received at least one wage payment in the last year, and 83% percent of them received it through a formal account.	Money is pieced together from many different sources. The Kenya Financial Diaries (KFD) project (2014) found that low-income households (HH) had a median of ten sources of inflows (in Mexico it was 7.3), ¹⁶ which fluctuated $\pm 55\%$ from month to month. KFD showed that 25% of inflows in rural areas came from resources received from friends/family. Findex (2014) shows that only 16% of adults in low-income countries have received at least one wage payment in the last 12 months, of which 17% received it through a formal account.
Financial Outflows	KFD cites the US Federal Reserve figure (2010) that Americans make 73 purchases per month.	In KFD, consumption expenditures fluctuated $\pm 43\%$ monthly. Rural HH made 31 purchases per month while HH in urban areas made 66.

The KFD (Kenyan Financial Diaries) offers a great deal of insight into how low-income households regularly select financial solutions to deal with the volatility of their inflows and outflows. Common practices to lower expenditures included: missing meals, pulling children out of school or taking on extra work.

The KFD also notes that inflow volatility is commonly driven by the occurrence of large expenditures, which then force a household to find enough money to cover them. Many of these abnormally large expenditures are the result of an unforeseen event such as medical care, a death in the family or a disaster. This underscores the importance of risk mitigation in money management.

Nevertheless, having multiple sources of inflows can be understood as a risk management strategy as well. If one source does not produce returns when they are needed, others might. Income can also vary independently of expenditures as different sources of money fluctuate in a given time period (i.e. seasonally).

The unpredictable volatility of inflows and outflows helps to explain why low-income people are sometimes adverse to making long-term investments and/or agreeing to rigid payment structures. These insights provide the groundwork for a discussion on financial needs, goals and solutions in the next section.

15. Data in this table is almost entirely compiled from Kenyan Financial Diaries (KFD) (2014) Available at: http://fsdkenya.org/wp-content/uploads/2015/08/14-08-08_Financial_Diaries_report.pdf, and the World Bank Findex (2014) global survey. Available at: <http://www.worldbank.org/en/programs/globalfindex>

16. Sanford, Caitlin. (March 2016). Estirando El Gasto. Available at: <http://financialdiaries.com/wp-content/uploads/2016/03/ESTIRANDO-English-compressed-1.pdf>

03

Financial needs & solutions

“The irony of money management is that; the less money one has, the more time one must spend managing it. When someone only has a few dollars, each dollar becomes very important, and people will spend a lot of time using an array of tools to ensure that every dollar is used optimally.”

The financial inclusion industry classifies financial needs into four universal categories.



While these needs are shared across income levels, the financial solutions people design to fulfil them vary enormously. To understand why, we revisit the differences in stocks and flows across income groups described in the last section.

Since low-income people have fewer assets, they usually have less financial resiliency (i.e. the ability to recover from a financial shock) than high-income folks. Furthermore, given the higher levels of volatility in their inflows and outflows of money, they are much more prone to financial uncertainty than high-income people.

Therefore, low-income people are often forced to focus on financial stability. In the United States Financial Diaries, 77% of respondents reported valuing financial stability above “moving up the income ladder”.¹⁸ Of course, low-income people are also interested in growing assets, but creating stability often takes precedence as it can determine whether rent is paid, school fees are met, or there is enough food for the family to eat. Thus, in comparison to high-income people, low-income people spend more time managing short-term liquidity and trying to build resilience against unforeseen expenses than high-income people.

Having said that, when finances are stable, meaning that low-income people can afford to focus on building lump sums of money, they certainly do.¹⁹ However, the need to constantly reprioritise stocks and flows between stability and growth needs, means that low-income folks are consistently reallocating their stocks and flows between different financial solutions.²⁰

This financial juggling act also makes it harder for low-income people to commit to longer term financial planning and/or investment strategies.

17. The first three elements in this framework are taken from “Portfolios of the Poor”. Since the creation of this framework, payments are popularly added as a fourth element. For more on the original framework, see: Collins, D., Morduch, J., Rutherford, S., & Ruthven, O. (2009). *Portfolios of the Poor: How the World's Poor Live on \$2 a Day*. Princeton University Press.

18. Morduch, Jonathan, and Schneider, Rachel. *Spikes and Dips: How Income Uncertainty Effects Households*. Available at: <http://www.usfinancialdiaries.org/issue1-spikes>

19. Low-income people use routines and hierarchies to build frameworks for daily money management decisions that balance their needs for flexibility and self-discipline. This is well described in: George, D., & Mas, I. (October 2015). *Making Digital Financial Services Relevant Part 2*. MicroSave. Available at: <http://blog.microsave.net/making-digital-financial-services-relevant-part-2/>

20. To gain a fuller understanding of the strategies employed by low-income people to do this, see: Mas, I. (January 2015). *Money Resolutions, A Sketchbook*. CGAP. Available at: http://www.cgap.org/sites/default/files/Working-Paper-Money-Resolutions-Sketchbook-Jan-2015_0.pdf

Low-income people are forced to **prioritise financial stability** (i.e. liquidity, mitigating risk) at the expense of building lump sums of money much more than their high-income counterparts.

01

02

Since both growth and stability are important to low-income people, they often **juggle their financial resources** between financial solutions as circumstances dictate.

Summary of Major Differences in Financial Needs by Income Level

Instead, low-income people are **attracted to flexible solutions** that allow them to negotiate terms as their circumstances change.

04

03

Low-income people have a **lower ability to make long term plans/ investments** and an aversion to solutions with rigid structures and/or hypothetical outcomes (i.e. Insurance) compared to high-income people.

These factors combine to greatly influence how different income groups select financial solutions. Formal financial products have been crafted to meet high-income people's financial needs. These products have been designed for the predictable flows, stable stocks, and static needs of high-income people, not for the constant recalibration and reallocation of resources that low-income people exhibit.

For high-income people, formal finance neatly presents a product for each financial need. Managing liquidity is done with a bank account, a loan is taken for larger sums of money, insurance policies guard against unpredictable risks and debit and credit cards facilitate transactions. Money management in low-income areas, on the other hand, does not neatly fall into product categories. Rather, it lives in the grey areas in-between them, as people try to fulfil multiple objectives at once or juggle resources between them, while limiting the downside by any means possible.

In order to illustrate some of the differences in the financial solutions high and low-income people choose,²¹ we first make some general statements about how money management differs and then compare the financial solutions (strategies, tools, products and services) each income group selects to fulfil each of the four universal financial needs presented earlier.

21. For a very informative paper on the differences between financial habits in South Africa and Kenya (a more and less advanced financial ecosystem), see: Zollman, J. & Cojocaru, J. (January 2015). Cash Lite: Are we there yet? Rethinking the evolution of electronic payments in Kenya based on evidence in the Kenyan and South African Financial Diaries. Available at: <http://fsdkenya.org/publication/cashlite-report-are-we-there-yet-rethinking-the-evolution-of-electronic-payments-in-kenya-based-on-evidence-in-the-kenyan-and-south-african-financial-diaries/>

Table 2: Money Management Tools and Techniques by Income Level ²²

	Adults in High-Income Countries	Adults in Low-Income Countries
Money management strategies	While an array of management techniques are possible, formal financial services are a common tool used. The Findex (2014) data shows that 91% of adults have a bank account. For high-income people, financial management is akin to strategic planning, where inflows, outflows and needs are fixed and predictable enough that a long-term pathway can be planned towards them.	The Findex (2014) data shows that only 28% of adults in low-income countries have a bank account, and those that do, do not use it very often. KFD recorded a median of 14 financial tools that were being used and research presented in Portfolios of the Poor ²³ recorded 8-10 in three other countries. Money management is largely about maintaining liquidity while keeping the little money they have invested as productively as possible. This often means keeping small amounts liquid, borrowing when needed, and maintaining strong social networks. It is more akin to juggling than banking.
To manage short-term liquidity	Commonly done through savings in a bank account. The Findex (2014) shows that 67% of adults in high-income countries reported saving money in the last 12 months, and almost half of them (47%) did so in an account at a financial institution.	Commonly done through a combination of savings strategies and multiple informal sources of borrowing. The Findex (2014) data reports only 47% of adults saved money in the last year, ²⁴ and only 10% of them used an account at a formal institution to do so. KFD found households (HH) held a median of 9% of their financial assets at informal institutions. Savings are often “invested” in a savings group or “lent” to a family member or used to increase food stores. KFD estimates the median HH only keeps 10% of financial assets liquid.
To accumulate a large lump sum of money ²⁵ (to invest or pay a large expense)	Commonly done by taking a loan from a bank or credit card company. The Findex (2014) data shows that in high-income countries, 37% of adults borrowed money in the last year. 17% borrowed that money from a financial institution, while 15% borrowed from a family or friend. 49% have a credit card.	Commonly done through breaking lump sums into more manageable sizes, and/or taking small loans from multiple sources. The Findex (2014) data shows that in low-income countries, 52% of adults borrowed money in the last year. 9% borrowed that money from a financial institution, while 35% borrowed from family or a friend. 1% have a credit card.
To deal with unforeseen expenses	Commonly done through savings for smaller expenses and insurance for larger ones. 16% could not come up with emergency funds if needed. For those that could, 52% of people’s main source would be savings, 22% would borrow from a friend or family, and 12% would work more or take a loan from an employer.	Commonly done through collecting funds from family and friends and liquidating available assets. 24% could not come up with emergency funds if needed. For those that could, for 48% of them the main source of funds is friends and family, followed by 20% who could work more or take a loan from their employer, and 18% who would use their savings.
Make and receive payments	While cash is still a commonly used tool for payments, it is increasingly common to use digital methods. Findex shows 75% have a debit card. 49% have used the internet to make a purchase in the last year.	Cash is still the predominate form of payment even in East Africa. Payments are a bit less frequent, generally small in value, and often to small retailers, making them difficult to digitalize. The Findex shows 7% have a debit card. 1% have used the internet to make a purchase in the last year. 10% make payments using a mobile account (used a mobile phone to pay bills or send money).

22. Data in this table is almost entirely compiled from Kenyan Financial Diaries (KFD) (2014) Available at: http://fsdkenya.org/wp-content/uploads/2015/08/14-08-08_Financial_Diaries_report.pdf and the World Bank Findex (2014) global survey. Available at: <http://www.worldbank.org/en/programs/globalfindex>

23. Collins, D., Morduch, J., Rutherford, S., & Ruthven, O. (2009). Portfolios of the Poor: How the World's Poor Live on \$2 a Day. Princeton University Press.

24. This figure seems low. As Stuart Rutherford once famously remarked, “poor people are too poor not to save” (Interviews with Experts, CGAP, 2006). This statement explains that in many low-income communities in the developing world, there is a lack of social safety nets. In this case, if you do not have money coming in everyday, which is very common, you must have a little set aside for all those days when you still need to eat and pay other expenses. Moreover, there are commonly semantics issues in research on savings. Low-income people often do not view themselves as “saving”, either because they view the amounts they are setting aside as too low, or they are buying assets (tin roofing, tree saplings, chickens, gold bangles), which they clearly plan to liquidate later yet do not consider “savings”. For this reason, quantitative research on savings often requires careful interpretation.

25. Depending on the size of the lump sum, different strategies can be employed. Small lump sums can be saved, but larger ones (e.g. house repairs, car purchase, university fees) are much more likely to be achieved through credit.

