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Mobilizing Banking for Indonesia's Poor

BACKGROUND

Indonesia is the largest consumer market in Southeast Asia and a member of the G20, yet it has one of the largest underbanked populations in the world. As of 2014, only 36 percent of Indonesia's 243 million people were banked, leaving the majority financially excluded, exposed to risk, and left to manage their finances with mostly inefficient, informal services (World Bank, 2014).

Although formal financial services have the potential to improve the livelihoods of these underbanked millions, growth in the mobile phone market in Indonesia has been much more inclusive than such services. As of 2012, there were more than 143 million unique mobile subscribers, more than double the number of bank accounts (MasterCard Advisors, 2014). Mobile financial services (MFS) and branchless banking schemes deliver financial services via banking agents, who are contracted by institutions to process customers' transactions off site, thus bypassing the need to visit a physical bank branch. Using mobile phones to offer MFS is therefore a promising solution for reaching the underbanked millions.

Despite the potential convenience, MFS has failed to gain traction among Indonesian consumers. The first MFS products entered the market in November 2007, yet only 0.4 percent of Indonesian adults currently have registered electronic wallets (e-wallets) (Shrader, 2013). To understand how MFS can meet consumers' needs more effectively, which is the focus of this report, one must first understand the evolving regulatory environment in which the emerging industry is operating.

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LANDSCAPE

Regulators have maintained a cautious approach as they determine the most effective way to govern the new MFS market. This caution has hindered the development of an ubiquitous network of mobile and branchless banking agents, which is the backbone of the MFS ecosystem, and limited the services offered to transfers and payments. Service providers have yet to fully commit to MFS, as they have been unable to develop extensive agent networks or design products to meet the greatest needs of poor consumers: savings and loans. While industry analysts have correctly cited regulation as a major constraint, we found that the failure of MFS to launch is more than a story of regulatory barriers.

Providers have so far developed technological solutions to the wrong problems because they consider their competitors to be the formal providers of financial services, such as commercial banks, Western Union, post offices, and utility outlets. We took a different approach to defining the competition: instead of presuming that the value proposition of MFS in Indonesia is similar to what has worked in other markets, we assessed how MFS could address specific needs of the Indonesian market.

MFS must compete with informal financial services that have names such as "trust bank" and "daily bank," which are already socially accepted, trusted, and tailored to the expectations and needs of poor consumers. However, these services also have a burdensome downside, which leaves the door open for well-designed, competitively priced, and widely distributed MFS products.

If designed well, priced competitively, and distributed widely, MFS has enormous potential to drive financial inclusion and promote inclusive growth in Indonesia. Policymakers and businesspeople alike are aware of this potential; in fact, the government of Indonesia is currently designing regulations to govern the emerging market. Meanwhile, Indonesian commercial banks and mobile network operators (MNOs) are testing and refining MFS products as they await greater regulatory clarity. Given the complexity of deploying these products, which often entails developing new services and markets, it is critical that regulators, policymakers, and businesses work together to realize their goals and entice consumers to adopt these new offerings.

MFS industry experts, such as GSMA, the Consultative Group to Assist the Poor, and the International Finance Corporation, have been trying to push government and business closer together by producing research reports aimed at helping these stakeholders understand their shared objectives and align their strategies. Significant research has explored the regulatory feasibility and commercial viability of MFS in Indonesia. Although creating desirable MFS services that will incentivize consumers to switch from their proven and familiar financial tools is the third piece of the puzzle, little attention has been given to consumer demand.

Our research finds strong potential demand for MFS among poor segments of the Indonesian market, driven by their desire for financial services that are more accessible, affordable, and secure than those currently available. However, their dissatisfaction with the status quo is not enough to compel them to adopt new products and services.

Therefore, creating a self-sustaining MFS ecosystem will require government and business to tap into the logic and the emotions that incentivize consumer behavior.

RISK AND REWARD PROFILES ACROSS STAKEHOLDERS

Indonesian regulators and policymakers hope to use MFS to drive financial inclusion and promote inclusive growth, but they are wary of creating systemic risk and exposing poor consumers—the country's most vulnerable population—to the risks associated with using unproven financial services. Banks and MNOs are eager to jump into the emerging MFS market, but they are reluctant to invest heavily before regulators have clarified the rules of the game, thus their current products are essentially placeholders for full-fledged MFS services. While still largely unaware of MFS, poor consumers currently have access to a mix of expensive, inflexible, and risky financial instruments to manage their incomes. With the right incentives they might consider adopting MFS, but only if the value is clearly illustrated and the risks are largely mitigated. For government, business, and consumer alike, the decision to embrace MFS is all about balancing risk and reward.

Regulatory Feasibility: Promoting Financial Inclusion while Mitigating Micro and Macro Risks

Amid the hype and the considerable investment in MFS in Indonesia, uptake has been slow. The first MFS products entered the market in November 2007, yet nearly eight years later only 0.4 percent of Indonesian adults have registered e-wallet accounts (Shrader, 2013). Despite the government's strong commitment to promote financial inclusion, memories of the Asian financial crisis of 1997-1998 remain fresh in the minds of regulators; in the late 1990s, more than 80 Indonesian commercial banks were nationalized or recapitalized (Valikappen Moestafa, 2013). Although Indonesia emerged from the global economic crisis of 2007-2008 relatively unscathed, partly a result of conservative policies and greater oversight of commercial banks, the conservative regulatory approach has constrained the growth of the MFS market ("Economic crisis", 2011).

Given this history, regulators are taking a cautious approach to new services as they determine the most appropriate way to mitigate systemic risk and protect consumers. Because MFS offers new products, accesses new markets, and involves new service providers that lack financial services experience, such as MNOs, regulators must move forward with little precedent.

We identified four principal regulatory barriers: (1) constraints on licensing individual agents, (2) restrictions on cash-out transactions, (3) burdensome know-your-customer (KYC) and registration requirements, and (4) limits on transaction volume and e-wallet value (Shrader, 2013). To overcome these barriers, the Financial Services Authority, which is responsible for micro-prudential oversight, and Bank Indonesia are issuing increasingly clear but cautious regulations. New branchless banking regulations were are expected by the end of 2014 (Joyce, 2014).

Commercial Viability: Low Margins, High Volume

Indonesian commercial banks are among the most profitable in the world, but they are accessed by only a narrow, high-income segment of Indonesian society (Valikappen Moestafa, 2013). MFS present an opportunity for commercial banks to expand to new markets. Since mobile coverage in Indonesia is universal and mobile use nearly so, MNOs are interested in MFS's potential to offer new products that will increase average revenue per customer and reduce the high rate of customer attrition. With a less conservative corporate culture than banks, MNOs have been aggressively pushing into the emerging MFS space, but they are constrained by both the services they can offer and who can qualify as an MNO agent. While MNOs have already penetrated low-income markets and developed vast networks of mobile phone credit agents, their MFS products are limited to transfers and payments, and usage is low.

Despite their differing motivations for entering the MFS market, a successful outcome for both banks and MNOs has a similar look—a high volume of low-margin transactions. Poor customers are price sensitive and their transactions are small, and the potential profit margin from each transaction is even smaller. To be profitable, banks and MNOs must offer the right product, at the right price, to the right customers so these low-margin products will be used frequently.

Consumer Desirability: Outperforming Market Incumbents, Fulfilling Aspirations, and Placating Fears

With regulators, businesses, scholars, and industry experts paying considerable attention to the regulatory feasibility and commercial viability of MFS, it's easy to lose sight of the most important player: the consumer. The question remains of whether there is a demand for MFS among poor Indonesians.

Our research suggests that there is significant latent demand for MFS products, as many poor consumers we interviewed are not satisfied with the formal and informal financial services currently available to them. We also found that emotion is as important as cost-benefit calculations in guiding these consumers' choices. The choices available to poor customers are constrained by both price and time, and the inefficiency of managing a complex mix of financial instruments. We found above all that consumers value financial services that are accessible (easy to use and conveniently located), affordable (flexible and competitively priced), and secure (safe from impulsive spending and reliable).

MFS can simplify the financial lives of poor consumers by providing a one-stop shop for a suite of savings, loans, and money transfer tools that are accessible, affordable, and safe. Regulations aside, the biggest challenge to generating demand is designing simple, user-friendly products that embody these principles, and marketing campaigns that clearly illustrate their value while assuaging consumers' fear of the unknown. Regulations should be designed with these principles in mind while supporting the development and deployment of these new products.

