



CONSUMER PROTECTION IN FINANCIAL TECHNOLOGY

RISKS UNBANKED AND UNDERBANKED CONSUMERS FACE IN DIGITAL CREDIT AND THE TECHNOLOGICAL AND REGULATORY APPROACHES TO MITIGATE RISK

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ABSTRACT

Digital credit is an evolving industry, particularly in emerging markets with tremendous income and business potential. The growth of this industry leaves low income and financially inexperienced consumers vulnerable to a range of risks. Our project aims to identify the existing and anticipated risks consumers face in accessing digital credit; analyze the intricacies of causes that drive risk; and assess risk alleviation approaches to determine their effectiveness in stemming risk, ability to propel financial inclusion and welfare contributions. Our research is comprehensive in mapping this digital credit ecosystem.

Understanding the landscape of digital credit will allow stakeholders to more effectively intervene and provide solutions to protect unbanked and underbanked consumers in emerging markets. For the Center for Effective Global Action, our project will contribute analysis to their work on digital credit, from the consumer protection and welfare perspective. We provide recommendations for future research based on identified gaps and assess the effectiveness of tested practices to allay consumer risk. This will help CEGA design their financial inclusion programming. For implementers and CEGA affiliates including digital credit providers, governments, NGOs, and researchers, our report will provide a big picture of consumer protection in this space to inform their activities.





SECTION I

Context,
Goal, and
Project
Objective



CONTEXT, GOAL, AND PROJECT OBJECTIVE

Context


The rapid expansion of digital credit, defined as small loans provided instantly and remotely over digital channels, has created new, unique risks for consumers that do not exist in traditional credit markets. Three features of digital credit make these risks unique: Digital credit platforms are designed to reach households and merchants with little experience in formal finance; Digital credit is delivered online; Digital credit is largely deployed in emerging economies.

The central issue today is that actions to allay consumer risk have not kept up with this new technology. Risk mitigation approaches have either not been implemented by providers and/or regulators or remain untested. There is a dearth of evidence based analysis on the short- and/or long-run impacts of digital credit, specifically consumer vulnerabilities. While there exists a body of research and evaluations on the effectiveness of approaches that have been implemented, their reach and scope have been limited. As a result, stakeholders including lenders, consumers, and policy-makers are making important decisions without full knowledge and critical assessment of consumers' interaction with digital credit.

Goal and Project Objective

Protecting consumers in the digital credit marketplace is the ultimate goal. Risk mitigation means that digital credit providers and regulators understand potential consumer risks and needs and implement proven practices to stem these risks without diminishing access to credit.

The project objective is to assess, in a comprehensive manner, the risks that consumers face in digital credit. The assessment is meant to fill the gaps in stakeholder knowledge, providing a whole picture of threats and means to address these threats. The objective facilitates the ultimate goal of protecting consumers because with complete information resource deployment in the forms of intervention and further research will be deployed more effectively.





SECTION II

Methodology



METHODOLOGY

Our methods of aggregating research and assessing consumer risk were conducted through:

Literature review and background research to synthesize trends in digital credit pertaining to consumer protection. Relevant research included reports, studies, and academic articles which provided perspectives from consumers, digital credit providers, NGOs and government regulators.

Interviews with relevant stakeholders and experts to codify results and analysis.

Systems mapping to synthesize the digital credit ecosystem relevant to consumer risk.

Analysis of relevant quantitative and qualitative data and research to identify the most salient features of risk mitigation for potential interventions and needed research. The analysis will inform decisions to invest in study, action, and innovation.





SECTION III

Landscape Map



MAPPING OVERVIEW

Mapping the consumer risk landscape includes the following topics that together provide an overview of consumer risk and risk mitigation strategies:

Primary risks consumers face in the fintech space

Causes that drive consumer risks

Mitigation approaches that allay consumer risks and causes

Examples of mitigation strategies that have been implemented






ECOSYSTEM OF CONSUMER RISK, CAUSES AND APPROACHES TO MITIGATE RISK

Consumer Risk 1: Credit traps and overindebtedness

Predatory lenders and lending practices take advantage of consumers. Predatory lenders target people that have trouble borrowing from legitimate, formal lenders. These borrowers are often low-literacy and low-income, have bad credit and are unfamiliar with the credit apparatus. While people with a good credit scores and stable incomes have more options when borrowing money, targets of predatory lending tend to have fewer choices. As a result, they are susceptible predatory lenders who intentionally set high interest rates, additional fees, and rigid repayment terms. Borrowers are trapped in vicious credit cycles, with increasing debt and inability to make payments to keep up with the aggressive lending terms.