The irony of money management is that the less money one has, the more time one must spend managing it. When someone only has a few dollars, each dollar becomes very important, and people will spend a lot of time using an array of tools to ensure that every dollar is used optimally.²⁶ Examining the differences between the financial solutions selected by the two income groups helps us to see and understand important trends upon which we can design improved solutions.

Trends of specific note are:

1. High-income people use formal institutions for a much higher percentage of their financial needs than low-income people. Low-income people keep **a very small percentage of their financial assets in formal institutions**. They use a high number of financial strategies, including, but certainly not limited to, formal products.
2. Since a higher percentage of high-income people have formal accounts, and since payments are larger in size, and often to larger retailers, a much **higher percentage of payments are digital** in high-income countries.
3. While low-income people are constantly managing liquidity, they **do not hold a lot of liquid assets**. They search for liquidity when it is needed, finding it in different places, or borrowing it from different people depending on the circumstances and amount needed.
4. Another reason low levels of liquid assets are kept is that it is hard to use them strategically when they are easily accessible and so much is needed. Temptation and theft are big issues. People will often use social networks to increase **their savings discipline** and decrease its liquidity. Common solutions are savings groups, ASCAs and ROSCAs.²⁷
5. Financial management in low-income areas is highly dependent on **social networks**. These networks provide the discipline to save, liquidity when needed and risk pooling during times of emergency.²⁸
6. Financial solutions which allow low-income people to **pursue multiple financial needs at once**, so the little they have can do the most possible, are quite alluring. Similarly, solutions that give them the **flexibility to reallocate resources easily** as their circumstances change are also appealing to low-income earners.

To further build intuition surrounding these concepts and trends, we use the next section of this paper to present practical examples of how low-income people make choices about which financial solutions to use in order to fulfil their financial needs.

26. This is best explained in the book: Mullainathan, S., & Shafir, E. (2013). Scarcity: Why having too little means so much. New York, NY: Times Books.

27. For those unfamiliar with ASCAs (Accumulating Credit and Savings Association) or ROSCAs (Rotating Savings and Credit Associations), this Bankable Frontier Associate and Gates Foundation Focus Note provides a great summary in the Annex. Available at: <https://docs.gatesfoundation.org/documents/Focus%20Note%201%20Outcompeting%20the%20Lockbox%20-%20Linking%20Savings%20Groups%20to%20the%20Formal%20Financial%20Sector.pdf>

28. It is also worth noting that relying on social networks for financial needs can also be very burdensome. Doing so means people have little privacy in their financial lives, which can lead to embarrassment.

04

Understanding informal money management in the digital era

“ In some very common situations, formal options are not obviously superior to informal techniques which often offer benefits that formal solutions still cannot. ”

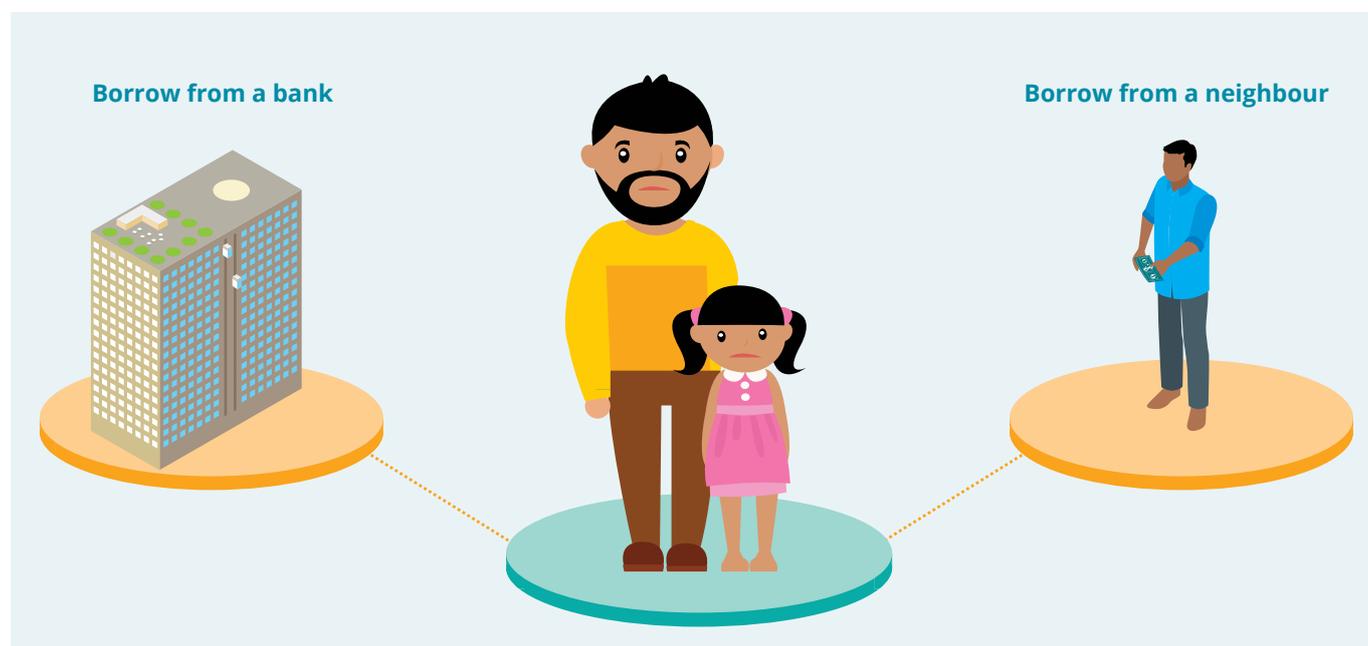
This section takes the data as well as the conceptual frameworks presented in the previous sections and builds upon them in order to provide a more practical understanding of how they affect the financial decision-making of low-income people. We do this by presenting four illustrative examples of how a low-income person might decide between a formal product and an informal strategy for each of the four categories of financial needs.

We analyse the decision with regards to four common desirable traits to show how the formal compares to the informal. We end each section by noting important concepts in financial inclusion that help to explain the decision and offer some insight into how future product development might offer a more desirable option.

Overall, the objective of these comparisons is not to show that informal options are superior in all cases. The circumstances under which any of these decisions are made can elevate one option over the other. Rather, these comparisons simply show that, in some very common situations²⁹, formal options are not obviously superior to informal techniques which often offer benefits that formal solutions still cannot.

Example 1. Managing liquidity: borrowing from the bank or a neighbour

The Situation: Aban needs to pay school fees for his daughter next week. While he does not have enough to do so now, he should receive some money in two weeks that will be enough to cover the fees. Aban would like a short-term loan to cover the costs. He could apply for one at the local bank branch in his town,³⁰ or he could ask his neighbour. Here is how he might weigh the two options.



29. This is also well illustrated in Making Access Possible research. Focus Note 6. Mapping the DNA. Available at: <http://cenfri.org/documents/MAP/2016/Insight%20Note%206%20-%20Mapping%20the%20DNA.pdf>

30. Depending on the country, this could also be a local credit union or microfinance institution.

Framework for choosing a financial strategy:

	Loan from the Bank	Loan from his Neighbour
Ability to Secure the Loan	While he may have physical access to the bank, Aban may not be able to borrow unless he has evidence of a salary, a piece of property for which he can prove ownership or a form of formal identification. Also, he most likely will lack an official credit history for the bank to establish his credit score. Further, even if he fulfils enough of the above conditions, short term loans like this are uncommon, and being able to receive the payout in less than a week is unlikely.	This will depend on the financial position of Aban's neighbour and his relationship with them. While it is common to borrow from friends, they are often facing similar expenditures, and it is likely they will not have liquidity when it is needed. Maintaining good standing with neighbours that can help, like a shopkeeper, is very important. Building these relationships, and ensuring that loans from friends and family are repaid on time, helps to develop an informal credit score among the community (financial reputation).
Cost of the Loan	While banks often offer competitive interest rates on loans for terms of a year or longer, short term loans often carry higher interest rates and early repayment penalties. Similarly, lending fees can raise real lending costs significantly.	Much of informal lending is done with little or no interest rate. ³¹ The real cost of the loan is the expectation that the lender can ask the borrower for a loan themselves in a time of need. This could be more or less burdensome than paying interest to a bank. Further, there is an important loss of privacy when one's social network is involved in one's finances to this degree.
Additional Benefits	The potential to build a credit history with the bank to offer more and possibly larger loans in the future is very important.	The potential to build financial value on top of a social relationship where the lender and borrower can help each other with short-term liquidity in the future, thus avoiding the payment of interest fees to a bank.
Convenience	The loan application paperwork and the time taken for approval can be impediments. Further, travelling to the bank during business hours, dealing with an intimidating teller, or waiting in line can be burdensome.	Lending terms may be more flexible, regarding when and how payments are made on the loan. If the loan is from a neighbour, making payments should be easy, but sometimes a friend or relative giving a loan could be harder to reach when the money is needed.

Important financial inclusion concept:

Social network finance is the incorporation of social networks in financial management. This can work in different ways depending on the underlying relationships between people. For example, **reciprocal finance** works when people lend to each other in times of need. This allows people to pool liquidity as a larger group, while only holding small amounts of it themselves at any given time. **Distributive finance** is when the relationship is one-sided, and a wealthier relation is asked to help a less wealthy person in times of need. While such help is expected in many cultures, it is also easy to see how it could become burdensome quickly.

Social relationships are also used to help achieve financial goals. It is much harder to save alone than it is in a group, and many low-income people participate in saving groups, or derivatives of them like chamas, ROSCAS, ASCAS or credit unions. The social pressure of saving together helps everyone keep their commitment to a regular contribution. Furthermore, these types of savings organisations often offer access to small loans, which can be very helpful.

However, the prerequisite trust needed to help another with their financial management must be built over time, and therefore even in situations when a formal lending option might be available, a person like Aban could choose to access credit through his social network to build relationships with important community members.

31. This generally applies when borrowing from a close friend, member of the community or family member. Informal 'street side' moneylenders, however, may charge varying levels of interest.

Opportunities for improvement:

Currently, there are few formal financial products that allow people to build, or maximise on, social relationships through their use. Some providers have tried to digitise existing ROSCAs or chamas with varying levels of success.³² This will remain a challenge until formal finance either successfully incorporates social networks, or improves to the extent that it can replace them.

Fintech firms designing formal financial products should further explore more sophisticated mechanisms that allow people to do more than simply send money to each other. Social network products could also allow structured lending between friends³³ and requests for funds for specific purposes from multiple people.³⁴ Moreover, data from social networks could be leveraged to endorse people's credibility for a loan.³⁵ Some alternative lending platforms are already beginning to integrate data from social networks into their creditworthiness assessments.³⁶ All of these platforms, however, require borrowers to use smartphones, and are predominantly based in East Africa. Furthermore, some of these appear to depend on assessments of whether or not the borrower is a salaried employee.³⁷

More generally, in terms of formalised lending, there is still a lack of options for affordable small loans, given for short terms, with easy and quick approval processes. Given the understanding that low-income people use small amounts of credit often for daily liquidity needs, products like these could be very helpful. Products like M-Shwari and KCB M-PESA in Kenya, M-Pawa in Tanzania, and MoKash in Uganda and Rwanda are good starts, but this product category still carries quite high-risk premiums. Similarly, although we have seen the development of some alternative lending platforms, such as Tala, Branch and Saida, many of these carry high-interest rates, a significant issue if reports surrounding the concerns of multiple borrowing are true.³⁸

32. This is discussed in more detail in 'P2P Lending' in Section 5.

33. An IOU app, or some way to remind friends through a neutral third party that they owe you money could be very helpful. These would help remove the social strain associated with servicing informal debt. Something akin to apps in developed markets that enable friends to track bills and other shared expenses (see www.splitwise.com), but related to informal loans could be an interesting area to explore.