UNDERSTANDING THE FINANCIAL NEEDS OF THE POOR: THEORETICAL FRAMEWORK

Our research is influenced by the 2010 book, *Portfolios of the Poor: How the World's Poor Live on $2 a Day*, which explores how the poor cope with small, irregular, and uncertain incomes. Putting food on the table and paying suppliers, utility bills, and children's school fees is very challenging for the poor to manage out of current income alone (Collins, Morduch, Rutherford, & Ruthven, 2009). Responding to unexpected health emergencies and raising lump sums for the occasional large purchase is often impossible. According to Collins et al. (2009) despite the need for tools to help the poor contend with meager and unpredictable incomes, "too few financial instruments are available to effectively manage these uneven flows. It is a 'triple whammy': low incomes; irregularity and unpredictability; and a lack of tools."

Participants across the study sample have a much greater need for financial mediation than is evident from their income alone. When choosing financial services, consumers consider trustworthiness, security, convenience, and affordability, and all services currently available, both formal and informal, have significant tradeoffs. Banks are often inaccessible, their tools complicated and expensive, if also secure; loans from family and friends have social costs and pose risks to close relationships, but they are cheap, easy to acquire, and flexible in terms of repayment; informal services are unregulated, expensive, and carry security risks not associated with formal services, but they are often more convenient and tailored to the needs of poor consumers.

The demand for financial tools in poor communities derives from three principal needs. The first is to manage the basics, for which participants employ different means, such as borrowing from friends and family, purchasing goods on credit at the local *warung* (a small family-owned business), and keeping cash on hand to "transform irregular income flows into a dependable resource to meet daily needs" (Collins et al., 2009, 18)." The second is devising strategies to cope with risk, as an emergency can "derail families with little reserve"; this often means relying on family, friends, and neighbors for support (Collins et al., 2009, 18). Finally, participants often turn to banks, cooperatives, consumer finance companies, and informal services developed by members of their community to raise a lump sum to pay for the occasional big-ticket expense, like a new home, a motorcycle, or a wedding (Collins et. al, 2009, 18). As we explore the values and pain points for the different savings, borrowing, payment, and money transfer tools participants currently use to manage their financial portfolios, we will return to the typology of needs as identified in *Portfolios of the Poor.*

RESEARCH METHODS

To understand the potential market for MFS among poor Indonesians, we spent the months of June and July 2014 immersed in three communities, one each in Jakarta, Bandung, and the Ciwidey Regency of West Java Province. We created ethnographic profiles of each community that detail the rhythms of their economic and financial lives.

We incorporated techniques of human-centered design, such as learning from the customer and participatory design, to test whether poor segments of the community might adopt MFS products that are already on the market, in the pipeline, or as yet unimagined, and whether these products might improve customers' livelihoods (Datar & Lal, 2014). After completing focus group discussions, in-depth one-on-one interviews, and product ideation workshops, we developed a portrait of each community that captures the contours and idiosyncrasies of their financial management practices. At the same time, we conducted a series of stakeholder interviews with commercial banks, cooperatives, MNOs, regulators, government officials, and industry experts in order to incorporate their perspectives, interests, and concerns into our analysis.

In designing our research methodology, we prioritized depth over breadth, recognizing the limitations of our sample frame and size. Our data is not representative of all of Indonesia, and we do not attempt to universalize our findings to a specific moment and place; we instead use the insights gained from these communities to help us understand how mass market services can be tailored to specific segments of the population and specific contexts (Kolko, 2011). We are confident that our data, which are complemented by an extensive literature review and a series of interviews, provide insights that are broadly indicative of the challenges and opportunities faced by the Indonesian poor as they manage their financial portfolios.

Participant Characteristics

Based on the prevalence of microenterprises in the urban locations and smallholding farmers and agricultural workers in the rural location, we selected three sites for our study—Slipi, Pasir Layung, and Gambung Pangkalan. Micro-, small-, and medium-scale enterprises (MSMEs) represent 98 percent of Indonesian businesses and employ 94 percent of the workforce; 40.8 percent of the labor force works in agriculture (note that smallholding farms are considered MSMEs) (Stuart, Joyce, & Bahar, 2014). Previous segmentation analyses have suggested that these two populations are underserved by formal financial services and likely to adopt MFS (International Finance Corporation, 2010; Spire Research & Consulting, 2013). The locations we sampled correspond with those in previous studies and recent pilots.

The Indonesian government defines a microenterprise (ME) as a business with less than 300 million IDR (24,500 USD) in annual sales (Law No. 20/2008). Based on these criteria, all the business owners that we sampled, which represent 82 percent of total participants, operate MEs. Participants ranged in age from 19 to 64, and gender was equally represented. Based on estimates of monthly revenues, profits, and household size, all participants live above the national poverty line of 200,262 IDR (16.60 USD) per month and earn between 21,500-50,000 IDR (1.80-4.15 USD) per day (World Bank, 2014). According to Collins et al. (2009) 2 USD (24,220 IDR) per day is the "widely recognized benchmark for defining the world's poor." It is important to note that Indonesia's national poverty line is well below 1 USD per day, which has been criticized by outside observers for being too low (J.C., 2014).

Community Profiles

Slipi	Pasir Layung	Gambung Pangkalan
13 participants 7 women, 6 men 8 warung owners 1 gasoline re-seller 1 masseur 1 construction worker 1 motorcycle taxi driver 1 tailor	12 participants 6 men, 6 women 7 warung owners 2 day laborers 2 motorcycle taxi drivers 1 private driver	13 participants 7 men, 6 women 7 smallholding farmers 2 livestock breeders 2 warung owners 1 fruit wholesaler 1 share cropper

Slipi, Jakarta

Slipi is located in central Jakarta, wedged between the heavy traffic along the Parwan Toll Road and the stagnant Ciliwung River. It is one of the densest neighborhoods in the capital, a labyrinth of alleyways and sewers that pass between small family homes and businesses. Most residents are from the Betawi ethnic group, indigenous to the Jakarta area, and have extensive social networks across the city.

As in all three locations, participants in Slipi have limited education and financial literacy, and are typically responsible for multiple dependents. Their economic lives center around their homes and immediate surroundings. Most of the women run small businesses from the family home, selling anything from *gorengan* (fried tempeh and tofu) and *jamu* (a traditional medicinal herbal drink) to household staples. The men help capitalize the warungs by working other jobs, such as driving *ojeks* (motorcycle taxis) or day labor. Participants spend most of their days within a few hundred meters of home, which deepens the community's economic and social ties.

Pasir Layung, Bandung

Pasir Layung is a dense neighborhood in western Bandung, Indonesia's second largest city. All the participants run MEs, and many also work in professional services as drivers, teachers, and civil servants. The community is more mobile, educated, and financially literate than their peers in Slipi and Gambung Pangkalan. This broadens the framework of the participants' financial lives, which in Slipi and Gambung Pangkalan are limited to participants' immediate surroundings. Due to their increased mobility and exposure, the financial management decisions of participants in Pasir Layung are less reliant on community consensus, informed instead by their employers, mass marketing, and the influx of newcomers into this migratory community.

Gambung Pangkalan, Ciwidey Regency

Gambung Pangkalan is a hilltop village populated by smallholding farmers and the handful of business owners who cater to them. Its terraced slopes abut a jungle, the source of a creek that cuts through the town and irrigates the fields of tea, coffee, and produce. The most remote location in the sample, Gambung Pangkalan is also the most poorly served by formal financial institutions, markets, and government services, such as schools and health facilities. Limited access to these services affects the community in at least three ways that distinguish it from the urban communities we sampled: (1) villagers have fewer formal and informal financial services from which to choose; (2) villagers have difficulty moving their goods to market, and in securing supplies for businesses and non-food items for household consumption; and (3) villagers are inward looking, and thus hesitant to assume the risk of adopting new products unless their friends, family, and neighbors vouch for their credibility.

FINDINGS

When asked what drives their financial management strategies, participants across all three communities cited similar aspirations: providing their children a better life (when applicable), increasing their income opportunities, securing their lifestyles, and preparing for future emergencies. Personal histories, individual preferences, behavioral norms, and community values shape these aspirations and influence financial management choices. While the relevant personal factors we observed are as varied as the number of individuals we sampled, the behavioral norms and community values that shape participants' aspirations are surprisingly consistent.