Cause 1.1: Lenders set higher interest rates than traditional banking.¹

Low income borrowers often take loans to pay off immediate expenses and to fulfill short term financial needs. Banks almost turn down low-income, inexperienced applicants, leaving them with few options. Borrowers, then, turn to private or informal money lenders. Lenders prey on borrowers' low income status and lack of security to exploit them. The instant influx of cash from lenders solves the borrower's immediate problem but triggers a cycle of inability to repay and contributes to mounting debt. Poor financial capacity and the burden of high interest rates accumulating over time, trap borrowers and drives overindebtedness. Borrowers are tethered to the expensive financial product which diminishes their economic prospects.





Mitigation Approach 1.1.1: Setting interest rate caps through regulation
(Implementer: Regulator)

Interest rate caps or ceilings are a key component of many countries' credit policies. Providers are incentivized to set reasonable interest rates that do not fluctuate. Governments set interest rate ceilings through banking regulations to address consequences of high costs of borrowing and predatory lending. The financial regulators also use interest rate caps as a form of subsidy to economically vulnerable groups.

Example 1.1.1: Financial Services Law (Bolivia)ⁱⁱ

Bolivia adopted a new financial services law in August 2013. The law is a combination of several provisions aimed at strengthening the financial sector and creating a regulatory framework that adopts and implements international standards and principles like the Basel II and III (international regulatory framework for banks) principles. One of the key measures under the law is regulating deposit and lending rates.

Mitigation Approach 1.1.2: Providing innovative and incentive driven structures for interest rates and loan terms.ⁱⁱⁱ (Implementer: Service Provider)

Interest rates and loan terms can ease the financial burden of low-income households and merchants with volatile income streams. Some measures to incentivize manageable interest rates and loan terms include:

- *"Cash back incentive."*^{iv} A monetary award to the consumer for paying back all of their loan installments on time.
- *"Future interest rate reduction."*^v A model that decreases the interest rates on future credit offerings for borrowers with proven repayment habits. Traditionally, lenders treat all of their customers the same. Repeat borrowers with perfect repayment records are





charged the same interest and fees as unproven first-time borrowers, which disincentivizes borrowers from improving their payment habits, as they perceive no benefit in doing so. Borrowers will repay loans on time, saving themselves from credit burden if there are obvious rewards associated with repayment.

- *“Customization:”^{vii}* A system that identifies a target group, analyzes its characteristics and needs, and designs services and products accordingly. Customization can help reach a broader customer base by offering more relevant and useful services to unserved and underserved markets, which provides a better user experience.^{vii}
- *“Basic, “no-frills” accounts and/or services:”^{viii}* Simplified products that are easy to use and understand. “Basic accounts can help meet essential financial service needs at low cost and serve as an entry point to more sophisticated services.”^{ix}

Example 1.1.2: LendUp (California),^x KAITE with EcoCash (Zimbabwe), Agribusiness Systems International and GADCO with TigoCash (Ghana), SmartMoney (Tanzania), and Zoono (Zambia)

With the aim to counter the payday lending system, LendUp, a California based startup is built around a framework called the LendUp Ladder. This provides an actionable path for customers to access more money at a lower cost. A point based reward, education and gamification structure allows the user to move up the ladder to access more diverse and effective credit products. It also enables financial education, making users more responsible and improving their credit risk profiles. LendUp encourages the borrower to improve their financial habits, rewarding them for prompt repayment, providing tools for financial education, and enabling easy understanding.





Various financial service providers in Africa have partnered with large produce buyers to help them make payments to farmers using mobile money. These services have enabled farmers to repay microloans with mobile money, thus reducing both the need for cash and lengthy travel times previously required to make cash repayments. The produce buyers KAITE in Zimbabwe, as well as Agribusiness Systems International and GADCO in Ghana, have initiated pilots to pay farmers with EcoCash and Tigo Cash, respectively. Similarly, SmartMoney in Tanzania and Zoono in Zambia have also facilitated mobile payments between suppliers and farmers, resulting in lower payment costs and improved security. Zoono, which works mainly in the agricultural sector in Zambia and Malawi, offers farmers a choice between receiving mobile money in their mobile wallet (if they have one) or receiving an electronic voucher.

Mitigation Approach 1.1.3: Sending SMS with summary product information and ensuring customers understand lending terms.

(Implementer: Service Provider)

Consumers' familiarity with the SMS communication offers up opportunities to engage them after loan origination to facilitate user understanding of features like repayment requirements. SMS reminders is an almost costless mechanism that can address financial literacy as well as financial health of borrowers. Simple reminders are sent in coordination with payment due dates, enabling borrowers to keep up with their loan repayment schedule.^{xi}

Example 1.1.3: M-Shwari (Kenya)^{xii}

M-Shwari sends simple, timely SMS messages describing key terms and conditions that customers can store and access at a later time. M-Shwari also calls and sends SMS messages to borrowers to remind them of impending due dates. The messages are easy to understand, short and aligned with payment schedules.