34. In late 2016 FSD Africa released a report on the East Africa crowdfunding landscape. The report found that the biggest source of growth in this area is from donation or concessionary lending based on crowdfunding flows from developed nations into less developed markets, such as Kiva (www.kiva.org). While there are some home-grown East African crowdfunding platforms, such as M-Changa in Kenya (<http://changa.co.ke/>), the study only found four active home-grown solutions, each with varying levels of growth and success. Very few of these crowdfunding solutions are therefore maximising on existing, social relationships within these underserved communities. Read the report in full here: https://www.fsdafrica.org/wp-content/uploads/2016/10/16-11-07-Crowdfunding_Report-final-1.pdf

35. The digital Microlending organization, Kiva, piloted a programme called, "Kiva Zip" in 2011 to use people's social networks to endorse them for a loan. They closed the programme in Kenya in 2015. See more at: <http://nextbillion.net/weekly-roundup-10-2-15/>

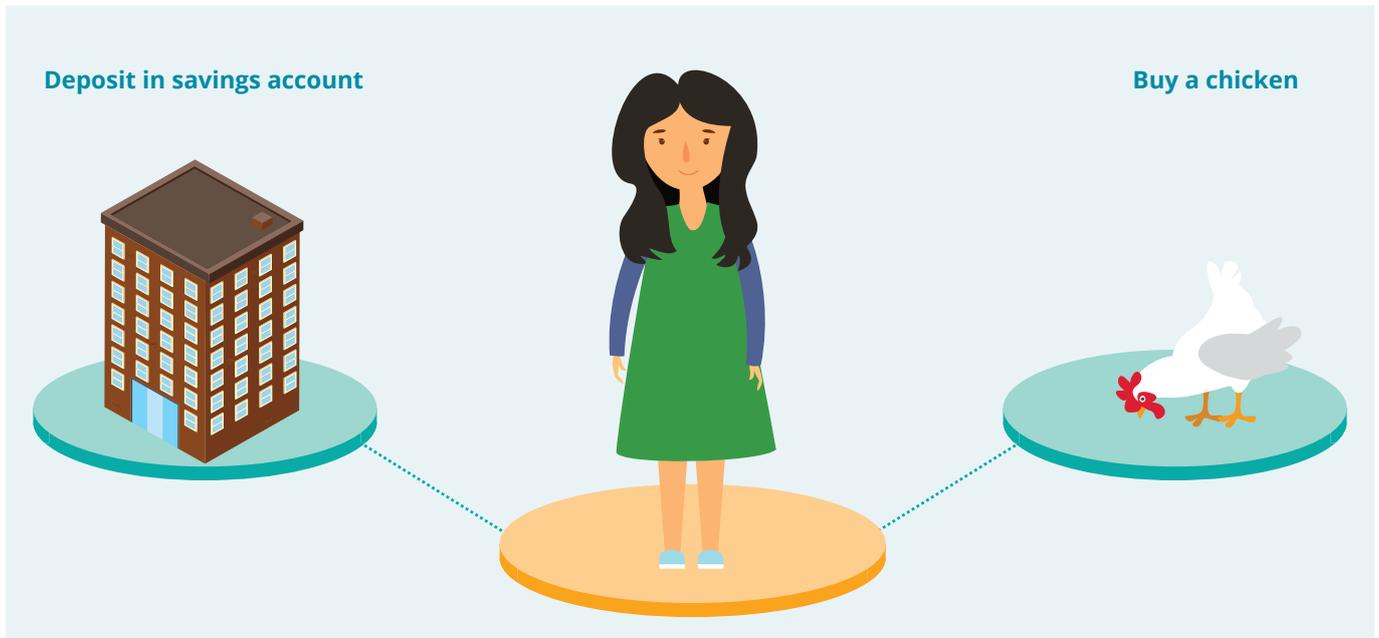
36. Branch (www.branch.co) uses smartphone data to assess who is likely to be a good borrower. Some of this is linked to social networks such as who they call, how often, and who they interact with across social messaging platforms. Similarly, Tala (www.tala.co) uses a smartphone app to access credit worthiness through basic biographical information; from the size of social networks to the regularity of daily habits. We are also seeing alternative data platforms emerge, such as Cignifi and First Access, that create smart credit profiling based on alternative data. These initial efforts are interesting to watch, but there still appears to be scope for growth and learning. Furthermore, questions remain about the predictive capacity of alternative data.

37. It appears that Lenddo (www.lenddo.com) borrowers must be salaried workers (see: <http://www.thehindubusinessline.com/money-and-banking/tracking-online-behaviour-for-granting-loans/article8991329.ece> and <https://www.techinasia.com/lenddo-social-network-reputation-based-lending-startup>)

38. For more information about the cost of credit in Kenya, see this 2016 analysis from CGAP: <http://www.cgap.org/blog/digital-credit-kenya-time-celebration-or-concern>. For more information on multiple borrowing and the motivations for accessing digital credit see this 2017 analysis from MicroSave: http://microsave.net/files/pdf/Where_Credit_Is_Due_Customer_Experience_of_Digital_Credit_In_Kenya.pdf

Example 2. Building a lump sum: savings accounts vs. chickens

The Situation: Joyce has a little extra money and feels like her greatest financial need is to use it to build a larger lump sum of money. She has a formal account at a bank and could deposit it, or she could invest it somewhere and hope to get a return. Joyce decides her best investment would be a chicken, which is common given KFD 2014 found that 66% of households owned at least one chicken, and the median household owned six.³⁹ Here is how she might weigh the two options.



Framework for choosing a financial strategy:

	Deposit in Savings Account	Buy a Chick (Baby Chicken)
Security	While this might be a very secure option, especially when a country offers deposit insurance, researchers from KFD 2014 also reported a surprising incidence of households that thought of banks as “exploitative”. These perceptions can be just as important as reality whether they reflect it or not.	There are risks associated with owning a chicken (e.g. theft, loss, sickness, death). However, the risk might not seem as daunting as it is easier to understand than something like bank failure or inflation.
Return on Investment (including cost)	While there might be a small interest rate offered, it is often less than the rate of inflation, and further, likely not very meaningful in absolute terms with regards to a small value deposit. Lastly, any gains might be negated by account maintenance, minimum balance, withdrawal fees or transport costs to the bank.	There are costs of owning a chicken. It must be housed, sometimes treated with medication, and especially in urban areas, fed. However, housing might be constructed from scrap building materials, feed might just be food scraps, and medication could be minimal. Beyond this, as the chicken grows, its value increases, and may even multiply if it has chicks of its own, or provide returns in the form of eggs. This gives the owner a return on investment undoubtedly greater than what they would receive from the bank (if the same amount is invested in a chicken or a bank account)

39. Zollman, J. (2014). Kenyan Financial Diaries (KFD). Financial Sector Deepening Kenya [FSDK]. Available at: http://fsdkenya.org/wp-content/uploads/2015/08/14-08-08_Financial_Diaries_report.pdf

Liquidity	<p>Bank accounts are very liquid if withdrawals can be made easily, however, that is very often not the case in the developing world.</p> <p>Sometimes, however, a low-income individual does not want a savings account to be liquid. Research from 2009 in Kenya found that intra-household pressures on women to share savings with their husbands led them to seek high transaction cost saving devices, even when reduced cost devices were available.⁴⁰ When given more ATM cards to improve the liquidity of their saving accounts, women with less bargaining power saved less.</p>	<p>71% of households in KFD 2014 thought a chicken was a liquid asset. Further, the chicken can help with liquidity/inflows by regularly laying eggs.</p> <p>For those who want to keep their saving tied up in a 'fixed', illiquid asset, a chicken provides a more secure, inaccessible savings device than an easily accessible bank account</p>
Convenience	<p>Major issues are branches/agents not being located nearby, and/or people being able to get there during business hours or having to wait in long lines.</p>	<p>Animals like chickens are much harder to raise in urban areas, plus they need to be watched and cared for daily. However, this task can be delegated to family members.</p>

Important financial inclusion concept:

Working Money⁴¹ is the concept that low-income people are too poor to have much of their money sitting idle, not giving them returns. Therefore, they limit the amount of cash they keep on hand, at the bank or in a mobile money account, because it is not productive for them in that particular form.⁴² Low-income people try to ensure that the little they do have is giving them the biggest return possible. That return could be in the form of a growing domestic animal which they own, or a favour a neighbour owes them for a loan they have extended to them in the past.

Another important concept related to saving is **Mental Accounting**⁴³, which suggests that while every dollar may look the same, it is not always treated equally. This is because the method by which money is gained has the potential to dictate how it is used. Money from a savings group might be earmarked for school fees, while gifts from a relative in the city might be used for home improvements. It is much harder to keep these various mental accounts separate if all money is put in the same place – like a bank account. Therefore, it is unlikely that a bank account would be used for many different mental accounts.

Opportunities for improvement:

Currently, non-financial assets, such as domestic animals and fertilisers are common purchases for low-income people. The returns these assets offer can be higher than those of formal products. It is difficult to calculate, with absolute certainty, the return on loan to a friend or an investment in a farm animal. Formal financial products do not, therefore, necessarily need to compete with these directly, although they would be much more alluring if they offered more salient returns. One such savings product, which unlocks access to short-term credit, is M-Shwari. Additionally, banks have had some success in the past offering lottery-like benefits to depositors.⁴⁴

Undoubtedly, products that help people intuitively manage their different mental accounts have been hard to design. The trouble has been trying to keep them simple enough to understand, while flexible enough to accommodate different people's personal accounts. This particular issue is discussed in more depth in the last section.