Understanding Participants' Financial Practices

Fluctuating cash flow makes it difficult to manage a budget on current income alone. Each time participants need to make a financial decision in some form, such as making a purchase, buying on credit, or saving money, they first determine if they are able to do so with their on-hand cash reserves. This is more complicated than merely counting the cash in their wallet, as they must take into account competing obligations such as food, restocking the family business, paying debt obligations, and reaching savings goals. If they deem it imprudent to make a purchase with current cash reserves, most participants have the option to use either—in the words of Collins et al. (2009)—"past income [savings] or future income [loans] to fund today's expenses."

How the Poor Save

Participants rely on a variety of savings tools, which inadequately address their savings objectives. Saving cash under the mattress, a common strategy used as buffer during lean times, is difficult to resist, but those who use it complain that cash saved at home is too accessible and thus easy to spend on unnecessary items. Cash saved with informal services (such as bank harian, bank percayaan, or arisan, which are the different forms of savings clubs observed in the sample locations) is illiquid, and these services often have rigid and burdensome daily deposit requirements, restrictions on withdrawals, and substantial withdrawal fees (1-5 percent). These informal savings tools are unregulated and insecure, also vulnerable to theft and loss with little assurance of recovery.

While regulated and relatively safe, formal savings accounts at banks and cooperatives are not well suited to the needs of the poor, as making regular small deposits and withdrawals at these institutions is time-consuming and expensive, and some participants fear that tellers might scoff at their small deposits. Travel and wait time to use ATMs and bank branches can be long, often more than 2.5 hours in Gambung Pangkalan. Moreover, bank and cooperative accounts are difficult and expensive to maintain, as they have relatively high minimum balances, stiff penalties, and numerous account maintenance fees. Cooperatives often restrict members' ability to withdraw funds freely.

Savings Tools

Bank Celengan. All participants used some form of celengan—commonly known as a piggy bank—to store their daily cash balances, which enables them to have enough on hand to manage the basics, even if business is slow. We expected participants to be concerned about the security risk of storing a good proportion of their assets as cash in their homes, but they were much more concerned about spending impulsively than the risk posed by thieves. In fact, they cited the temptation to spend their cash on unnecessary purchases as the greatest risk of saving at home.

Value:

- The celengan is liquid, thus cash saved is immediately available to pay for household expenses and business capitalization.
- Depositing into a celengan is as easy as tucking cash under the mattress, and there is no minimum deposit requirement or withdrawal fee.
- Cash saved in a celengan can be spent anywhere.

Pain points:

- Cash saved in a celengan is very vulnerable to impulse spending, as it creates a constant temptation to spend cash saved in the home.
- The celengan is not conducive to raising lump sums for larger purchases or other needs.
- Cash saved in a celengan cannot be collateralized for loans and does not build credit.
- Cash saved in a celengan can be easily lost or stolen.

Bank Harian/Bank Percayaan. Members of the sampled communities have developed informal savings tools that are tailored to the specific needs of the community. Bank harians and bank percayaans—the daily banks and trust banks referred to earlier—were being used in all three communities. Under these informal banking schemes, *pengumpul uang* (money collectors, akin to banking agents) collect daily deposits from customers. Much like a holiday savings plan in other countries, customers cannot withdraw their savings until their account matures after one year of saving, often at Ramadan. They then have the option to withdraw in cash or in the form of a *siraya lebaran*, a Ramadan parcel consisting of staple foods and household items. Early withdrawals require several days advance notice and often incur penalties.

Value:
- These tools are specifically designed to raise lump sums from very small daily deposits.
- They force disciplined saving and protect customers from impulsively spending their savings.
- Money collectors make depositing very convenient.
- There are no startup fees.
- There are no account maintenance fees.

Pain points:
- The deposit schedule is rigid and not all customers are confident of their ability to save money every day for a year while contending with their small and irregular incomes.
- Money saved can only be withdrawn once per year on a set date; early withdrawals are often penalized (does not apply to all services).
- Deposits are unregulated, vulnerable to bookkeeping errors or manipulation by money collectors, and there is no formalized dispute resolution process.
- Early withdrawals are heavily penalized, so cash saved is not readily available to smooth out income fluctuations or cover unexpected expenses.

Arisan. Seventy-five percent of participants are members of one or more arisan, which is a rotating savings club typically formed by an existing group (e.g., family, friends, co-workers). It serves the dual purposes of bringing the group together to reinforce social bonds and enabling members to save lump sums for planned expenses. We observed arisans composed of members from the same family, neighborhood, or organization. Members of an arisan gather at regular intervals and contribute a set amount of cash to the savings pot, which is then awarded to one member at each meeting through a lottery or prearranged distribution schedule. Over the course of the arisan cycle, which lasts several months to a year or more, each member wins the pot once so that their winnings equal their total contribution over the course of the cycle.

Value:
- Arisans enable savers to raise substantial sums of money with relatively small weekly or monthly deposits.
- They protect savings from impulse spending.
- They reinforce social bonds.

Pain points:

- Members do not have complete control over when they withdraw their savings and must reach consensus with other members to set a withdrawal schedule.
- Money saved through an arisan is not readily available to smooth out income fluctuations or cover unexpected expenses.
- Those who do not participate say they believe their income stream is not steady enough.

Koperasis Simpan Pinjam. Only 42 percent of participants, the majority of them in rural Gambung Pangkalan, are members of a Koperasis Simpan Pinjam, or savings and loan cooperative, also known as a credit union. These cooperatives are "user-owned organizations that operate for the benefit of members" (Grameen Foundation, 2014). In fact, 20 percent of Indonesia's adult population belongs to a cooperative (Grameen Foundation, 2014). The objectives of the nearly 200,000 cooperatives across the country vary, but savings and loan cooperatives are the most common type in Indonesia (Makarim & Taira, 2014). While the rules that govern individual cooperatives differ, the general structure remains the same. Each member holds equity in the cooperative and receives annual dividends. Cooperatives often restrict members' ability to withdraw funds and require that savings be put up as collateral for loans, which are often capped at a low level.

Value:

- Cooperatives are trusted; as one participant said, "I know the people that run the co-op, so it's safe and easy."
- Cooperatives provide relatively integrated services; members can collateralize loans with savings, partition their savings account, and buy other financial products like life insurance.
- Cooperatives pay out annual dividends and savings accounts are interest bearing.
- Cooperatives often provide financial literacy education.
- Savings deposits are semi-liquid, which helps protect against impulse spending.

Pain points:

- Cooperatives are not conducive to making frequent small deposits.
- Cooperatives have few branches and ATMs, so distance, wait time, and limited hours of operation impose significant costs on members.
- Account fees cut into savings.
- Some participants believe that cooperatives are not as secure as banks, and that the government is more likely to back a bank in times of financial crises.
- Minimum balance requirements make accounts less practical for poor people with small and irregular incomes.
- Access issues and limits on withdrawals mean cash saved is not readily available to smooth out income fluctuations or cover unexpected expenses.

Commercial banks. While 67 percent of participants have a bank account, three-fourths of that group were nevertheless underbanked. Saving accounts at banks, while regulated and more secure than cooperatives, are not well suited to the needs of the poor. Making regular small deposits and withdrawals at these institutions is time-consuming and expensive. As noted above, travel and wait time at ATMs and bank branches can be long in both urban and rural settings, and participants expressed apprehension at entering upscale bank branches, as they feared that tellers might scoff at their small deposits. Moreover, these accounts are difficult and expensive to maintain, as they have relatively high minimum balances, stiff penalties, and numerous account maintenance fees.

Value:

- Deposits are relatively well protected from impulse spending; as one participant said, "If the money is in the bank, it is hard to take out, but if it's in the house, I will take it and spend it."
- Savings are relatively easy to withdraw, depending on the distance to the nearest bank branch or ATM.
- Deposits are backed by the government.
- Banks offer integrated financial services, and many ATMs provide deposit, withdrawal, transfer, and bill-pay services.
- Some banks are working to expand access through the post office, branchless banking, and mobile banking applications.