Cause 1.2: Informal moneylending industry operates outside of formal financial services regulations.

Digital credit providers, in most cases, lie outside the formal finance sector, which includes banks and microfinance institutions. As a predominantly unregulated industry, providers are free to set rigid and exploitative terms driven by profit making goals. These practices harm consumers.

Mitigation Approach 1.2.1: Developing fair and competitive markets through coordinated market regulations (Implementer: Government/ Regulator)

In recent years, a variety of institutions and technological products have penetrated financial markets with varied business models and services. Regulators are tasked with developing a financial sector through regulation that meets the needs of diverse individuals and firms.^{xiii} Studies consistently find that what matters for economic growth is the overall development of the financial system, rather than the relative shares of banks and financial markets. Therefore, a credit sector with a combination of traditional banks and nonbanking financial institutions can be sufficient. Nationally and internationally competitive markets provide consumers with greater choice amongst financial services. More options create pressure for providers to offer competitive, high quality products and drives innovation.^{xiv}





Example 1.2.1: Association of Banks (Peru), Banking and Finance Services Act (Zambia)
In Peru, the Association of Banks, along with other partners, has established a mobile payments platform that all financial institutions, mobile phone operators, and electronic money issuers in the country can use. The “Peru Model” is a streamlined mobile platform that coordinates financial intermediaries and provides a shared infrastructure to consumers.

Zambia has amended its Banking and Finance Services Act to include specific provisions on consumer protection, market conduct and competition in the financial sector.

Mitigation Approach 1.2.2: Harmonizing market conduct rules and oversight for all comparable credit offerings for all providers and channels
(Implementer: Government/ Regulator)

While freer markets and competition are essential to sustain an effective financial industry, unhindered competition can create an environment for financial exclusion. High prices and high interest rates exclude a large part of the population. According to the G20 High-Level Principles on Financial Consumer Protection, policy measures to harmonize market conduct include:

- Requiring banks to offer basic or low-fee accounts
- Granting exemptions from onerous documentation requirements for consumers
- Allowing correspondent banking (where one financial institution provides services on behalf of another)
- Providing government benefits via electronic payments





Example 1.2.2: Bank Negara Malaysia's Consumer and Market Conduct Framework (Malaysia)

In Malaysia, "consumer empowerment and protection are addressed through a comprehensive framework that includes market conduct regulation and supervision, avenues for redress, consumer literacy and public awareness initiatives."^{xv} While the Bank's Consumer and Market Conduct Department (CMC) has played a key role in developing the framework, it has been developed over the years through engagement with other departments in Bank Negara Malaysia, consumer associations, and other players in the financial technology industry.

Cause 1.3: Credit scoring algorithms are flawed.

Credit scoring algorithms may not accurately predict ability to repay, unfairly profile or discriminate, or lack adequate informed consent by the consumer for data collection and usage. As a result, lenders may underestimate or overestimate the capacity to repay if there is no adequate system to check information on the borrower's existing debts or reliable means to verify their credit-worthiness.^{xvi}

Mitigation Approach 1.3.1: Designing alternative credit scoring methods (Implementer: Service Providers)

Lenders are increasingly determining credit scores by using nontraditional sources of data, many of them not directly related to monetary transactions. To augment their traditional underwriting mechanism, providers are accessing consumer mobile data and using advanced analytics to assess the credit-worthiness of unbanked and underbanked customers. "Transaction-based lending models, especially peer-to-peer lending,"^{xvii} allow applicants to demonstrate their quality in nontraditional ways. Alternative credit scoring methods offer opportunities for financial





institutions to grow their lending portfolios while managing risk.

Example 1.3.1: Vodacom (Tanzania)

Vodacom, a mobile service provider in Tanzania, has partnered with First Access, a for-profit social business focused on data analytics using prepaid mobile data to predict credit risk for consumers who have never had a bank account or a credit score. First Access offers an instant risk scoring tool for low-income customers by analyzing “demographic, geographic, financial and social network data from a subscriber’s mobile records.”^{xviii} The scores are authorised by subscribers via text message and delivered to participating financial institutions in real time, along with a recommendation on the loan size and other related information.