40. Schaner, Simone. "The Cost of Convenience? Transaction Costs, Bargaining Power, and Savings Account Use in Kenya." 2013c. Dartmouth College Working Paper, Available at: <http://www.poverty-action.org/sites/default/files/publications/The-Cost-of-Convenience-April-2016.pdf>

41. Julie Zollmann - CGAP (2014), "When Saving for Tomorrow Necessitates Borrowing for Today." Available at: <https://www.cgap.org/blog/when-saving-tomorrow-necessitates-borrowing-today>

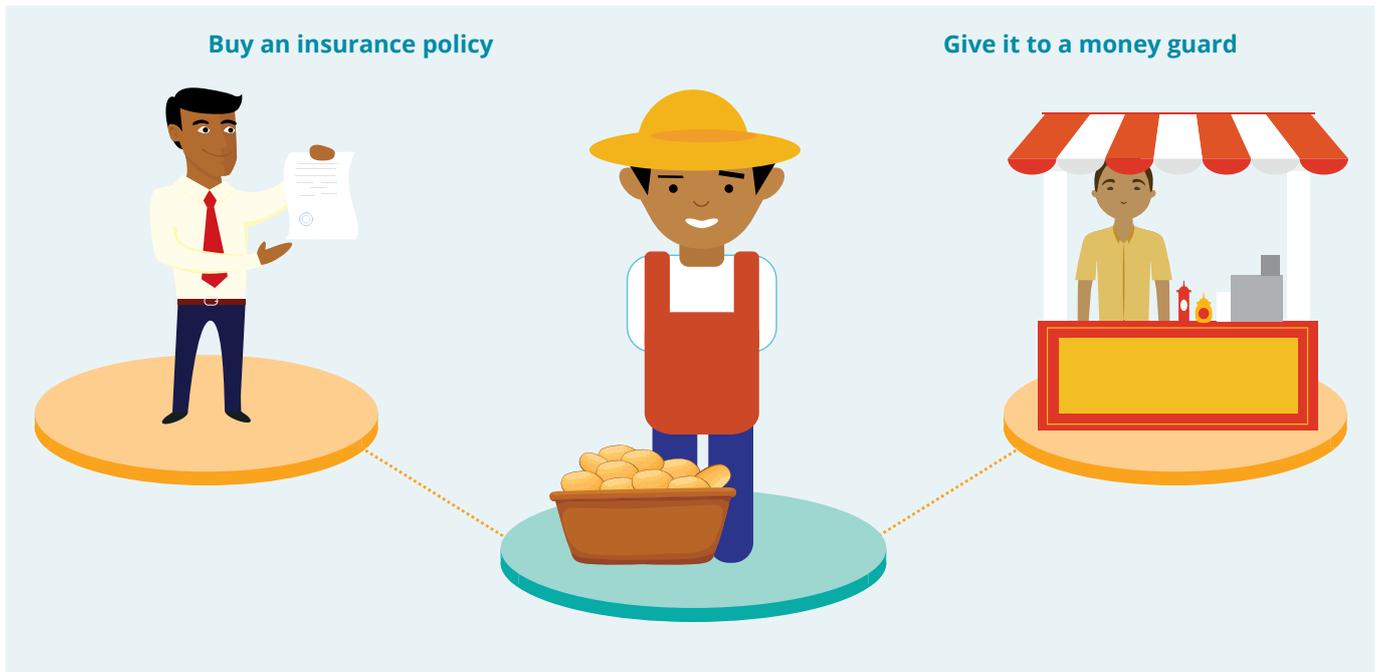
42. This may be changing as digital lending algorithms use account balances/activity to calculate the size/terms of loans offered to customers. However, it is still unclear how salient these factors are in these algorithms and to what degree people understand this connection, and are then willing to prioritise it.

43. MicroSave in collaboration with Ignacio Mas, "Musings on Money - the what and why of the billions." Available at: http://www.microsave.net/files/pdf/Musings_on_Money.pdf

44. Using the Lure of Lottery to Spur Savings. Available at: <https://insight.kellogg.northwestern.edu/article/using-the-lure-of-a-lottery-to-spur-savings>.

Example 3. Managing risk: buying an insurance policy vs. money guard⁴⁵

The Situation: Migbaru is a potato farmer and he has just sold some of his harvest. He is worried as the rainy season has become more unpredictable, and therefore so has his yield. A progressive insurance company is offering small crop insurance policies, which he could buy. Alternatively, he could give some of his extra money to the local shopkeeper (often referred to as a Money Guard) to hold for him,⁴⁶ as he has done in the past. Here is how he might weigh the two options.



Framework for choosing a financial strategy:

	Buy Crop Insurance	Use Shopkeeper as a Money Guard
Premium/ Cost	A well-designed policy will have an affordable premium, but microinsurance policies like these are still rare. ⁴⁷	While Migbaru will not have to pay a premium, the opportunity cost is not having insurance coverage, which is a multiple of the premium paid, nor will his money be earning interest (if he invested it elsewhere).
Pay-out/ Benefit	A well-designed payout will cover a portion of the losses, ideally enough to allow Migbaru to meet the basic needs he would have purchased with the sales he lost.	It could just be equivalent to the value of the savings he leaves with the shopkeeper; however, the shopkeeper may also extend him some credit as he has built a relationship with him/her. One of the most important things Migbaru can do when he has money is spread it around his social network, so he might ask for money later when he needs it.

45. Stuart Rutherford (2016), "Getting and Spending in Central Bangladesh - Money management patterns in fifty low-income households." Available at: <http://blog.gdi.manchester.ac.uk/wp-content/uploads/2016/08/Interim-Report-V2.pdf>

46. Moneyguards are people trusted enough to hold a person's cash. They could be a shopkeeper or a co-worker, family member, or neighbor. The principle here is that sometimes people prefer to allocate some of their resources to prevent against risk, as opposed to buying a product which may only do so under certain conditions. In this example, other strategies could just as likely be digging a well/furrow, investing in irrigation, changing the type of crop being grown.

47. Mobile network operators are increasingly offering microinsurance products to build customer loyalty and increase churn. Many of these products (a third according to this CGAP publication from 2014: <http://www.cgap.org/publications/emerging-global-landscape-mobile-microinsurance>) are offered free of charge, although often conditional on customer activity. 'Freemium' products, in which a basic level of insurance is offered for free, is another common offering. However, many of these policies offer very basic insurance, often with no choice of coverage.

Extent of Coverage	It is important to note that if there are no crop losses or the losses are from an event not covered by the policy, or happen outside of the dates the policy covers, or Migbaru is simply not able to prove his losses should be covered; he receives nothing.	Regardless of whether the event occurs, when it occurs, or if an entirely different event occurs, Migbaru will still have the value of the premium he would have paid. In other words, his savings provides at least some minimal coverage for any event that occurs at any time.
Convenience	This will usually be a function of how easy it is to receive payment from a valid claim. Some index policies may offer an easy claims process, but usually at the cost of being very specific to the occurrence of an event (i.e. flooding), which can be verified easily without a visit from a claims officer.	It is such a simple system; it should be very convenient. However, there is the risk that the shopkeeper uses the money for something else and does not have it when needed, or scams Migbaru somehow. Even in this case though, Migbaru can likely recuperate value-in-kind.

Important financial inclusion concept:

Liquidity Farming⁴⁸ is one of the major reasons why low-income people have so many financial inflows and financial management strategies. In one sense, Liquidity Farming is the practice of cultivating inflows to best match outflows (expenses). In another sense, it is the practise of building trust in one’s social network so that multiple sources of money are available when needed. In this sense, Liquidity Farming is, in fact, closely related to social network finance.

Opportunities for improvement:

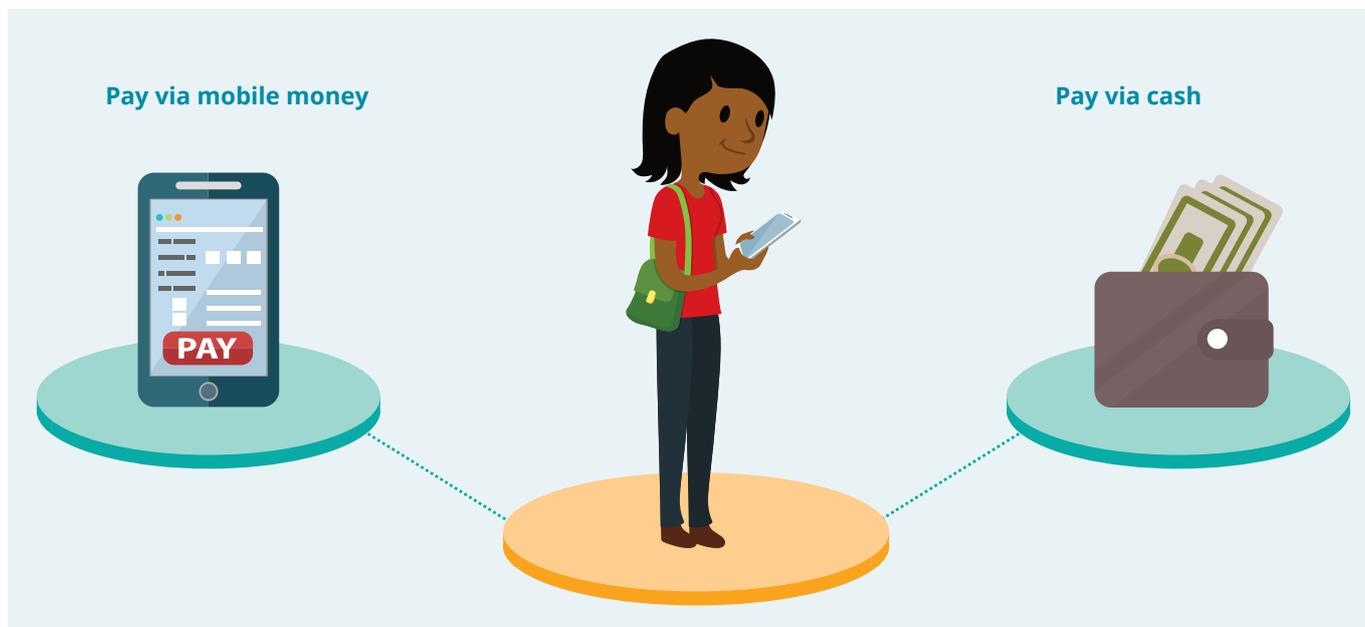
In the above example, the insurance policy does offer a bigger potential payout, but the conditions of that payout are limited by the occurrence of a very specific type of event, during a limited time period. By not buying the policy, Migbaru forgoes the potential of a bigger payout but gains flexibility as to how he can spend the money he saved by not buying the policy.

For example, if Migbaru had a health emergency, he would still have the money he would have spent on the premium, and further, the potential of a loan from the shopkeeper. While microinsurance policies can still offer value, formal finance providers also need to understand that policy constraints limit the ability of people to “farm liquidity”. Therefore, for unforeseen risks, many people prefer small lines of credit.

48. Ignacio Mas and John Gitau (2014), “Liquidity Farming: How the poor cultivate relationships to create sources of future cash.” Available at: <http://nextbillion.net/liquidity-farming/>

Example 4. Making payments: mobile money vs. cash

The Situation: While Betty has a mobile money account and uses it regularly to buy airtime and pay her monthly bills, she does not often use it to make purchases at stores. While standing in line for the register at the supermarket, Betty looks into her wallet and checks her balance on her mobile money account. Based on what she sees, Betty estimates that she has enough cash and enough e-money to pay for her groceries. Here is how she might weigh her options.



Framework for choosing a financial strategy:

	Mobile money	Cash
Security	The major risk is mistakenly sending money to the wrong merchant number and being unable to retrieve it. Furthermore, there is an assortment of confidence scams run over mobile money systems, but, it is rare for users to lose money.	There is a security risk to carrying cash around to make payments as it could be lost or stolen, however, once, at the register, this risk is negligible.
Cost	Depending on the system and sometimes the specific retailer, merchant payments are free or, carry only a small cost. ⁴⁹ This cost is usually much lower than that of a credit card, but greater than that of a debit card.	Could be the cost of ATM or bank withdrawal fees, but often low-income inflows come in cash, so the cost is quite minimal.
Speed	Often slow, after unlocking one's account, entering the payment amount and merchant number, the system can take a while to return a confirmation to both the buyer and seller. This can be burdensome in a place like a grocery store where there is likely to be a line of people waiting to pay.	The major impediment is when there is not correct change for the payment. This would be rare at a grocery store but can be common at small retail shops.