Pain points:

- Participants believe that savings accounts at are not designed to meet their needs because they prefer to make frequent small deposits.
- Administrative fees eat away at savings, especially if customers do not maintain minimum balances.
- Banks have numerous requirements to open accounts, including two forms of identification, which can present difficulties for the poor.
- In rural areas, commercial bank branches and ATMs are frequently located far from home.
- In urban areas, many poor people run small businesses out of their homes and cannot afford to take time off to visit a bank, which may take a long time because of traffic and queues.
- There are often long queues.

How the Poor Borrow

When participants need to make a purchase they can't afford, they must weigh the costs and benefits of borrowing money. They have limited formal and informal tools from which to choose, and must consider whether the loan needs to be collateralized, the difficulty of the application process, the interest rate and repayment schedule, the default terms, and the clarity and ease of the dispute resolution mechanisms.

Across the board, participants value low interest rates and flexible repayment terms, which allow them to repay in small irregular amounts throughout the month. Despite the social costs, all participants expressed a preference to borrow from friends or family, as they usually do not charge interest and are flexible in terms of repayment. If this option is not available or the amount required is more than their relations can provide, there are informal, albeit expensive and risky, tools to meet this demand. Formal loans from banks or cooperatives have rigid repayment terms and are often out of reach for participants.

Borrowing Tools

Family, friends, neighbors, and warung. When participants' cash reserves are stretched thin, they turn to those immediately around them for assistance. To make ends meet during tough periods, participants first ask their family, and then their friends and neighbors, for a short-term loan. Warung owners are also accustomed to selling their customers goods on credit, and we encountered three shop owners who keep ledgers to track their debtors.

Value:

- There is usually no interest, no fixed term for repayment, and little (financial) recourse if not paid in full.
- Loans are typically available immediately.
- There is no onerous application process.
- Usually there is no need to put up collateral.

Pain points:

- It is difficult to raise large sums from family and friends in poor communities.
- The expectation is that any generosity should be returned in-kind; thus if you borrow money from a close relation, there is a social obligation to help them in the future.
- Loans are often written off by the lender, which damages their finances.
- Borrowing from friends, family, and neighbors risks damaging important relationships, which down the road can have a negative effect on the an individual's personal support network.

Bank Keliling/Bandar. When unable to secure a loan from friends or family, 25 percent of participants reported using a bank keliling or bandar—literally a roving bank or bookie—which are loan sharks. While participants understood the costs and risks of using bank kelilings and bandars, including rigid repayment schedules and high interest rates, many did not view them as predatory lenders. Besides friends and family, there are few options for obtaining small loans immediately, thus they viewed Bank kelilings and bandars as providing an important service to the community that banks and cooperatives were often unwilling to provide. Participants in each community we sampled use these services when they have no better choice.

Value:
- Loans are readily available and dispersed immediately.
- Bank Kelilings and Bandars offer microloans to help smooth out fluctuating income.
- Borrowers can repay their loans in small daily installments.

Pain points:
- Loans have high interest rates and issuance fees.
- Loans have rigid daily repayment requirements.
- Agents come to the home every day to collect payment, which can be embarrassing.
- The service is fully unregulated, and so there is no protection from theft or fraud.

Koperasis Simpan Pinjam. Members of savings and loan cooperatives can borrow against their savings and apply for small loans. The sample complained about invasive surveys that are part of the slow-moving application process. They were also uncomfortable collateralizing the few fixed assets they owned. While participants were frequently afraid to seek loans at cooperatives because of risk of default, those who used cooperatives expressed the belief that these institutions are better designed to meet their needs than commercial banks.

Value:
- Borrowers are able to renegotiate monthly installments if they are unable to keep up with payments.
- Cooperatives provide financial literacy education, which helps consumers understand how their loans work.
- The application process is less onerous than that of banks.
- Loan products are designed to meet the needs of the poor.

Pain points:
- Surveys are personal and often include visits from the lender to the home and/or business.
- The application process is long.
- Borrowers must be a member of the cooperative and regularly save there to obtain a loan.
- Borrowers must put savings and other assets up as collateral against loans.
- Cooperatives have strict limits on how much members can borrow.
- Poor people with small, irregular incomes have trouble setting aside enough money each day to make lump sum payments at the end of the month.

Commercial banks. While two of the wealthier participants have borrowed from commercial banks to purchase and renovate their homes, the rest of those sampled have never borrowed from a bank. Many indicated that bank loans do not meet their needs, as they frequently do not provide loans that are less than 5 million IDR (409.56 USD), whereas the participants generally need a smaller loan. Additional complaints include a long and invasive application process, collateral requirements, and difficulty setting aside cash every day to make large payments at the end of the month.

Value:

- Banks can provide large loans and specialized loans, like mortgages.
- Banks have clear dispute resolution mechanisms, as well as tellers and a loan office that help facilitate the application and repayment process.

Pain points:

- There is a perception that banks and bank products are not designed for poor people with small and irregular incomes.
- Bank account registration and application requirements can be onerous and time-consuming.
- Banks often do not provide small loans.
- Loans require significant collateral, such as a home or valuable business assets.
- Poor people with small and irregular incomes have trouble setting aside enough money each day to make lump sum payments at the end of the month.

How the Poor Make Payments and Transfers

Indonesia is a cash economy, and cash is the preferred method of payment for the MEs, farmers, service providers, retailers, and suppliers we encountered. In all three communities, participants prefer to keep a large share of their wealth liquid to cover recurring expenses and capitalize their businesses in the wake of price increases and business slowdowns.

Due to strong competition between informal businesses and low profit margins, businesses must sell a high volume of goods to be sustainable. Inventory turnover is high, so business owners prefer a liquid and widely accepted forms of payment. In short, cash is king. People trust cash, as it makes payments simple, immediate, and requires no intermediary, thus limiting the risk of a scam. All participants primarily use cash to pay for daily goods and services and to pay bills. Ninety-two percent reported traveling regularly to the Pos Indonesia (post office) or a Perusahaan Listrik Negara (national electric utility) branch to pay their bills in cash, despite widely available ATM and mobile phone services. In fact, only 8 percent of participants paid their utility bills at ATMs, and none reported ever making a mobile bill payment.

The vast majority of warungs, street vendors, and traditional markets—places where most participants and many poor Indonesians conduct their daily business—accept only cash payments. Modern mini-marts (e.g., 7-Eleven, Alfamart, Circle K, Indomaret) and a wide range of formal (i.e., registered) businesses accept debit, credit, and mobile payments. However, only 13 percent of participants had ever used debit, credit, or mobile payments, and none used them regularly. Forty-two percent use banks to make transfers to their children for tuition fees or to remit money to relatives back home, and none of those sampled reported using Western Union, Money Gram, or other money transfer services. In fact, one participant went so far as to drive 1.5 hours on his motorcycle every other week to give his son cash to pay his school fees and living expenses.

ANALYSIS

Building on the ethnographic profiles of our three sample communities, we developed three behavioral archetypes that represent frequently observed financial management behaviors. These archetypes help place consumer demand for MFS in context and enable us to describe the qualities consumers demand in their financial tools. In developing these archetypes, we paid close attention to the participants' personal goals and aspirations, as well as their fears and apprehensions. The sampled communities are traditional and tightly knit, so we also paid careful attention to the influence communal norms and religion have on participants' financial management behaviors.

We identify three design principles that should guide regulators and businesses as they develop and deploy MFS products. We then discuss why the current applications of MFS are not compelling to Indonesian consumers, and provide a case that illustrates one of the incumbent informal financial services that is MFS's most serious competition. We next argue that mobile savings might be the on-ramp that leads to the widespread adoption of MFS, and close with targeted recommendations for businesses and regulators.

BEHAVIORAL ARCHETYPES

Sustainer

The sustainer lives day-to-day. He is focused on keeping food on the table and a roof over his family's head, and enjoying life's simple pleasures. Each day presents new challenges, which he confronts by using proven strategies to make it to tomorrow. While he is aware of the unpredictability of life, his time horizon is narrow, and he believes that if he encounters adversity, he can rely on his family, friends, and community for support. He is risk averse, finding it easier to accept the status quo than to try new approaches to grow his business or boost his income.

Qualities:

- Present minded
- Values simplicity
- Risk-averse
- Traditional
- Relies on community

- **How they manage the basics.** The sustainer manages his income on a day-to-day basis. He saves most of his money under his mattress because he needs to keep it liquid, yet he is wary of having too much cash on hand because he might spend it on non-essentials. He relies on friends and family for small loans during lean times.