Cause 1.4: Providers use price manipulation where they have hidden fee structures or “teaser” rates

Mitigation Approach 1.4.1: Establishing a licensing process for digital credit lenders and setting strict penalties for manipulation (Implementer: Regulator)

Monitoring market conduct is essential to curb price manipulation and fraud among providers and protect consumers from associated risks.^{xix} With the introduction of different kinds of providers ranging from telecoms to mobile money startups, entry of eligible credit providers is the first and one of the most important aspects of market conduct. Creating a new licensing framework for specialized operators corresponding to the functions they perform, monitors and regulates providers' scope and actions. This formulates a proportionate but lighter regulatory regime than the one that oversees commercial banks or other financial intermediaries.^{xx} Formal licensing standards require regulators to assess providers'





understanding of their target market and relevant operational and security risks. Licensing would require providers to establish and maintain adequate policies, procedures, controls, audit programs, information systems, governance and reporting lines. It would also dictate hiring standards, including background checks for agents and employees.^{xxi}

Example 1.4.1: Reserve Bank (India),^{xxii} Draft Framework on Branchless Banking (Zambia)^{xxiii}

Reserve Bank of India (RBI) approved a new stripped-down type of bank, which are expected to reach customers mainly through their mobile phones rather than through bank branches. As per the RBI Guidelines on Licensing of Payment Banks, “the objective of setting up payments banks with a structured licensing process is to provide small savings accounts and payments/remittance services to migrant labor workforce, low income households, small businesses, other unorganized users^{xxiv}.”

Under Zambia’s Framework on Branchless Banking, non-bank digital financial service providers are not allowed to extend credit but can partner with an institution that is already licensed to provide credit. In such cases, the licensed institution will be responsible for the management and extension of credit while the digital financial services provider offers the delivery channel.





Consumer Risk 2: Unnecessary burden of credit that fails to meet consumer needs, due to misuse or poor usage of credit products

Inadequate of information imposes a disproportionate burden of credit on the weaker consumers. Without access to user feedback, many providers do not fully understand consumer needs. Because target consumers are inexperienced with financial services, they do not understand their own needs either. Lack of knowledge both on the consumer and provider sides, creates a disconnect between user needs and the financial products that they use. Consumers, then, fail to manage their finances effectively and do not use the tools that would most benefit their individual circumstances.

Cause 2.1: Providers lack know your customer processes that help them assess user needs and challenges.

Credit providers do not always understand customer credit needs and situations. Providers are unable to adequately track transactions made by consumers in their daily lives. Improper customer identification leads to improper customer compliance and unsound monitoring of credit accounts, leaving both provider and customer at risk. As a consequence, providers mismanage their product offerings and consumers underutilize or misuse those products.

Mitigation Approach 2.1.1: Establishing Know Your Customer norms
(Implementer: Regulator)

Know Your Customer is a type of banking regulation which requires financial institutions and companies operating in the financial sector to identify, document, and validate the identity of a customer before engaging and providing services to those customers. By first verifying





customers' identities and intentions and then understanding their transaction patterns, banks are able to more accurately pinpoint suspicious activities.

The objective is to know customers by verifying identities, confirming they're not on any prohibited lists, and assessing their risk factors. This system is designed to prevent money laundering, terrorism financing, and run-of-the-mill fraud schemes. Providers make transactions safer in this way. While KYC practices should not penalize innocent consumers, burdening providers with limited resources is a limitation worth noting.

Example 2.1.1: National Biometric Platform (India)

In India, Aadhaar is a national biometric platform that functions as a basic validation service. The platform inputs biometric identity numbers and validates a match. The system verifies an individual's identity and address using electronic biometric authentication. In a country like India, with a large population of unbanked individuals and households, these identification numbers will enable providers to easily access and verify information to fulfill the KYC practices for these consumers. This digital infrastructure will effectively bring those previously unbanked into the formal financial sector.

Mitigation Approach 2.1.2: Obtaining user feedback on product and service (Implementer: Service Provider)

Continual testing and refining content can help identify best practices for disclosure of terms and conditions via digital channels. Testing can be aimed at typical consumers with generalizable needs. Insights from the feedback into users' lifestyles, routines, and preferences help providers shape better credit products. Feedback mechanisms may include text-based surveys or phone calls.





Example 2.1.2: M-Shwari (Kenya), Solidaridad (Dominican Republic)

In Kenya, M-Shwari and M-Pawa rely on user feedback, sending instant SMS's. This system provides important product details to consumers and offers mechanism through which users can register their comments. M-Shwari's model has also inspired similar mobile based, small value, short term loan products in Tanzania (M-Pawa), Senegal, and the Philippines.

In the Dominican Republic, Solidaridad accurately assesses willingness and capacity of beneficiaries to repay by conducting an in-person survey. The survey is a way to measure informal income and savings in Solidaridad's risk calculations.

Cause 2.2: Users make poor decisions based on misinformation and misaligned incentives between provider and consumer.