49. It should be noted that sometimes these fees are not very transparent. For more, see: Mazer, R. Fixing Hidden Charges in Lipa na M-PESA, CGAP. Available at: <http://www.cgap.org/blog/fixing-hidden-charges-lipa-na-m-pesa>

Convenience	E-value is convenient to store. Moreover, in countries with large functioning agent networks, e-value can also be convenient to buy. However, using it to make a payment in most countries still requires entering a series of codes and waiting for confirmations, which requires significantly more effort than simply counting some cash in a wallet. It also requires customers to be literate.	The major inconveniences are travelling to a bank to ensure you have enough for payments, but if you receive cash directly, this is not a problem. Storing a large lump sum of cash safely between payments can be risky (e.g. theft, loss). If one has enough cash at a payment point (as is almost always the case), it is an extremely convenient method of payment.
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Important financial inclusion concept:

Build on existing informal financial strategies. This is one of the major themes of the paper and is well illustrated by this payments example. M-PESA in Kenya was originally designed to digitalise an existing formal financial service. Specifically, it was built to help distribute and collect microcredit in Kenya. However, when its creators observed how people were using it, they discovered that there was a much greater interest in M-PESA’s ability to send domestic remittances to friends and relatives around the country.⁵⁰

The pioneers of M-PESA stumbled upon a superior solution for something people had already been doing informally. The service grew quickly, and similar services spread around the developing world. Nonetheless, for the most part, mobile money has continued to be limited to domestic remittances, as well as paying bills and buying airtime. Specifically, these services have not been able to garner usage with retail payments.⁵¹

A major reason for this is the enduring lack of clarity surrounding whether or not such services have any net benefit over just using cash. Furthermore, it does not solve any major problems people have had with making retail payments, offer salient additional benefits, and it is still inferior on important aspects such as speed and convenience. Therefore, it should not be surprising to learn that all providers that have tried to encourage people to use their mobile money accounts to make retail payments have struggled to catalyse usage.

Opportunities for improvement:

In a previous paper titled “Redesigning Digital Finance for Big Data”⁵² we discuss opportunities for digitalising retail payments in more depth. In summary, we acknowledge that mobile money providers must solve the current issues with speed and convenience, and provide a clear value proposition to both customers and merchants. Further, mobile money providers should target specific retail demographics and explore retail payments for online goods and services as Tencent’s WeChat in China has successfully done.⁵³

50. For more on the story of M-PESA, see; Lonie, S. and Hughes, N. M-PESA: Mobile Money for the “Unbanked” Turning Cellphones into 24-Hour Tellers in Kenya. Available at: <http://www.mitpressjournals.org/doi/pdf/10.1162/itg.2007.2.1-2.63>

51. We base this judgement on the low percentage of retail payments that are being done through mobile money as an overall percentage of retail payments. However, there are certainly significant absolute volumes of payments being made through systems like Lipa na M-PESA in Kenya. In the 2016 Safaricom Annual Report, they report 43,603 active merchants (30-day basis), and 20.2 billion Kenyan Schillings (approx. US\$ 195 million) in transactions as of March 2016. Available at: https://www.safaricom.co.ke/images/Downloads/Resources_Downloads/Safaricom_Limited_2016_Annual_Report.pdf

52. Schiff, A. & McCaffrey, M. (2017) .Redesigning Digital Finance for Big Data. The Helix Institute of Digital Finance. Available at: <http://www.helix-institute.com/data-and-insights/redesigning-dfs-big-data>

53. In many countries, especially those in Africa, digital connectivity is still a barrier for this type of approach. It is therefore suggested as a strategy to target middle-high-income people, which is probably the vast majority of people currently using mobile money merchants anyway.

05

Product development ideas for Fintech players

“ Rather than digital financial service providers ‘pushing’ products onto low-income individuals, ‘pull’ solutions should be developed instead, based on demand for the services on offer. ”

One of the major objectives of this paper is to convince readers that product development for mass market finance in the developing world needs to take a different approach.

In summary, future product development⁵⁴ in this space should:

- 1) Build solutions based on the popular informal money management techniques employed by people for generations, as opposed to trying to extend access to financial products designed for people with larger stocks and flows and more stable financial needs.
- 2) Use digital tools to design scalable products which are flexible. Develop products that can assist in complex decision-making and incorporate other facets of their lives, such as social networks and moveable assets, into a customer's financial management.

In summary, rather than digital financial service providers 'pushing' products onto low-income individuals, 'pull' solutions should be developed instead, based on demand for the services on offer.

In this section, we offer seven ideas organised under two central themes from informal finance and look at the field of technology to note initiatives that we think have the potential to bring great new products to the market. Specifically, we discuss the themes of 1) social network finance and 2) blurring product lines.

Theme 1. Social network finance



This paper highlights how important liquidity management is for low-income people because of the volatility of their inflow and outflows. The paper further explains that liquidity is not managed by keeping a lot of assets liquid, due to the concept of **working money**. It is frequently done through **liquidity farming**, through multiple inflows of money, and by building a social network that can help when needed. This means that the social networks that support financial management are paramount. Furthermore, products that can be designed to improve how people's relationships help them manage their money are important and deserve serious attention.

There has been some great work done on social network finance already. Mobile money was a significant breakthrough ten years ago, allowing millions of people to more conveniently send money to members of their social network in other areas of their country. Mobile money has largely worked in the developing world where formal financial solutions are not popular.

54. For some great thoughts on how to create digital financial services that are based on informal financial practices, which are intuitive and useful, please see: Gupta, A. K., Mas, I., & Varghese, A. (October 2015). Making Digital Financial Services Daily Relevant Part 3. MicroSave. Available at: <http://blog.microsave.net/making-digital-financial-services-relevant-part-3/>

However, more recently, firms like Paypal and Venmo, WeChat, Google Wallet, Facebook Messenger, Snapchat, and Square have developed Person-to-Person (P2P) internet based solutions⁵⁵ that work well in both developed and BRIC markets.

These solutions are still very simple, allowing people to send money to each other, usually using a mobile handset. For many people, this appears to be more convenient than sending physical cash or making online bank transfers. However, it is likely that significant improvements on these systems can still be made.

Unfortunately, while there is a lot of data captured by these P2P systems already, we have seen very little on the reasons why people are making the P2P transfers in the first place and therefore, what types of improvements might be helpful. Given this, our comments on these systems are based on observations of social network finance in the developing world. Below, we present some ideas that we believe show great potential.

P2P transfers plus

P2P transfers are done for a number of different reasons using a number of different methods. While sometimes money is sent to support general needs, other times it is transferred for a specific purpose. As mentioned already, low-income people often use **money guards** as savings mechanisms. Offering a digital solution where people can transfer money to a contact, that can only be transferred back to them,⁵⁶ might be helpful.

Further, products like Google Wallet, Circle and Facebook Messenger are now making it easier than before to request money from contacts. While this makes sense in a situation where you are owed money, general requests for money might be less successful. A helpful feature would be if **money could be requested for specific purposes**.⁵⁷

For example, school fees are approaching and a person might want to send out a request to several different people to help pay for them. Money received from this request could be sent directly to the child's school or land in an account that could only be used for school fees. Solutions like these might also appeal to people's methods of mental accounting. The M-Tibia product, a joint venture between Safaricom and PharmAccess, in which clients receive conditional health payments into a specialised wallet, is an example of this.⁵⁸

The amount of transfers people make: of varying amounts, to different people, at different times, might get complicated, and a **ledger could be useful**. Google Wallet and Facebook Messenger already offer these features, which help the user keep track of money sent and received between contacts over time. Solutions might also go further to integrate with special occasions like a birthday or graduation where people could strengthen social ties with contacts through a mechanism to contribute to that event.⁵⁹

55. Internet based solutions are not yet appropriate for most developing world markets where internet connectivity is still low. Further, these services are built for customers that already have debit or credit cards which are used for customer registration and getting cash in and out of the system. In some developing countries, bank accounts or mobile money accounts could be used to register customers but in most cases, internet connectivity must first improve and other solutions to customer registration will have to be used (i.e. biometrics) and moving cash in and out of the system (i.e. agent networks).

56. This idea, along with some other great ones, comes from Mas, I. (July 2013) The Need for Intuition Rather than Simplicity Around Account Features. Available at: <http://blog.microsave.net/the-need-for-intuition-rather-than-simplicity-around-account-features/>

57. An example of such a product is Tilt (www.tilt.com) a social payments start-up (now owned by AirBnB to be integrated into their platform) which targeted millennials in developed countries, and allowed them to create and share fundraising goals among friends. These types of crowdsourcing applications are available in developing markets such as East Africa. However, as discussed previously, these applications are usually focused on flows of funds from developed to less developed countries. They do not, therefore, maximise on existing relationships within low-income communities. See this study for further details: https://www.fsdafrika.org/wp-content/uploads/2016/10/16-11-07-Crowdfunding_Report-final-1.pdf

58. More information is available at: <https://www.pharmaccess.org/update/safaricom-launches-transformative-partnership-to-promote-healthcare-inclusion-in-kenya/>

59. The initial growth of WeChat - China's mobile pay service - has been linked to the introduction of social payments for special occasions. In 2014, WeChat introduced the concept of sending digital 'Red Packets' over their payment network. 'Red Packets' mimic the age-old custom of giving red envelopes filled with money at special events, such as weddings, holidays and birthdays. When the Red Envelopes were launched in 2014 during Chinese New Year, the number of people using WeChat payments more than tripled from 30 million to 100 million per month. Read more here: https://www.fastcompany.com/3065255/china-wechat-tencent-red-envelopes-and-social-money?partner=rss&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+fastcompany%2FHeadlines+%28Fast+Company%29. If anyone was to develop such a product in developing markets, it would most likely be a leading social messaging site such as Facebook.

Finally, social networks are often used to help instil discipline to save. Saving is easier when it is done as a group, and there have already been many efforts to **digitise savings groups**.⁶⁰ Any such attempt needs to begin with a solid understanding of what digital improvements would add value to these informal mechanisms⁶¹. There are currently many organisations trying to get this right⁶², but most are still small-scale, and we have not yet witnessed any clear success stories that appear to have the potential to scale. In addition, challenges still remain around user experience in digitising these savings groups and customer acquisition across digital platforms that require access to smartphones.⁶³ This does seem like an area that will eventually offer improved solutions, but much work still needs to be done.

P2P lending

Another trend this paper highlights is that a great proportion of lending is done between peers in low-income communities. This informal lending is done to manage liquidity on a short-term basis, and respond to unforeseen risks as they occur. This has benefits compared to most formal finance products, as it can be accessed in small amounts, for short terms and carries little or no interest.

Solutions have already been developed to test if digital products can offer improvements in this informal practice. Many current solutions are based on **ROSCA or ASCA models** (i.e. MChama, PezaZetu, Puddle and MoneyFellows), but there are a variety of different potential approaches⁶⁴ providers can take. A second group of products are designed as **market makers**, helping to structure loans and ensure repayments between investors and borrowers, without involving a bank (i.e. PeerForm, Funding Circle, Prosper and Lending Club in developed markets and Pezesha in Kenya).

While the first group of products needs to ensure that they offer tangible improvements on the informal practices that are already occurring (similar to the digital savings groups), the second group of lenders need to ensure that they are creating new opportunities for borrowers. However, most of the current models require identification verifications that are not practical in the developing world (i.e. credit scores, utility bills), and many are designed to refinance existing debt on longer timelines.

Consequently, significant augmentations would have to be made to these models in order to ensure their relevance for low-income people in the developing world who want instant, small loans with short terms, and can offer little in terms of identification verification. Alternative data can help overcome some of these identification barriers, but the predictability of this data remains unclear.