- **How they raise lump sums.** The sustainer uses proven, community-based informal savings tools like arisans and bank harians to make small, regular savings deposits. He knows and trusts these services.

- **How they deal with the unexpected.** The sustainer first turns to friends and family for help, and if he comes up empty-handed, he liquidates assets or borrows from a Bank Keliling. He does not use banks or cooperatives because he thinks their services are complicated and meant for wealthy people.

Builder

The builder is methodical and disciplined. She builds her assets incrementally, with the goal of giving her family opportunities for a better life. She believes that people should always work hard to improve their lot in life. By employing a complex financial management strategy and maintaining a mental tabulation of her financial statements, she is able to maximize her net worth, capitalize on her multiple businesses, provide protection from the unexpected, and secure her retirement. She sets aside a small amount each day, and when this amount accumulates she deposits it in a bank as a rainy-day fund.

Qualities:
- Disciplined
- Broad time horizon
- Risk manager
- Family and community centered
- A trusted source of financial counsel and small loans

- **How they manage the basics.** The builder partitions her assets and assigns each partition to cover specific future expenditures. She allocates her cash to different short-term savings accounts at banks and cooperatives, and stows some under her mattress. She is reluctant to borrow from a Bank Keliling because it is expensive, and would sooner turn to family and friends. Typically, though, the builder is a net lender.

- **How they raise lump sums.** Before borrowing, she researches a wide range of options to meet her needs and tries to avoid having more than one loan out at time. To save and borrow, she uses a mix of informal and formal tools, including arisans and bank harians, as well as bank and cooperative accounts. However, before she takes out a loan, she must first be confident that she can satisfy the lending requirements and make the installments.

- **How they deal with the unexpected.** The builder plans for the unexpected with a dedicated rainy-day savings account, as well as government-subsidized insurance. If necessary, she sells off assets, borrows from family or friends, or, as a last resort, uses a Bank Keliling.

Striver

Like the builder, the striver wants to grow his business and create a better life for his family, but he's not methodical in his approach. Rather, he reaches for new opportunities and takes risks, both in starting new ventures and adopting new products and services. The striver runs multiple enterprises but is somewhat undisciplined in both his business operations and financial management. While tightly integrated into his community and caring deeply for his friends and family, he seeks out information and makes his own decisions. He is likely to adopt new technologies and try new services before most others in his community.

Qualities:

- Open-minded
- Forward looking
- Risk taker
- Impulsive
- Independent

- **How they manage the basics.** The striver manages the basics much like the sustainer and builder. He primarily uses cash on hand that he pulls each day from under the mattress. While he uses banks and cooperatives, he does not manage his daily budget as carefully as the builder. As a result, he often suffers cash flow problems and relies on his friends and family to bail him out.

- **How they raise lump sums.** The striver is an opportunist and will use any loan at his disposal so long as he thinks he'll be able to make the payments. This includes borrowing from family and friends, bank kelilings, cooperatives, and commercial banks. Prone to risky investments and acting impulsively to exploit opportunities, he may need to sell off assets to repay old loans.

- **How they deal with the unexpected.** The striver is likely to turn to family and friends to deal with the unexpected. If they cannot help, he seeks funds wherever available, including borrowing from a bank keliling or selling off assets.

Design Principles

Our analysis has generated three principles that should remain at the forefront of the decision-making process as businesses and regulators design MFS services and regulations. In order to outperform incumbent financial services—which is essential to attract consumers—MFS must directly address the pain points identified in the previous sections. The new services must embody the following principles, which are the fundamental qualities the participants say the poor demand in financial services.

Security

MFS services must be secure. Participants said the greatest risk to a secure financial future is the risk of impulsively spending easily accessible savings. To remove the threat of impulsive spending, participants seek a service where they can frequently but irregularly deposit small amounts. However, since participants' businesses are relatively capital intensive and their incomes variable, these cash reserves must be accessible without paying substantial withdrawal fees. MFS services should allow consumers to tailor the liquidity of their savings to match their needs. Participants also expressed a strong desire for transparent and reliable mechanisms to protect against fraud and loss, and easy, accessible dispute resolution mechanisms. An MFS product or service that embodies security would:

- Protect consumers from their tendency to spend their savings impulsively
- Provide liquidity so that money saved is accessible during emergencies and business slowdowns
- Recruit, vet, and train MFS agents to provide consistent service and adequate dispute resolution; as one participant noted, "Trust is less of an issue with the service provider than it is with the person with whom you're doing business."
- Include clear, well established, and easy dispute resolution mechanisms
- Design loan repayment schemes for people without steady and predictable income streams so they are less likely to default on their loans

Accessibility

In the sampled urban and rural locations alike, consumer choice is frequently driven by accessibility, as indicated in the range of informal financial tools developed and used at the community level. However, access is multidimensional; it not only relates to a service's physical distance but includes psychological barriers and issues of class that have implications for MFS socialization and marketing strategies. Banks are considered tools of the wealthy, with services designed for people with consistent and sizable incomes. The physical branches themselves are socially inaccessible, even in the urban locations where bank branches are within walking distance of participants' homes. Some consider bank tellers intimidating and unfriendly, and are unwilling to bear the risk of using an ATM without understanding the dispute resolution mechanism. Accessible financial services must be simple, convenient, and intuitive. An MFS product or service that embodies accessibility would:

- Provide reliable agents embedded in the communities, near customers' homes and businesses
- Include intuitive service interfaces and processes supported by knowledgeable representatives

- Provide ubiquitous access so customers can use products and services across cities, provinces, and islands
- Integrate savings, loans, payments, transfers, and bill pay into one service platform
- Encourage frequent, small transactions
- Empower customers to work slowly toward their savings goals

Affordability

Existing MFS products do not have a consistent pricing strategy. Each major service provider has a different pricing scheme, with some charging standard SMS rates for each transaction and others charging the same price per transaction as their premium banking services. Since the poor primarily use informal financial tools, MFS pricing should take into account the costs of these services, which participants continually referenced when discussing the price of both formal and mobile financial services. An MFS product or service that embodies affordability would:

- Provide low costs per transaction
- Be competitively priced with other informal and formal services
- Reduce opportunity costs through improved accessibility of services
- Have transparent and logical pricing

Why payments and transfers fail to solve the most significant problems

MFS products are unattractive to the underbanked because they fail to address unmet needs or add value that goes beyond the services they already use. MFS products have been limited to airtime top-ups, bill pay, peer-to-peer transfers, and payments, but Indonesians have little trouble acquiring these services elsewhere.

- **Airtime top-ups and bill pay:** Airtime top-ups are as easy as walking a few meters to the nearest airtime vendor, who is often a friend and will send airtime on credit with a simple text. While mobile bill pay makes life a little easier, the poor can easily pay their few bills at the local post office or utility branch.

- **Transfers:** Providers have pushed person-to-person transfers as the gateway to MFS adoption in Indonesia. However, strict regulation of how customers register for MFS accounts and on the types of agents that can cash out has rendered these services useless to most customers and retailers.

- **Payments:** Low-income Indonesians rarely shop at licensed businesses, such as modern mini-markets (e.g., Indomaret, Circle K), which comprise the vast majority of the brick-and-mortar retail outlets that in theory accept mobile payments. We conducted a retail audit and observed that most outlets equipped for mobile payments were in fact unable to process in-store payments. Clerks lacked the know-how, and high rates of staff attrition made training obsolete within months.

The real competition is informal finance like Ibu Dewi's bank harian

Ibu Dewi, a middle-aged woman in Slipi, runs a bank harian (daily bank) that has more than 500 customers spread across several communities in west Jakarta. A bank harian is a savings service in which subscribers obligate themselves to a year's worth of daily savings deposits. They are one of the many informal tools developed to meet the savings gap in the formal market, and we documented these daily banks in communities across Java.

To participate, customers deposit the same amount of money every day for a year with Ibu Dewi's roving money collector. Ibu Dewi then deposits all harian deposits in her own account with Bank Mandiri (Indonesia's largest commercial bank). Customers can choose the amount of their daily deposit at the beginning of each yearly cycle, usually within the range of 500-20,000 IDR (0.40-1.70 USD); once they set their rate, they cannot change it until the savings term is up.