Users, particularly poor and low incomes individuals, lack awareness of both digital systems and financial products. They are not financially literate and are not always required to read terms of service agreements. Providers often fail to disclose information before providing services. As a result, users do not fully understand the product and its accompanying terms and regulations, leading them to make poor financial decisions or withdraw from the market completely.

Mitigation Approach 2.2.1: Conducting financial literacy trainings on how to navigate digital financial services (Implementer: Service Provider)
Providers, NGOs and regulators can offer financial literacy trainings. Trainings must compile the basics of formal finance in order to educate consumers on how to make financial decisions and how to use financial products. Basic financial literacy informs the consumer of what product terms mean, the information contained within the terms, and the





importance of reading and understanding the terms. It also educates them about their roles and responsibilities in their transactions.

Example 2.2.1: The Indian Government (India), Rule-of-thumb based training (India and the Philippines)

The Government of India Guidelines on banking regulations strengthens the role of banking regulators and officials handling customer complaints. The guidelines encourage using customer complaints as a teaching method by identifying critical problems and common trends in those complaints. These findings are incorporated into consumer training to engage customers and educate them about the product and ways to protect themselves.

Programs in India and the Philippines provide rule-of-thumb-based training. These trainings focus on delivering simple financial heuristics instead of in-depth information about financial concepts. The idea is that simple trainings focused on basic and necessary concepts, may be more effective at improving financial behaviors and business outcomes. Voice-based mobile phone messages are a suitable medium to deliver easy-to-remember and easy-to-adopt rules of thumb.





Consumer Risk 3: Misinformed consumers due to lack of transparency

Without transparency on the part of credit providers, consumers miss relevant information that they use to make financial decisions. Compounding this, consumers often have limited resources and knowledge about financial terminology which prohibits them from understanding often complex financial products and services. As a result, consumers, **are** unable to understand or gain correct, clear, and/or comprehensive information about credit products. Consumers, then, make poor or suboptimal choices.

Cause 3.1: Providers fail to communicate product terms clearly, and poor customer decisions follow.

Providers fail to communicate lending terms, product features, and legal or contractual commitments. Communication is either missing or unclear. Even when product information is provided, consumers may not be required to read the terms before accessing the loan.

Mitigation Approach 3.1.1: Establishing transparency standards through regulation and private sector practices (Implementer: Regulator)

Transparency standards can be achieved through two different means: regulation and industry standards. First, regulators can holistically and systematically drive transparency practices and establish standards to ensure that terms are clearly communicated to the consumer. Possible approaches that can generate and implement transparency policies are:

- *Consumer Protection Regime:* Laws that provides clear consumer protection rules and provides adequate institutional





arrangements to ensure fair implementation, in terms of enforcement and redressal mechanisms;

- *Code of Conduct for non-bank credit institutions:* Principles based code of conduct that establishes standards for providers, similar to those followed by banking institutions; and
- *Dispute resolution mechanism:* Judicial systems that ensure fair dispute resolution between consumers and providers.

Second, industry-driven standards in the form of code of conduct rules or self-regulation include:

- *Disclosure of use of customer information:* Providers must be clear and open about what customer information they gather and their information storage practices;
- *Statements on key product features:* Providers must clearly explain each product offering, its features, terms, and conditions; and
- *Honest advertising and sales materials:* Product must be advertised without misleading consumers about what they will receive and what their responsibilities are.

It is important to note that many of these recommended practices may only work in a highly functioning, efficient government structure. Therefore, implementation in developing countries needs to tailor legislation based on their socio-economic, political, and regulatory environments.





Example 3.1.1: National Financial Inclusion Strategy (Paraguay)^{xxv}

The strategy is aimed to 'accomplish financial inclusion by leveraging the combined power of the private, non-profit, public sectors and civil society to identify realistic targets' to 'reduce poverty and promote economic growth in Paraguay'. Under this, the Secretary for Consumer Protection (SEDECO) is an umbrella consumer protection regulator whose remit covers all sectors including the financial sector. Under the national strategy, SEDECO issues market conduct rules including transparency standards for all regulated firms.

Mitigation Approach 3.1.2: Establishing standard definitions for the cost of digital credit and all bundled services (Implementer: Regulator)

Digital credit redefines or **generates new** financial terminology.

Establishing definitions for financial terms means clearly defining interest rates, credit-related fees, and fees for bundled products. This will enable implementers to disclose in a clear, conspicuous and understandable way, the cost of the product, inclusive of interest rates and fees. Cost disclosure also explains monetary and non-monetary consequences of early, partial, late or non-repayment of the loan. Such information can be sent electronically via mobile device, in a timely and cost effective manner.