60. For a detailed understanding of Savings Groups, see: http://www.seepnetwork.org/filebin/pdf/resources/Savings_FINAL_web.pdf

61. BFA and the Gates Foundation offer some helpful starting points in this focus note. Available at: <https://docs.gatesfoundation.org/documents/Focus%20Note%201%20Outcompeting%20the%20Lockbox%20-%20Linking%20Savings%20Groups%20to%20the%20Formal%20Financial%20Sector.pdf>

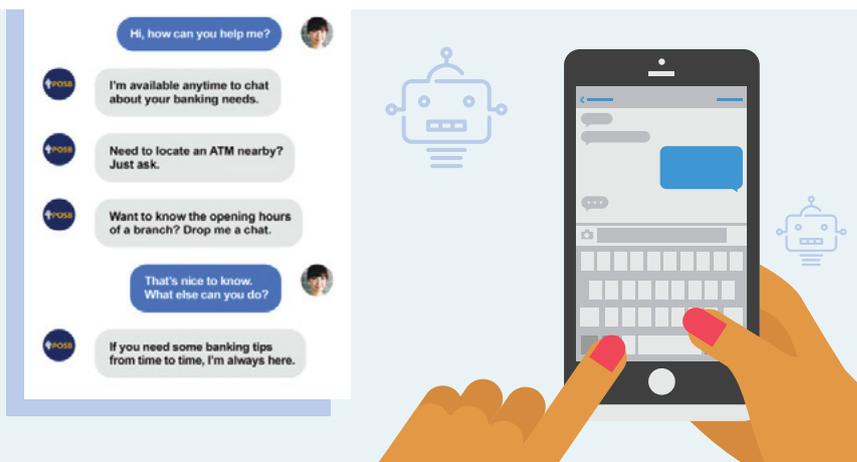
62. In Nigeria, Diamond Bank launched the Diamond eSUSU in 2016, but no results have been reported yet (<http://www.diamondbank.com/personal/savings/diamond-esusu/>). eSUSU is piloting an app based solution (<http://www.esusu.today/>). eMoneyPool has developed a web-based solution, but only offers it in the U.S.A. (<https://www.youtube.com/watch?v=dmoXYjr6rk>). Donors in the developing world have also been very interested in both linking savings groups to formal financial institutions (with very mixed results), and developing digital interfaces for their group management. In Tanzania, a Digital Saving Group (DSG) Platform has been created for the Aga Khan Foundation with funding from FSDT and the Gates Foundation, and technical support from BFA (http://www.akdn.org/sites/akdn/files/media/publications/2017_04_-_akf_-_digital_savings_groups_dsg.pdf). However, we could not find any reviews of the system. CARE International conducted a pilot linking savings groups to M-Pesa e-wallet in Tanzania, but found it problematic, and decided to focus more on partnerships with commercial banks (http://www.care.org/sites/default/files/documents/ECON-2013-CARE-%20Connecting-the-worlds-poorest_0.pdf). In 2014, the GSMA allocated funding to Airtel Uganda, which partnered with The Grameen Foundation to develop Airtel Weza. The 2015 GSMA case study of the product, noted that it was too early to draw conclusions about it, and that its commercial potential was uncertain given the low uptake of the service (<https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/06/Case-Study-Airtel-Uganda-1.pdf>). Finally, Savings at the Frontier is a \$17.6 million-dollar grant to Oxford Policy Management in 2015. They are reviewing literature on savings group and formal finance links, and plan to run some pilots in Tanzania, Zambia and Ghana (<http://www.opml.co.uk/projects/savings-frontier>).

63. See this Accion blog for more insights on Saving Circles: <http://blogs.accion.org/fin-tech/digital-savings-circles/>

64. PWC, Peer Pressure (2015) outlines models especially with regards to bank collaboration. Available at: <https://www.pwc.com/us/en/consumer-finance/publications/assets/peer-to-peer-lending.pdf>

Theme 2. Blurring product lines

Money management in low-income areas does not neatly fall into product categories. Rather, it lives in the grey areas in-between them, as people try to fulfil multiple objectives at once or juggle resources between them, while limiting the downside by any means possible.



This paper highlights the complexity of financial management for low-income people; who employ many different money management techniques to achieve as many goals as possible with limited resources. To reach a financial goal, these people do not use a single tool, but rather, a combination of many. For example, to save a lump sum of money, they may join a savings group, invest in livestock and eventually save some cash with a family member. The amount of effort put into each, the optimal time to cash-in, or the existence of other superior options, are often hard to determine.

Two points are worth highlighting here. The first is that low-income people do not look to a single product as a way of reaching a goal. More dynamic products which blur the lines between current products like savings accounts, loans and insurance policies, might fare better. Secondly, using multiple products at once is complicated, and assistance with optimising resources might also provide value.

Financial bots

While automated financial management designed to help manage these complex financial lives is not yet available, the technology that will power it probably already is. This technology is **chatbots**, which is the foundation of a rapidly growing field in fintech called **conversational finance**, or responsive finance. Many people are familiar with chatbots already, like Apple's Siri, Google's Assistant,⁶⁵ Microsoft's Cortana, or Amazon's Alexa. However, they have now begun to proliferate rapidly. Six months after Facebook launched its open sourced chatbots platform, it announced that there were already over 34,000 chatbots being offered.⁶⁶ People can ask these chatbots questions by voice or typed chat, and they respond with answers. Many can also securely accept payments.

These chatbot technologies have already entered the financial space. One of the prime examples of this is the MasterCard chatbot⁶⁷ powered by Kasisto.⁶⁸ In less developed markets, we have seen some simple bots being launched to help with financial literacy and education.⁶⁹ In terms of helping people manage their money, Kudi (www.kudi.ai) very recently launched in Nigeria to help manage bill and P2P payments.

65. Google has also bought api.ai which is a platform developers can use to build chatbots.

66. Venture Beat is available at: <http://venturebeat.com/2016/11/11/facebook-messenger-chief-says-platforms-34000-chatbots-are-finally-improving-user-experience/>

67. For an illustrative demonstration of the capabilities of this bot, please watch: <https://www.youtube.com/watch?v=m-nbznQRjaY>

68. Some other examples in developed markets are Cleo (<https://meetcleo.com/>) and Penny (<https://www.pennyapp.io/>)

69. See Mr Finance Bot (<http://www.onowmyanmar.org/mr-finance-bot/>)

Further, more recent breakthroughs in **general purpose artificial intelligence** (the prime examples being IBM's Watson, and Google's DeepMind) mean that chatbots can self-learn and teach themselves new domains of knowledge.⁷⁰ This is exciting as they have the potential to help people answer complicated questions like, "what is the best use for the next dollar I earn". However, learning multiple, regional languages found in many developing markets will inevitably present a significant challenge.

In theory, these technologies can make the leap from helping us more efficiently gather information to analysing it for us and providing the solutions we seek. Also, chatbots could become 'digital advocates' for low-income people, helping them manage the complex formal systems they are required to navigate in order to access essential financial products and services.⁷¹

While it is easy to see the potential for these conversational bots to help people make complex decisions and better manage their money, one of the biggest tasks they will face is garnering the information they need on the context in which these decisions are being made, and therefore, the optimal responses for different users. In the developing world, transactions made in cash, savings done in chickens, and risk management conducted in savings groups do not yield the **digital footprints**⁷² these machines need in order to learn and improve feedback for users.

Long before these generalised solutions become a reality in the developing world, incremental improvements will be made using these technologies. They can already help customers with tasks like picking the most appropriate loan or setting reminders for savings, or limits on spending. Juntos⁷³ has been leading the way in the developing world, working with banks and telecoms over SMS platforms to **improve their customer experience** and increase their activity rates. More solutions like these certainly hold promise for financial inclusion.

Blurred savings products

Another theme emerging from this paper is that low-income people tend to use products in ways they were not designed to be used in order to attend their financial needs. As illustrated in this paper, a person might choose to save in order to protect their crops rather than buying insurance. Furthermore, it is regularly observed that people borrow to save, which seems counterintuitive, but can be easily understood from a behavioural perspective. Saving is difficult, because it means forgoing whatever would be purchased today, in order to reach some goal in the future. We all need incentives to help us save, and when we have a high interest loan to repay, it is a great incentive to save regularly to make those repayments.⁷⁴

Products, such as SafeSave's P9 in Bangladesh (2007) and Jipange KuSave in Kenya (2010)⁷⁵, have been specifically designed to offer a borrowing to save experience. These products offered loans to clients, a portion of which was held in a savings account.

70. This is still very rare though, and is really only true for pioneering bots like the ones mentioned.

71. DFS tech, a subsidiary of DFS Labs, an early stage fintech incubator specialising in emerging markets, is launching a consortium to help push innovation in this area. See here for more details: <http://www.dfslabtech.net/digital-advocates.html>

72. In the preceding paper titled: Redesigning Digital Finance for Big Data, we outline strategies that digital finance providers should be using now to build better databases in the developing world. Available at: <http://www.helix-institute.com/data-and-insights/redesigning-dfs-big-data>

73. For more information on their work, see this CGAP case study. Available at: <http://www.cgap.org/sites/default/files/Working-Paper-Juntos-Finanzas-A-Case-Study-Oct-2015.pdf>

74. For more on this phenomenon see MicroSave Briefing Note: Borrowing to Save: Perspectives from Portfolios of the Poor. Available at: <https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-borrowing-to-save-perspectives-from-portfolios-of-the-poor-may-2010.pdf>

75. For more on how these products functioned and worked in the market, especially Jipange KuSave see this CGAP case study. Available at: <http://documents.worldbank.org/curated/en/410091468278359041/pdf/75154020120CGA0Box0374307B00PUBLIC0.pdf>

As customers successfully repaid loans, they were offered bigger ones, and more would go into their savings. Eventually, they would be borrowing their own money.

While this is a clever way of helping people transition from borrowing from a bank to borrowing from savings, this scheme is fundamentally flawed. Basically, this scheme effectively eliminates the bank's revenue from interest, and therefore their interest in offering it. However, with technology and mobile network operators also offering financial services with different revenue models, a product like this could be made to work.

Another idea that could prove alluring is to blur the lines between **purchasing and savings**. For example, imagine if every time you used your mobile money wallet, or debit card, 1% of the value of that transaction was put into your long-term savings account.⁷⁶ A product like this could be even more intuitive so that it only applies to certain purchases, and/or sets money aside towards more specific saving vehicles. For example, every time you bought a coffee, money could be put in a school savings account. This would have to be intuitively designed to mimic people's systems of mental accounting, but if built well, could help people organise these systems.

76. Examples of such products in the developed world include Bank of America's 'Keep the Change' savings program (<https://www.bankofamerica.com/deposits/manage/keep-the-change.go>), in which day-to-day purchases made with a Bank of America debit card are rounded up, and the difference transferred from an individual's checking account to savings account. Acorns (www.acorns.com) and MoneyBox (www.moneyboxapp.com) follow the same concept but invest the rounded up 'spare change' rather than putting them into a savings account.

Conclusion

The ideas provided in this last section are just starting points. They are based on an understanding of what *might* help low-income people to better manage their money and some of the latest developments in the fintech sector. We would like to see more work in both of these areas.

Importantly, fintech companies have borrowed their product development process from technology companies, not finance companies. This will be vital to the successful development of appropriate new products. As mentioned multiple times throughout this paper, while there is some great high-level data from surveys like Findex, and some in-depth data from specific locations collected by financial diaries projects, the granular data required to predict what new products will make tomorrow's markets is not yet available.

This paper strives to provide multiple, and much needed, starting points from which product development professionals can develop prototypes. These prototypes need to be taken to market over existing digital channels and A/B tested so that the misguided ones may fail quickly, and the viable ones improved rapidly through direct customer feedback.