Consumers can make only one penalty-free withdrawal from their savings immediately before Ramadan. As mentioned above, this service functions as a holiday savings plan, much like the Christmas clubs in the U.S. and the UK. It helps families cope with the increased costs during the Muslim holy month, when household expenditures typically double. Some savings plans also pay out in the form of a siraya lebaran, a parcel of household goods that roughly corresponds in value to the amount of money a customer saved over the year. The siraya lebaran reflects this service's proposition of locking in savings for household consumption.

Ibu Dewi's valuable service enables low-income consumers to make small daily deposits that correspond to their expected daily cash flows. There are no account startup or maintenance fees, and the service is very convenient, as the money collectors go to customers' home. Homes are in fact the primary place of business for many of Indonesia's 95 million microentrepreneurs.

While the rigid deposit and withdrawal terms of bank harians help consumers save more diligently, they also impose heavy costs. Ibu Dewi earns interest on the savings deposited in her Bank Mandiri account, none of which she pays out to savers. Furthermore, consumers' savings cannot be collateralized for credit. Finally, Ibu Dewi charges her customers a 1-5 percent withdrawal fee and heavily penalizes customers who withdrawal their savings early.

Consequently, many consumers also try to save cash at home, in an arisan, or in the form of a productive asset. Money saved at home is fully liquid and many have a hard time not spending their cash, yet money saved in an arisan or in productive assets is too illiquid and thus not readily available when needed most, much like with a bank harian. Arisan and bank harian accounts force disciplined savings, but they also can burden households with rigid deposit requirements and stiff penalties for early withdrawals. Liquidizing assets during emergencies is costly, time-consuming, and slow. Furthermore, all such savings schemes are vulnerable to theft, damage, and uninsured loss.

Clearly, with 80 percent of the market underbanked and reliant on informal tools—and their many pain points—there is a gap in the market for savings services that help Indonesians achieve their financial goals.

The solution might be a suite of services, socialized through savings

We prototyped a number of MFS products with consumers, including person-to-person transfers, bill pay, in-store purchases, and microcredit. Our goal was to determine which service could be the gateway to more widespread adoption. We found that, despite understanding the mechanism of the prototypes, consumers by and large could not see how these standalone services could be useful in their day-to-day lives.

After completing our fieldwork and analyzing the data, we realized that a mobile "end-of-the-day" savings tool might just be the key to unlocking value for the consumer. We recently returned to Indonesia to conduct a design lab, where regulators, service providers, and financial technology companies used insights from our research to develop mobile savings concepts. The lab helped us design a mobile savings concept that enables consumers to set specific savings goals by separating their savings into different sections. Consumers can then decide how liquid each section will be, which will enable them to reach their specific savings goals more easily. We then traveled back to the field with a low-fidelity prototype of this concept, which we further refined with input from underbanked Indonesian consumers.

This time, the result was very positive, as consumers easily grasped the concept and value of mobile payments, transfers, and loans in the context of a mobile savings account. They were able to imagine how these services would be linked to an e-wallet, and that their money would be partitioned into accounts that enable them to have money on hand for daily expenses and also a less liquid savings account to help them reach specific goals. We also tested numerous incentive structures to encourage regular savings.

Despite our optimism that mobile savings might be the on-ramp to greater adoption of MFS, we realized that consumers do not view financial service functions in isolation. While they are keenly aware of the cost of saving, they are even more frustrated with the challenge of managing the many financial services they currently use. Underbanked Indonesians thus will benefit most from a bundle of services that incorporates mobile savings, credit, transfer, payment, and insurance tools that reduce the costs of managing over a dozen (mostly informal) financial services.

The Indonesian government recently launched a program to deliver cash subsidies to poor Indonesians through e-money. This program can increase financial inclusion, but only if it leads to the adoption of auxiliary financial services. We believe a savings tool that allows consumers to save toward specific goals is the most tangible way to socialize the concept and utility of MFS. Much work still needs to be done, but a bundle of services, socialized through savings and spurred by the government-to-person program is the most promising path forward.

RECOMMENDATIONS

The imminent release of new branchless banking regulations contributes to the timeliness of our research on consumer demand for MFS among the Indonesian poor. By exploring consumer behaviors, conducting an analysis of the pain points of existing financial services, and running product ideation workshops with consumers, we found that the tools now available leave the Indonesians we sampled with many unmet needs that could be fulfilled by well-designed MFS products and services. To meet these needs and generate demand for MFS, regulators must enable the development of a cohesive MFS ecosystem and businesses must design products that are accessible, affordable, and secure. We recommend the following actions.

Recommendations for Businesses

To compel poor Indonesians to adopt MFS, businesses should:

- Work with customers to design products and services that embody the three design principles—accessibility, affordability, and security—and work with regulators to develop supporting regulations
- Expand networks of MFS agents to include informal, unlicensed businesses, which is where the majority of Indonesians work and shop, as these businesses are embedded in communities and are trusted
- Use key community leaders to socialize new products. Trying untested financial products is risky, and the poor rely on respected members of their community to vouch for new products and services. These socializers should include MFS agents who can act as brand emissaries and tailor their message and marketing to local needs. A socialization or marketing campaign should familiarize consumers with the concept and utility of MFS, and help technologically inexperienced consumers understand that these products were designed to meet their needs.

Recommendations for Regulators

To spur the nascent market, regulators should:

- Allow unlicensed businesses to act as MFS agents in order to expand the cash-in (deposit)/cash-out (withdrawal) network to the community level
- Empower agents to register new customers away from bank branches and MNO branch offices, which are difficult to reach and inconvenient for many poor consumers
- Empower medium-sized banks and MNOs to license agents who can both register customers and perform cash-out. Some of these organizations have more experience serving poor Indonesians, and MNOs can leverage their extensive network of phone credit agents to provide MFS.
- Allow MFS service providers to offer savings accounts and microloans in addition to payments and transfers. Poor consumers demand new savings and loans products.
- Expand e-wallet size limits so customers with registered e-wallets can maintain larger balances, thereby permitting more robust savings products

BEHAVIORAL ARCHETYPES:

A way of classifying customers based on behaviors that may vary by context. The focus is on behavior rather than demographic indicators.
Pain points: A moment when a consumer experiences frustration, difficulty, or uncertainty when using a product or service. Pain points indicate unmet user needs that a product, service, process, or business model seeks to address.
Value proposition: What a particular product or service offers customers to respond to their needs.
Design principles: A method of identifying attributes that a particular product or service needs to have in order to resolve the identified pain points.
(Datar, S., & Lal, R., 2014)

Market Opportunities

We identified several clear market opportunities for businesses:

- MFS can simplify the financial lives of poor consumers by providing a simple one-stop shop for a suite of savings, microloan, and electronic transfer and payment tools
- Savings is the gateway to MFS adoption, and we found the strongest demand for a savings tool that facilitates easy and cheap deposits of small, end-of-the-day cash balances. Participants understood the concept and value of mobile payments, loans, and transfers in the context of a mobile savings account.
- Poor consumers have very limited options for borrowing, yet they have a strong need for small, immediate cash loans to smooth out erratic income cycles. We also observed a clear market opportunity for a service that disperses small, immediate loans.

While the case for MFS in Indonesia is well documented, poor consumers have responded tepidly to product offerings thus far. Regulators, policymakers, banks, MNOs, and industry experts are optimistic that the timing is finally right for MFS to take off in Indonesia. New branchless banking regulations enable commercial banks to appoint their own agents, who can register customers and offer savings accounts, microloans, and micro-insurance. The development of a successful MFS ecosystem has the potential to transform Indonesia from one of the most underbanked populations in the world to a financially inclusive society. However, despite our optimism, success is far from guaranteed: if stakeholders lose sight of the consumer, all will be for naught.

References

- Alexandre, C. (2012). Regulators as change agents. *Innovations, 6*(4), 3-16.

- Firpo, J., Flaming, M., Fazal, A., Saxena, A., Rossi, N., & Biallas, M. O. (2010). IFC Mobile Money Toolkit [living document providing research tools for public use]. Washington, DC: International Finance Corporation. Retrieved from http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/financial+markets/publications/toolkits/mobilemoney_toolkit1

- Bilbao-Osorio, B., Dutta, S., & Lanvin, B. (2013). *The global information technology report 2013: Growth and jobs in a hyperconnected world.* Geneva: World Economic Forum and INSEAD.