Example 3.1.2: TechnoServe, Vodacom, CGAP and Arifu (Kenya)

TechnoServe, in partnership with Vodacom, CGAP and Arifu in Kenya, developed an SMS-based program for farmers. The program disseminated new or confusing product information with standard definitions, to the farmers. The program disclosed this information in order to prevent confusion and help farmers improve their business practices through proper use of their credit products.





Mitigation Approach 3.1.3: Providing user education at sign-up about the product and how to calculate a loan limit (Implementer: Service Provider) Borrowers may not know the cost or conditions of the product before they accept the conditions and become obligated to pay.^{xxvi} While product information and reminders for payment inform users who have already participated in the process, this can limit the consumer's ability to make suitable choices in picking the right product and terms. Providing information at the sign-up stage puts them in a better decision making position, helps them manage their finances and payment habits more effectively from the beginning, and also increases their confidence in the service. Provider transparency at the beginning is critical for users to trust a service. If users trust a service, they will use it more frequently and for a wider range of transactions.

Example 3.1.3: M-Shwari (Kenya)

User surveys from M-Shwari in Kenya showed that user experiences could be improved by increasing user education at sign up stages. Detailed information about services, especially methods of calculating loan limits, help users better understand how the product and its structure work, while reducing their trial limit and increasing consumer confidence in the service.





Risk 4: Lack of timely access to required funds

A majority of users in emerging markets work with a small amount of income, used mainly for day-to-day expenditures. Without stable incomes and significant savings, they often resort to credit to meet some immediate or unanticipated needs. Loan disbursement delays prevent these consumers from borrowing money in time to meet those needs. Without the necessary funds, consumers may not be able to cope with emergencies. Alternatively, borrowers may seek out other, more predatory loan providers who are more readily accessible.

Cause 4.1: Delays in loan disbursement due to fund availability.

A critical aspect of financial management for low income users is the timely availability of funds. Because many emerging markets are cash economies, funds are distributed electronically, and then consumers draw cash from agents, usually retailers. Retailers, however, do not always have reliable supply of cash on hand to disburse the loan amount. This problem is especially persistent in semi-urban and rural areas where the funding channels are limited.

Mitigation Approach 4.1.1: Improving agents' liquidity management
(Implementer: Service Provider)

Agents must manage their cash distribution better by securing enough funding for lending at all times. Some measures that can improve agent liquidity are:

- *Funding delivery mechanism:* Improved funding delivery mechanism for agents (more frequent cash delivery to agents, etc.)
Financial monitoring system: Digital credit providers are aware of the real time financial situations of their agents.





- *Agent approval processes:* Providers set criteria to determine the financial health and liquidity of retailers in order to determine retailers who serve as reliable agents.

Example 4.1.1: Agents and runners (Bangladesh), EasyPaisa (Pakistan)

In Bangladesh, agent aggregators designate 'runners,' employees who bring cash to agents on a regular basis. The practice provides frequent opportunities for retailers to rebalance their cash supply whenever needed.^{xxvii}

Pakistan's EasyPaisa "analyzes data on airtime sales to verify the financial health and liquidity of a business before approving a retailer as an agent."^{xxviii}

Cause 4.2: Delays in loan disbursement due to weak transaction mechanisms. Even if funds are sufficient, poor infrastructure and insufficient facilities to undertake disbursements may cause delays. Agents, bank branches, or other withdrawal mechanisms process disbursement requests slowly or lack machinery like ATM machines to withdraw cash. Such delays leave the user vulnerable in emergency situations.

Mitigation Approach 4.2.1: Enabling account to account interoperability

between financial and mobile providers (Implementer: Regulator)

The goal of interoperability is to use collective funds more effectively and respond to consumer demands with greater speed. Interoperability between financial and mobile providers facilitates account-to-account transfers in real time. Through this mobile money stream customers are able to source money directly from a variety of platforms and applications.^{xxix} Transactions across different mobile money systems, banking systems and other online services are simplified.^{xxx} Therefore,





interoperability establishes a well-connected system to move money around quickly and easily, and protect consumers from delayed transactions. These partnerships foster better transfers but also encourage streamlined business practices. Integrative systems allow "secure, real-time transaction processing; managing pre-funded settlement and reconciliation; implementing robust, aligned compliance policies and procedures."^{xxxii}

Example 4.2.1: Airtel, Tigo, M-Pesa and Vodacom (Tanzania)

Since 2012, Vodacom Tanzania and M-Pesa have been working to integrate their services. GSMA reports that Vodacom has realized real-time account-to-account transfers to and from a number of providers in Tanzania's banking sector.^{xxxii}

Internationally, Safaricom, MoneyGram and Western Union are interoperable, as are Tigo and Airtel.