“ We hope that the next generation of financial services for the developing world will offer tangible improvements on the informal financial management techniques that remain so popular there. It is our firm belief that the current pace of innovation in the technology sector will make this possible. ”

Appendix

Appendix 1. Brief background on digital finance

This is a brief introduction to digital finance for those who are not familiar with the industry. The term digital finance refers to agent banking and mobile money services provided by banks and telecoms. These services are in the developing world, and currently, 271 digital finance (mobile money and agency banking) services have launched across 93 countries.⁷⁷

These systems are characterised by using mobile phone networks to offer financial services to customers through either mobile handsets or through card-based systems. Cash-in and out of the systems is largely done through networks of retail stores⁷⁸ that earn a commission for exchanging e-value and cash.

While digital finance success stories have been increasing over the past ten years, they are still largely the exception in the industry. Providers have had a hard time building and maintaining large agent networks, registering new customers and convincing existing customers to use the systems regularly.

Beyond scaling the growth of distribution and usage of the systems, there are many other important challenges the industry is facing. Partnerships between bank and telecoms have been rare, limiting product development. Interoperability between providers has been lacking, making services like merchant payments difficult. In South Asia, many customers prefer to use the systems without registering for them (referred to as over-the-counter [OTC] transactions⁷⁹), concerning regulators and limiting provider revenues.

To learn more about digital finance, CGAP, GSMA MMU, MicroSave, The *Helix* Institute of Digital Finance, UNCDF's MM4P Programme (MM4P), The Alliance for Financial Inclusion (AFI), CENFRI and Financial Sector Deepening Kenya (FSDK) all provide a wealth of resources.

77. GSMA (2017), "State of the Industry Report on Mobile Money: Decade Edition: 2006-2016." Available at: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSMA_State-of-the-Industry-Report-on-Mobile-Money_Final-27-Feb.pdf

78. To learn more about how these distribution systems are designed, see: Mas, I. and McCaffrey, M. Designing Distributions Systems for Digital Money. Available at: GSMA (2016), "2015 State of the Industry Report on Mobile Money." Available at: <http://www.helix-institute.com/data-and-insights/designing-successful-distribution-strategies-digital-money-0>

79. For a more in-depth understanding of over-the-counter transactions, see: "OTC: A Digital Stepping Stone, or a Dead End Path?" Available at: http://www.helix-institute.com/sites/default/files/Publications/OTC_Digital_Stepping_Stone_or_Dead_End_Path.pdf

Access is not translating to registration

In countries where digital finance is offered, there were 4.1 billion mobile connections, yet only 10% were used to access the digital finance services available to them in 2015.⁸⁰ As discussed in this paper, such figures must be interpreted carefully with regards to the concept of practical access.⁸¹ Nonetheless, these statistics are quite indicative of the general trend that extending services to new markets is often met with tepid responses when they arrive, especially in the developing world.

Further evidence from the IMF FAS survey shows that of the 93 countries with DFS services in 2015,⁸³ 59 (63%) reported data on registered mobile money accounts for at least one year between 2013 and 2015 (latest year available). For these countries, a mean of 30% of adults had registered accounts. However, the median figure was only 13%, which we believe is a more accurate benchmark. This is because the reported figure of “registered accounts per 1,000 adults” does not represent the proportion of adults that have registered in the country.

In this data, single adults with multiple accounts are counted more than once. For example, the percentage of adults registered for mobile money in leading countries is Tanzania (184%), Kenya (118%), Uganda (112%) and Rwanda (104%). This is because registered customer statistics from multiple providers in the same country are simply summed, and therefore often double-counted. We know from the independent Finclusion research by Intermedia during this period that the actual figures for these countries, in terms of the percentage of registered adults, is roughly between 50% and 75% lower. Therefore, we think 13% registered adult rate should be the upper bound of registered adults in countries where mobile money is offered, which is in line with the GSMA estimate of 10%.

Statistics on bank accounts show similar trends. The World Bank Global Findex data (2014) shows that only 54% of adults have accounts in middle and low-income countries, with the figure dropping to 28% in low-income countries.⁸⁴ Since the respective figure is 91% in high-income countries, many industry analysts conclude that there is a large gap in access to financial services in middle, and especially, low-income countries. As access to financial services expand, we do see increased registration, meaning that lack of access was and is a salient barrier.

Therefore, most of the work done to expand formal finance in the developing world is focused on improving access to it. However, the figures we present below show that we also need a sharper focus on the utility of the services that are being offered.

80. GSMA (2016), “2015 State of the Industry Report on Mobile Money.” Available at: <http://www.gsma.com/mobilefordevelopment/programmes/mobile-money/industry-data-and-insights/sotir>

81. Once a telecommunications company activates mobile money services to its customers, they all technically have access to it, but practically they might not know that, or might not have an agent near them which makes the service convenient enough to use. Further, they may not have the required identification to register for the service. This makes it hard to determine if the differential between access and usage is a function of the service not being appropriate for the needs of the customer, or a result of the service not actually reaching them in practical terms.

82. Data analysed from IMF’s Financial Access Survey Portal. Available at: <http://data.imf.org/?sk=E5DCAB7E-A5CA-4892-A6EA-598B5463A34C>

83. GSMA (2016), “2015 State of the Industry Report on Mobile Money.” Available at: <http://www.gsma.com/mobilefordevelopment/programmes/mobile-money/industry-data-and-insights/sotir>

84. These figures are percentages of adults in respective regions that are 15+ years of age. Globally, 62% of the population has an account and in high-income countries, this figure is 91%. High-income countries are defined as countries whose economies had a 2010 GNI per capita of US\$12,276 or more. Low-income is defined as countries whose economies had a 2010 GNI per capita was US\$1,005 or less. Accounts are defined as those at a formal financial institution and/or mobile money provider.

Once registered, usage is irregular in low-income countries

Beyond the issue of having low account registration for mobile money and banking services, we find that only a small proportion of those that do register for a service actually use it. The GSMA reports that only 21% of digital finance accounts are used at least once every 30 days, leaving 79% of accounts either dormant or used on an extremely infrequent basis.⁸⁵

IMF FAS data yields very similar figures. Of the 59 countries reporting registered mobile money accounts, 14 (24%) did not report data on active account usage. Furthermore, six countries reported the same figures for registered and active usage, which is virtually impossible, so we eliminate those statistics. This leaves data from 39 countries which offer mobile money, representing 42% of reported countries. We find that of registered accounts, only a mean of 36% (median of 33%) had been used on a 90-day basis.

Of active mobile money accounts reported from the 39 countries previously described, a mean of 4.1 (median = 2.0)⁸⁶ transactions were made per month.⁸⁷ Even in Kenya, a paradigm for mobile money and agent banking, in 2014 Safaricom estimated that 98% of transactions were still made in cash.⁸⁸ In 2015, only 46% of mobile money accounts had a positive balance⁸⁹, meaning that most mobile money wallets are empty.

This is not because people are not saving, it is because they are choosing to do so in other ways. Insights from the Kenya Financial Diaries 2014 showed that 91% of savings happened through informal accounts in Kenya.⁹⁰ In Rwanda, the most commonly used financial device was 'saving in a house'.⁹¹ In Mexico, the most common tool was 'borrowing from family and friends'.⁹²

The World Bank Findex (2014) data illustrates a similar trend with bank accounts. It reports that in high-income countries, for those with a financial account, 91% of adults make at least one withdrawal a year, and 89% make at least one deposit a year. While this is a low bar for practically measuring usage of an account, it is interesting to compare it to low-income countries where the comparative metrics are 60% and 64%, respectively.⁹³ Using this metric, we can estimate that in low-income countries, adults are 39%-52% less likely to make either of these basic interactions with their account even on a yearly basis.

85. Analysis done using data taken from: GSMA (2017), "State of the Industry Report on Mobile Money: Decade Edition: 2006-2016." Available at: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSMA_State-of-the-Industry-Report-on-Mobile-Money_Final-27-Feb.pdf

86. Mobile money transaction refers to a financial payment or transfer to a third party using balances on a mobile money account via a mobile phone, including peer-to-peer (P2P) transfers, bill payments, merchant payments, and international remittances. There must be a network of transactional points outside bank branches that makes this service accessible to unbanked and underbanked people. Services that offer the mobile phone as just another channel to access a traditional banking product are not included. The service must offer an interface for initiating transactions for agents and/or customers that is available on basic mobile devices.

87. This figure is lower for registered accounts calculated for the 59 countries reporting those figures to be a mean of 1.3 (median = 0.5) transactions per month.

88. Safaricom Annual Report 2014. Available at: http://www.safaricom.co.ke/annualreport_2014/public/downloads/DEEPEN%20FINANCIAL%20INCLUSION.pdf

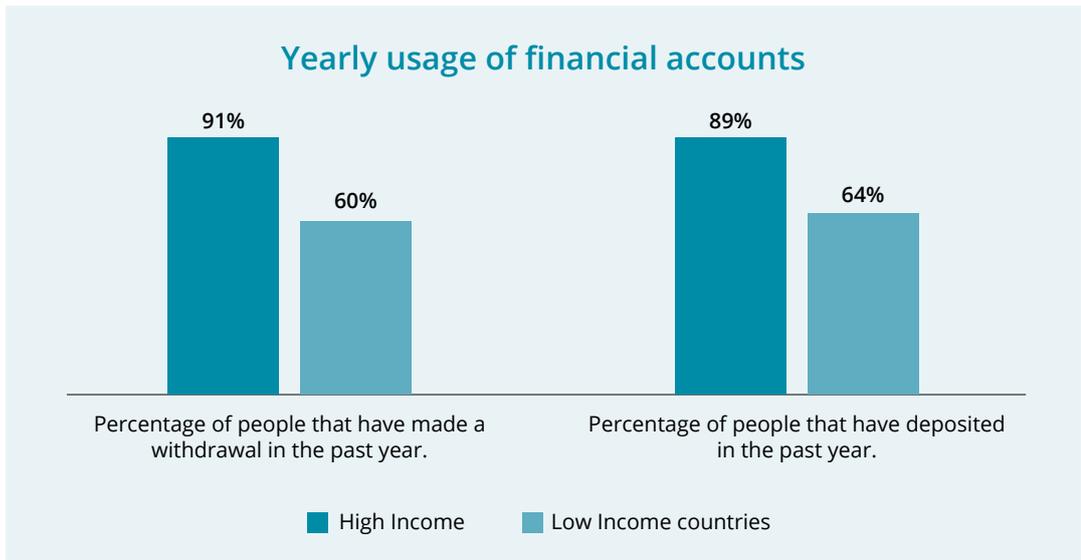
89. GSMA (2016), "Mobile Insurance, Savings & Credit Report." Available at: <http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/08/Mobile-Insurance-Savings-Credit-Report-2015.pdf>

90. Julie Zollman - FSD Kenya (2015), "Kenya Financial Diaries - The Financial Lives of the Poor." Available at: http://fsdkenya.org/wp-content/uploads/2015/08/14-08-08_Financial_Diaries_report.pdf

91. BFA (2016), "Rwanda Financial Diaries: Understanding the Financial Lives and Product Needs of Rwanda's Underserved Consumers." Available at: <http://financialdiaries.com/wp-content/uploads/2016/02/BFA-Rwanda-Financial-Diaries.pdf>