- Breen, S. (2013, April 4). "Mobile Money Asia: Indonesia's mobile money moons align" [blog post]. Mobile Money Asia. Retrieved from http://www.mobilemoneyasia.org/2013/04/indonesias-mobile-money-moons-align.html

- Camner, G. (2013, May 23). "In Indonesia, operators choose interoperability and collaboration" [blog post]. GSMA MMU. Retrieved from http://www.gsma.com/mobilefordevelopment/in-indonesia-operators-choose-interoperability-and-collaboration

- Camner, G. (2013). "Snapshot: implementing mobile money interoperability in Indonesia." In Mobile money for the unbanked case studies: Insights, best practices and lessons from across the globe (pp. 11–19). London: GSMA. Retrieved from http://www.gsma.com/mobilefordevelopment/mmu-case-studies

- Chakravorti, B., & Mazzotta, B. D. (2013). *The cost of cash in the United States.* Medford, MA: The Institute for Business in the Global Context. Retrieved from http://fletcher.tufts.edu/costofcash

- Cheng, I., Edwards, B., & Stallings, H. (2014, July 30). "Using human-centered design for e-payment systems in Indonesia" [blog post]. CGAP. Retrieved from http://www.cgap.org/blog/using-human-centered-design-e-payment-systems-indonesia

- Collins, D., Morduch, J., Rutherford, S., & Ruthven, O. (2009). *Portfolios of the poor: How the world's poor live on $2 a day.* Princeton, NJ: Princeton University Press.

- Davidson, A. N., & Leishman, P. (2011). *Incentivising a network of mobile money agents.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/building-incentivising-and-managing-a-network-of-mobile-money-agents-a-handbook-for-mobile-network-operators

- Davidson, A. N., & McCarty, M. Y. (2011). *Driving customer usage of mobile money for the unbanked.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/03/drivingcustomerusagefinallowres.pdf

- Davidson, N. (2011). *Mapping and effectively structuring operator-bank relationships to offer mobile money for the unbanked.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/mapping-and-effectively-structuring-operator-bank-relationships-to-offer-mobile-money-for-the-unbanked

- Dermish, A., & Kneiding, C. (2012). Branchless and mobile banking solutions for the poor: A survey of the literature. *Innovations, 6*(4), 81-98.

- Di Castri, S. (2013). *Mobile money: enabling regulatory solutions.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/mobile-money-enabling-regulatory-solutions

- "Economic crisis? Indonesia doesn't think so." (2011, December 4). Jakarta Globe. Retrieved from http://thejakartaglobe.beritasatu.com/archive/economic-crisis-indonesia-doesnt-think-so/

- Flaming, M., Mckay, C., & Pickens, M. (2011). *Agent management toolkit: Building a viable network of branchless banking agents.* Washington, DC: CGAP. Retrieved from http://www.cgap.org/sites/default/files/CGAP-Technical-Guide-Agent-Management-Toolkit-Building-a-Viable-Network-of-Branchless-Banking-Agents-Feb-2011.pdf

- Flaming, M., Prochaska, K., & Staschen, S. (2009). *Diagnostic report on the legal and regulatory environment for branchless banking in Indonesia.* Washington, DC: International Finance Corporation. Retrieved from http://www.ifc.org/wps/wcm/connect/2f6874004a1b31b68f65ffdd29332b51/Tool%2B2.5e.%2BDiagnostic%2BReport%2BExample%2B-%2BIndonesia.pdf?MOD=AJPERES

- Gormley, G. (2013, December 7). "Frog in Indonesia: Looking for the financial equivalent of a motorbike" [blog post]. Design Mind. Retrieved from http://designmind.frogdesign.com/blog/frog-in-indonesia-looking-for-the-financial-equivalent-of-a-motorbike.html

- Gormley, G. (2014, January 27). "In between chickens and prototypes: How insights become ideas on Project Bertumbuh" [blog post]. Design Mind. Retrieved from http://designmind.frogdesign.com/blog/in-between-chickens-and-prototypes-how-insights-become-ideas-on-project-bertumbuh.html

- Gormley, G. (2014, February 12). "Project Bertumbuh takes prototypes in-field" [blog post]. Design Mind. Retrieved from http://designmind.frogdesign.com/blog/project-bertumbuh-takes-prototypes-in-field.html

- Graf, J., Kayster, O., & Klarsfeld, L. (2013). *Marketing innovative devices for the base of the pyramid.* Paris: HYSTRA hybrid strategies consulting. Retrieved from https://static1.squarespace.com/static/51bef39fe4b010d205f84a92/t/51f237c4e4b07e4e5ac4e0f6/1374828484103/Full_report_Maketing_for_the_BOP.pdf

- Grameen Foundation. *Assessing the role of cooperatives in mobile financial services in Indonesia.* (2014). Washington, DC: Grameen Foundation. Retrieved from https://emitraindonesia.files.wordpress.com/2014/05/e-mitra-grameen-foundation-research.pdf

- Grameen Foundation & Citi Foundation. (2014). *Designing for adoption and scale highlights. Highlights from the conference Designing for Adoption and Scale, Mumbai.* Washington, DC: Grameen Foundation. Retrieved from http://www.grameenfoundation.org/designing-adoption-scale-workshop-highlights

- Fabricant et al. (2012). *Collective action toolkit.* San Francisco: Frog Design. Retrieved from http://www.frogdesign.com/sites/default/files/pdf/frog_collective_action_toolkit.pdf

- Hidayati, S. (2011). Cash-in and cash-out agents for mobile money in Indonesia. *Innovations, 6*(4), 117-123.

- IDEO. (2011). *Human centered design toolkit (2nd ed.)*. San Francisco: IDEO. Retrieved from http://www.ideo.com/images/uploads/hcd_toolkit/IDEO_HCD_ToolKit.pdf

- "Unemployment in Indonesia" [blog post]. (2014). Indonesia Investments. Retrieved from http://www.indonesia-investments.com/finance/macroeconomic-indicators/unemployment/item255

- Spire Research & Consulting. (2013). *Indonesia market assessment for agricultural value-chain payments via mobile technology.* Portland, OR: MercyCorps. Retrieved from http://www.mercycorps.org/sites/default/files/Spire Report-Agricultural Value Chain Payments %28Jan 2%2C 2013%29.pdf

- International Finance Corporation. (n.d.). "Mobile banking questionnaire: Non-users" (IFC Mobile Money Toolkit - Tool 3.10). Washington, DC: International Finance Corporation. Retrieved from http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/financial+markets/publications/toolkits/mobilemoney_toolkit1

- International Finance Corporation. (n.d.). "Mobile banking questionnaire: Users" (IFC Mobile Money Toolkit - Tool 3.9. Washington, DC: International Finance Corporation. Retrieved from http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/financial+markets/publications/toolkits/mobilemoney_toolkit1

- International Finance Corporation. *Mobile banking in Indonesia: Assessing the market potential for mobile technology to extend banking to the unbanked and underbanked. (2010).* Jakarta: International Finance Corporation. Retrieved from http://www.ifc.org/wps/wcm/connect/region__ext_content/regions/east+asia+and+the+pacific/publications/mobile+banking+in+indonesia

- J. C. (2011, August 3). "Indonesia's poverty line: To make a million people unpoor" [blog post]. Banyan.Retrieved from http://www.economist.com/blogs/banyan/2011/08/indonesias-poverty-line

- Jenkins, B. (2008). *Developing mobile money ecosystems.* Washington, DC: IFC and the Harvard Kennedy School. Retrieved from http://www.hks.harvard.edu/m-rcbg/papers/jenkins_mobile_money_summer_008.pdf

- Joyce, M. (2013, March 27). "Good news for e-money and remittance operators in Indonesia" [blog post]. Mobile Money Asia.from http://www.mobilemoneyasia.org/2013/03/good-news-for-e-money-and-remittance.html

- Joyce, M. (2013, May 2). "Indonesia launches guiding principles for branchless banking" [blog post]. Mobile Money Asia. Retrieved from http://www.mobilemoneyasia.org/2013/05/indonesia-launches-guiding-principles.html

- Joyce, M. (2013, May 15). "Mobile money interoperability in Indonesia announced." Retrieved from http://www.mobilemoneyasia.org/2013/05/mobile-money-interoperability-in.html

- Joyce, M. (2014, April 25). "Indonesian regulations favour the four biggest banks" [blog post]. Mobile Money Asia. Retrieved from http://www.mobilemoneyasia.org/2014/04/indonesian-regulations-favour-four.html

- Joyce, M. (2014, January 17). "Indonesia: what happened to the regulations?" [blog post]. Mobile Money Asia. Retrieved from http://www.mobilemoneyasia.org/2014/01/indonesia-what-happened-to-regulations.html

- Joyce, M. (2014, April 17). "New e-money regulations in Indonesia" [blog post]. Mobile Money Asia. Retrieved from http://www.mobilemoneyasia.org/2014/04/new-e-money-regulations-in-indonesia.html

- Kendall, J., Maurer, B., & Machoka, P. (2012). An emerging platform: from money transfer system to mobile money ecosystem. *Innovations, 6*(4), 49-64.