Consumer Risk 5: Consumer security and privacy breaches

Consumer data and information leakages leave individuals vulnerable to unwanted use of their data by hackers and third party purveyors. Consumer's financial and personal data may be used for identity theft, tax fraud or other criminal activities.

Cause 5.1: Systems vulnerabilities lead to attacks on user data and sensitive information.

Consumer data includes data used by creditors to determine credit-worthiness and transaction data. In order for providers to offer credit, they rely on personal information provided by consumers. Most of this information is transmitted digitally. Transaction details and loan amounts are also transmitted in this way, leaving consumer data vulnerable to attacks.

Data vulnerabilities are confirmed in Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World, which finds that "all but one application [analyzed by researchers] (Zuum) presents at least one major vulnerability that harmed the confidentiality of user financial information or the integrity of transactions, and most applications have difficulty with the proper use of cryptography in some form."^{xxxiii} Personal information, financial information and financial transactions are all exposed due to weak security systems operated by the digital credit provider.

Mitigation Approach 5.1.1: Establishing regulations on standard minimum security practices in handling consumer data to ensure privacy
(Implementer: Regulator)

In digital credit markets consumer data and other information is increasingly used and shared in the lending and borrowing process.





Standard minimum security practices in handling consumer data to ensure privacy sets quality protocol to standardize data security. This can be done through new legislation, rules and regulations, or by utilizing existing laws and expanding their interpretation to include digital finance. Some recommended regulations to set security standards include:

- *Consumer notification:* Providers are required to notify consumers when privacy breaches occur that may leave their data vulnerable and to suggest means for consumers to respond to such breaches.
- *Data misuse liability:* Providers state consumer liability clearly in the terms and conditions.
- *Consumer data destruction protocol:* Providers must maintain quality control standards for how and when to destroy user data.
- *Secure interoperability of data:* When data is shared across providers, they transfer the data securely and use the data consistently.^{xxxiv}

In designing the regulatory framework, the regulators must first consult with stakeholders and determine 1) the way data is being used and 2) the way that data is being protected via provider policies and practices. That way, they can track the main data risks and gaps in provider policies and practices to stem these risks.

Example 5.1.1: Banking Act (Tanzania), Central Bank (Kenya), Data Protection Laws (Ghana), Data Protection Laws (Uganda), Reserve Bank (India)

Tanzania's Banking Act prohibits unauthorized disclosure of transaction information
Kenya's Central Bank credit reference bureau regulations require that credit bureaus protect the confidentiality of customer data.





Ghana is adopting comprehensive data protection laws and establishing commissions to implement them.

Uganda is considering comprehensive data protection laws

India's Reserve Bank's (RBI) implementation of comprehensive reform failed consumers. The Reserve Bank produced guidelines mobile payments. It issued authentication to providers that meet certain security standards. However, Mo(bile) Money, Mo(bile) Problems found that MoneyOnMobile, an Indian provider, had the most security issues among analyzed apps, despite its RBI authentication.

Mitigation Approach 5.1.2: Establishing industry standards on provider use of consumer data (Implementer: Regulator)

Developers and security experts can collaborate on self-regulatory mechanisms and best practices for data retrieval, and use. Such systems will avoid gaps in product delivery and data use. Regulators can provide training and authentication to providers who abide by secure data use practices, but the system will be industry driven rather than regulated. The consumers will face the same data standards across platforms.

Example 5.1.2: Security Standards Council (United States)

United States's PCI Security Standards Council released a Data Security Standard, which governs the security requirements for entities that handle cardholder data

Bankers and Insurance Associations (Zambia)^{xxxv}

The Bankers Association of Zambia set conduct standards for cooperating members. The conduct standards are intended to guide provider's interaction with consumers. The Insurers Association of Zambia (IAZ) also produced its own code of conduct geared





toward consumer protection. Association bodies like these incentivize participation by creating a mechanism to share best practices, coordinate activities, and other ancillary services. When adherence to the codes of conducts is made a requirement to maintain membership, the likelihood of widespread, industry-level adoption is improved.

Cause 5.2: Providers fail to communicate how they use consumer data.

Because many consumers do not have formal credit histories, providers rely on other consumer data to identify credit-worthiness, which determines loan limits and credit risk. Data used by providers includes phone records, mobile transactions, phone bills, and social networks. This data may be used in lieu of or in addition to conventional credit assessment information depending on availability of other information. Data use in this way is important for reaching unbanked and underbanked consumers at scale.

Consumers, however, are often uninformed about the data that providers are using and how they are using it to determine credit-worthiness. Consumers' lack of financial literacy, desperation for a loan, and inaccessibility of loan terms (often terms appear in difficult to read forms or on small screens), compound the problem, undermining informed consent. Information is difficult for consumers to acquire because they do not know the right questions to ask or lack the opportunities to ask questions, and because the information that is provided is on a small screen, usually via SMS.