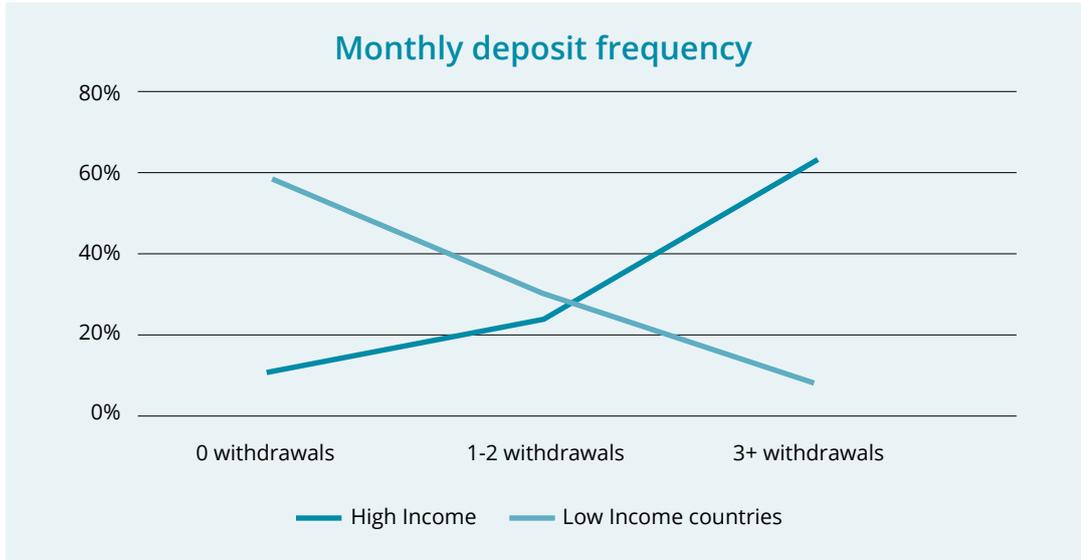
92. Caitlin Sanford - BFA, Financial Diaries, MetLife Foundation (2016), "Estirando el Gasto - Findings from the Mexico Financial Diaries." Available at: <http://financialdiaries.com/wp-content/uploads/2016/03/ESTIRANDO-English-compressed-1.pdf>

93. In Findex 2014, people were also asked if they hadn't made a deposit or withdrawal in the last year. In High-income countries, only 5% of respondents had not made either, while in low-income countries 25% had not made either (five times as many people). This has been the statistic World Bank researchers have used to measure account dormancy, but we find it to be quite a low bar and therefore choose not to use it even though it accentuates the difference in usage between high and low-income countries.



It is our belief that whether someone has made a deposit or a withdrawal from their account in the past year is a somewhat arbitrary measure of usage. For this reason, we also looked at the other measures of account usage in the Findex (2014) data. In particular, the data on withdrawals shows that this trend of much more frequent usage of accounts in high-income countries continues as the intensity of usage increases. Examining reported withdrawal data,⁹⁴ we see that usage in high-income countries is much more frequent than in low-income countries.

Further data from the Making Access Possible (MAP) project showed that in their six research countries, one country had a bank account dormancy rate of 76%, while in the other five countries, 50%-71% of adults simply used their bank accounts as “mailboxes”.⁹⁵ This refers to accounts used to receive a payment, which is then withdrawn in full immediately. This provides additional evidence that usage of financial services in developing countries is especially low irrespective of access to these services.



94. We examined deposit data as well. While the figures for low-income countries are very comparable, those for high-income countries are not, due to the fact that very few people, even in high-income countries, make more than three deposits or per month. We think this is likely because there are deposits (mostly in high-income countries) from employers and/or customers that are not captured in this data. We therefore choose not to present this analysis.

95. Making Access Possible. Focus Note 4. Lost in the Mail. Available at: <http://cenfri.org/documents/MAP/2016/Insight%20Note%20-%20Lost%20in%20the%20Mail.pdf>

Use cases are still very specific

The reasons why usage of accessible formal financial services is so low is complicated. However, the above analysis illustrates that there is indeed convincing evidence that usage is low among those with access to these services, and among those registered for them. Furthermore, usage is lower in low-income countries compared to high-income countries, which leads us to believe that either services are not needed as much by low-income people, or they are not designed as well for them. To better understand this phenomenon, we take a deeper look at the use cases for the services.

The large body of financial inclusion research explained in this paper shows that low-income people do not need financial services less than the rest of the world, they just need them to be designed better to fulfil their needs. The financial lives of low-income people are more demanding, and the formal products they are being offered either do not perform competitively with the informal strategies they are already using, or do, but only in very specific ways. In this second condition, they are adopted, but for limited purposes.

All mobile money usage is predominantly focused on three transaction types - airtime top-up, bill payment and person-to-person (P2P) transfer. Together, these three transaction types represent 97% of the volume and 90.7% of the value⁹⁶ of mobile money transactions globally. While most people agree that airtime top-ups and bill pay are great features, it is hard to argue that they are transforming people's lives.

However, P2P transactions (and its less frequently used derivatives: Government-to-Person [G2P], Business-to-Person [B2P], Person-to-Business [P2B], and Business-to-Business [B2B]) and banking-like services like savings, credit and insurance certainly do have the potential to significantly improve the quality of the lives of low-income people, most are just not popular. Usage of what we termed 'sophisticated financial services', such as credit, saving and insurance products, is also low. There are only 26 dedicated mobile saving services and 52 mobile credit services globally.⁹⁷ Among the global mobile saving accounts, only 69% have a positive balance.⁹⁸

Transactions in developing countries are frequent but usually small in value,⁹⁹ like paying a bus fare or buying milk. Hardly any of these are conducted over the mobile handset, much less through a bank account. In Kenya and other wallet-based markets, the design of these systems makes it more expensive, complicated and burdensome to conduct these small, proximate payments. The failure to digitalise public transport (matatu) payments in Kenya¹⁰⁰, where the average fare is around \$US0.50, highlights this. Lastly, the Making Access Possible (MAP) research in six countries reported that 99% of adults made these small, proximate payments exclusively in cash.¹⁰¹

Currently, mobile money and agent banking can be useful but are not transformational for many of those that have access to them, much less those that use them. This paper helps to explain why by examining the different ways low-income people manage their money and therefore why they choose to continue to use informal products they have adapted to meet those specific needs.

96. GSMA (2017), "State of the Industry Report on Mobile Money: Decade Edition: 2006-2016." Available at: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSMA_State-of-the-Industry-Report-on-Mobile-Money_Final-27-Feb.pdf

97. Ibid.

98. Ibid.

99. In Kenya, research from 2011 shows that in a cash flow environment, two-thirds of transactions were below US\$3 and the median transaction size was about US\$1. This is compared to the average mobile money transaction sitting at US\$75 in the United States. Insights from: Daryl Collins, Julie Zollmann, Peter Flemming - CGAP, "Is M-PESA Replacing Cash in Kenya?" Available at: www.cgap.org/blog/m-pesa-replacing-cash-kenya

100. Kenneth Odera - iafrikan (20156), "Kenya's Cashless Payment System For Public Transport Was Doomed By A Series Of Experience Design Failures." Available at: <http://www.iafrikan.com/2016/09/21/kenyas-cashless-payment-system-was-doomed-by-a-series-of-experience-design-failures/>

101. MAP Focus Note Five. (2016). The King is (not) Dead. Available at: [http://cenfri.org/documents/MAP/2016/Insight%20Note%205%20-%20The%20King%20is%20\(not\)%20Dead.pdf](http://cenfri.org/documents/MAP/2016/Insight%20Note%205%20-%20The%20King%20is%20(not)%20Dead.pdf)

Appendix 3. Further reading list for 'FInclusion to Fintech'

This paper is meant to be a primer for fintech professionals interested in product development in the developing world. The paper is heavily cited to allow for those with specific interests to learn more about selected topics. Further, we have listed some of the most important papers on the topic in this appendix for those who want to develop more expertise on this topic.

Important Financial Inclusion Resources:

1. Bester, H., Hougaard, C., Gray, J., and Saunders, D. (2016). 'Homefield Advantage' Learning from the Popularity of Local Financial Services Providers. UNCDF. MAP Work Available at <http://cenfri.org/documents/MAP/2016/Insight%20Note%203%20-%20Homefield%20advantage.pdf>
2. Julie Zollman - FSD Kenya (2015). "Kenya Financial Diaries - The Financial Lives of the Poor". Available at http://fsdkenya.org/wp-content/uploads/2015/08/14-08-08_Financial_Diaries_report.pdf
3. MicroSave in collaboration with Ignacio Mas, Musings on Money - The What and Why of the Billions MicroSave. Available at http://www.microsave.net/files/pdf/Musings_on_Money.pdf
4. Mas, I. (January 2015). Money Resolutions, A Sketchbook. CGAP. Available at http://www.cgap.org/sites/default/files/Working-Paper-Money-Resolutions-Sketchbook-Jan-2015_0.pdf
5. Zollman, J. & Collins, D. (2010). "Financial Capacity and the Poor: Are we Missing the Mark?". Financial Sector Deepening Kenya (FSDK). Available at <http://fsdkenya.org/publication/financial-capability-and-the-poor-are-we-missing-the-mark-fsd-insights-issue-02/>
6. Collins, D., Morduch, J., Rutherford, S., & Ruthven, O. (2009). Portfolios of the Poor: How the World's Poor Live on \$2 a Day. Princeton University Press.
7. Rutherford, S. (January 1999). The Poor and Their Money: An essay about financial services for poor people. Institute for Development Policy and Management University of Manchester. Available at <http://www.jointokyo.org/mfdl/readings/PoorMoney.pdf>
8. Shipton, P. (April 1990). How Gambians Save and What their Strategies Imply for International Aid. The World Bank. Available at: <http://documents.worldbank.org/curated/en/120041468771037897/pdf/multi-page.pdf>

Important Product Development Resources:

1. The Helix Institute of Digital Finance Product Innovation & Development training course. See: <http://www.helix-institute.com/training-courses/product-innovation-and-development>
2. CGAP. (September 2016). Customer Experience Toolkit. CGAP. Available at: <http://www.cgap.org/publications/customer-experience-toolkit>
3. Stone, K. (November 2015). A/B and See: A Beginner's Guide to A/B Testing. Available at: <https://www.invisionapp.com/blog/ab-testing-beginners-guide/>
4. Mas, I. (February 25, 2015). Money Resolutions, Digital Simulations. Available at SSRN: <https://ssrn.com/abstract=1555041> or <http://dx.doi.org/10.2139/ssrn.1555041>
5. Mas, I. and Almazán, M. (May 1, 2014). Product Innovations on Mobile Money. European Journal of Business and Management, Vol. 6, No. 19, June 2014. Available at SSRN: <https://ssrn.com/abstract=1707704> or <http://dx.doi.org/10.2139/ssrn.1707704>
6. Lonie, S. and Hughes, N. (2007). M-PESA: Mobile Money for the "Unbanked" Turning Cellphones into 24-Hour Tellers in Kenya. Innovations. MIT Press. Available at: <http://www.mitpressjournals.org/doi/pdf/10.1162/itgg.2007.2.1-2.63>
7. Mattern, Max, and Michael Tarazi. (2015). Designing Digital Financial Services for Smallholder Families." Available at: <http://www.cgap.org/publications/designing-digital-financial-services-smallholder-families>
8. CGAP. (2014) Insights into Action: What Human Centered Design Means for Financial Inclusion. Available at: https://www.cgap.org/sites/default/files/CGAP_Insights_into_Action_final.pdf.



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