- Kolko, J. (2011). *Exposing the magic of design: A practitioner's guide to the methods and theory of synthesis.* Oxford, UK: Oxford University Press.

- Levin, P. (2013). *Getting the most out of your data: Segmenting your mobile money customer base to drive usage.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/getting-the-most-out-of-your-data-segmenting-your-mobile-money-customer-base-to-drive-usage

- Levin, P. (2013, July 9). The Customer Journey to Regular Usage [PowerPoint presented at the GSMA MMU Global Event in Nairobi]. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/07/Customer-Journey-MMU-Global-Event-2013.pdf

- Liberoff, R., & Horn, C. (2012). Mobile identity and financial inclusion at the bottom of the pyramid. *Innovations, 6*(4), 65-72.

- Loh, J., & Indrakesuma, T. (2013). *Asian Trends Monitoring Bulletin, Bulletin 21:* Financial inclusion for asia's poor — a distant future? Singapore: Lee Kuan Yew School of Public Policy.

- Makarim, & Taira. (2013). "Indonesia: The new cooperatives law" [blog post]. Mondaq.] Retrieved from http://www.mondaq.com/x/237616/Financial+Services/The+New+Cooperatives+Law

- Markets, E. (2013). *Unlocking the Potential: Women and mobile financial services in emerging markets.* London: The GSMA mWomen Global Development Alliance. Retrieved from http://www.gsma.com/mobilefordevelopment/unlocking-the-potential

- Mas, I., & Almazán, M. (2014). Product innovations on mobile money. *European Journal of Business and Management, 6*(19): 90 - 109.

- Mas, I., & Sullivan, N. (2012). Mobile money as an information utility that touches everyone: Refining the vision for financial inclusion. *Innovations, 6*(4), 17-25.

- MasterCard Advisors. (2014). T*he road to inclusion: A look at the financially excluded and underserved.* Purchase, NY: MasterCard Advisors. Retrieved from http://www.mastercardadvisors.com/_assets/pdf/MasterCard-Road-to-Inclusion-Report.pdf

- MasterCard Worldwide. (2013). *Best practices in program management for closed loop and open loop systems.* Purchase, NY: MasterCard Worldwide.

- McGrath, F. (2013). *Mobile money for the unbanked 101: A guide to commercial best practice.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/07/MMU_Mobile-Money-101.pdf

- McKay, C., & Seltzer, Y. E. (2013, December). *Designing customer-centric branchless banking offerings.* Washington, DC: CGAP. Retrieved from http://www.cgap.org/sites/default/files/Brief-Designing-Customer-Centric-Branchless-Banking-Offerings-Dec-2013.pdf

- Mellor, W. (2014, May 20). "Indonesian banks woo remote islanders with floating ATMs." Bloomberg Business. Retrieved from http://www.bloomberg.com/news/2014-05-20/indonesian-banks-woo-remote-islanders-with-floating-atms.html

- "Cutting through the red tape in Java" [blog post]. (2014, September). Mondato. Retrieved from http://mondato.com/blog/indonesia/

- Paul Leishman. (2009). *Mobile money in the Philippines: The market, the models and regulation. (2009).* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/06/Philippines-Case-Study-v-X21-21.pdf

- Mohammad, G., & Retnowati, G. (2014, July). "Building and sustaining agent networks: Evidence from Indonesia" [blog post]. MicroSave. Retrieved from http://blog.microsave.net/building-and-sustaining-agent-networks-evidence-from-indonesia/

- Pénicaud, C., & Katakam, A. (2013). *State of the industry 2013: Mobile financial services for the unbanked.* London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/02/SOTIR_2013.pdf

- PwC Indonesia. (2013). Indonesian banking survey 2013. Jakarta: PwC Indonesia. Retrieved from http://www.pwc.com/id/en/publications/assets/pwc-indonesia-banking-survey-2013.pdf

- Shrader, L. (2014, June 5). "Indonesia: Anatomy of a successful human-centered design project" [blog post]. CGAP. Retrieved from http://www.cgap.org/blog/indonesia-anatomy-successful-human-centered-design-project

- Shrader, L. (2014, June 6). "Power of the persona: Applied product innovation with bank BTPN." CGAP. Retrieved from http://www.cgap.org/blog/power-persona-applied-product-innovation-bank-btpn

- Shrader, L. (2013, July 12). Latest on branchless banking from Indonesia [blog post]. CGAP. Retrieved from http://www.cgap.org/blog/latest-branchless-banking-indonesia

- Shrader, L. (2013, July 25). "Indonesia moves towards a cash light economy" [blog post]. CGAP. Retrieved from http://www.cgap.org/blog/indonesia-moves-towards-cash-light-economy

- Singh, S. (2013). How technology is being used in the region: E-money, mobile money, e-wallet. Are regulators coping and responding to this? [PowerPoint presentation at the Regional Capacity Building Training Program: Regulatory Environments to Promote Financial Inclusion in Developing APEC and Other Regional Economies, Melbourne, Australia]. Retrieved from http://adbi.adb.org/conf-seminar-papers/2013/04/22/5604.e.money.regulators.response/

- Sipahutar, T. (2014, January 20). "Branchless banking to enter new episode." *The Jakarta Post.* Retrieved from http://www.thejakartapost.com/news/2014/01/20/branchless-banking-enter-new-episode.html

- Sipahutar, T. (2013, September 4). "Branchless banking pilot off to positive start." *The Jakarta Post.* Retrieved from http://www.thejakartapost.com/news/2013/09/04/branchless-banking-pilot-positive-start.html

- Sipahutar, T. (2014, September 10). "OJK to issue branchless banking rule by year-end." *The Jakarta Post.* Retrieved from http://www.thejakartapost.com/news/2014/09/10/ojk-issue-branchless-banking-rule-year-end.html

- Datar, S., & Lal, R. (2014). "Creative matrix module: Prescription medication non-compliance." In *Design Thinking and Innovation.*

- Datar, S., & Lal, R. (2014). "Design, thinking & innovation: Introduction." In *Lecture* (Ed.), Lecture. Cambridge, MA: Harvard Business School.

- Stuart, G., Joyce, M., & Bahar, J. (2014). *Demand for mobile money and branchless banking among micro and small enterprises in Indonesia.* (TNP2K Working Paper 16 – 2014). Jakarta: TNP2K. Retrieved from http://www.tnp2k.go.id/en/download/demand-for-mobile-money-and-branchless-banking-among-micro-and-small-enterprises-in-indonesia/

- T. S. (2013). "The Economist explains: Why does Kenya lead the world in mobile money?" [blog post].

- *The Economist.* Retrieved from http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18
- *Telecom renewable energy vendor/ESCOs landscape in Indonesia.* (2013). London: GSMA Mobile Money for the Unbanked. Retrieved from http://www.gsma.com/mobilefordevelopment/telecom-renewable-energy-vendorescos-landscape-in-indonesia
- Valikappen, S., & Moestafa, B. (2013, February 5). "World's most profitable banks in Indonesia double U.S. returns." Bloomberg Business. Retrieved from http://www.bloomberg.com/news/2013-02-04/world-s-most-profitable-banks-in-indonesia-double-u-s-returns.html
- World Bank. (2011). Financial inclusion data for Indonesia [data file]. Retrieved from http://datatopics.worldbank.org/financialinclusion/country/indonesia
- World Bank. (2014, April 17). "Indonesia overview." Retrieved from http://www.worldbank.org/en/country/indonesia/overview