Mitigation Approach 5.2.1: Regulating standards for handling security breaches (Implementer: Regulator)

Customers are unable to secure their own data. Research shows that breaches can happen even when customers protect their PINs and other sensitive information. However, the customer is the party held responsible for the outcomes of data attacks. Regulators should require providers to standardize the use of data and their response to security attacks. Providers should adequately secure customer data but, in the event of a breach, have standard practices to react and protect customers. Providers should standardize practices of customer notification and liability. When data breaches occur, protocol should exist to ensure customers are aware of the security issue and the steps the provider is taking to repair the damage. In cases where data is mishandled by the provider, providers should be responsible and liable for the outcomes.

Example 5.2.1: eIDAS Regulations (European Union)^{xxxvi}

The EU's eIDAS Regulation makes service providers compensate consumers who are victims of poor security practices. The regulation strengthens security practices and ascribes consistent security protocol and government redressal for provider neglect.

Mitigation Approach 5.2.2: Obtaining consumer consent for use of their data (Implementer: Regulator)

Providers can facilitate processes that allow consumers to understand how their data is being used. Consumers should be able to give or deny consent for the use of specific data, its use, its disclosure to outside entities (private, public or legal), and its retention and destruction. Consumers issue separate consent for each different type of data that





providers are accessing. Providers should also inform consumers of the provider's data policies, especially in regard to selling consumer data. Codifying consent practices and recourse should be available in the case of data misuse.

Example 5.2.2: Credit reporting laws (Kenya) and Mobile Privacy Principles (GSMA)
Kenya's credit-reporting laws give consumers the right to access their information, dispute it if incorrect or incomplete, and have it corrected.

GSMA has developed a set of mobile privacy principles that address transparency, use restrictions, choice, retention and security. Under the Mobile Privacy Principles: Promoting Consumer Privacy in the Mobile Ecosystem, "These principles were developed in 2011 and describe the way in which mobile consumers' privacy should be respected and protected when consumers use mobile applications and services that access, use or collect their personal information. The key overarching objective of these principles is to foster business practices and standards that deliver meaningful transparency, notice, choice and control for mobile users with regards to their personal information and the safeguarding of their privacy. The principles also provide the basis for which the GSMA and its members develop further guidance in specific areas or context. For example, they laid the foundation for the Privacy Design Guidelines for Mobile Application Development (2012), which articulate the Mobile Privacy Principles in more functional terms and are intended to help drive a more consistent approach to protecting user privacy across mobile platforms, applications and devices"^{xxxvii}





Risk 6: Fraud liability

Fraud is a significant issue in both the financial and digital markets. Fraud appears in various forms and at multiple stages in the lending and borrowing chain, impacting providers and consumers in critical ways. Fraud occurs in different forms including SIM swap, social engineering scam (such as phishing), ATMs scams^{xxxviii}, unauthorized account access by employees and so on.^{xxxix}

Cause 6.1: Consumers are held responsible for fraudulent account activity. Terms of service place the responsibility for most forms of fraudulent activity solely on the consumer. For instance, “Airtel Money, GCash, mCoin, Oxigen Wallet, MoneyOnMobile, and Zuum have terms that hold the customer solely liable for most forms of fraudulent activity.”^{xl}

Mitigation Approach 6.1.1: Setting regulation to clarify liability in case of fraud and procedures for claims^{xli}. (Implementer: Regulator)

Governments can enforce laws to protect customers from fraud by setting security standards that stem fraudulent activity in the first place.

Regulators can also delineate circumstances under which providers or consumers should be liable. For example, laws may stipulate that customers are not held liable for fraudulent transactions beyond a certain amount.





Example 6.1.1: The Indian Government (India), Fraud liability model (United States of America)

Indian Government guidelines establish fraud insurance mechanisms. In cases of fraudulent activity, money is credited back to credited back to customers' accounts. Accounts are blocked pending an investigation to mitigate further risk.^{xlii}

In the United States, the consumer is not held liable for fraudulent transactions beyond a small amount.^{xliii} This model is based on the assumption that users are vulnerable to fraud that they are powerless to prevent, combat, or detect prior to incurring losses.

Cause 6.2: Providers mishandle fraudulent activity.

Upon identifying fraudulent activity, providers often lack concrete processes and the machinery to take up the cases and address fraud. Fraud redressal systems are particularly weak in emerging markets small providers often occupy the market.

Mitigation Approach 6.2.1: Establishing Fraud and Risk Management Service (Implementer: Service Provider)

FRMS, "a collaborative fraud control system...[requires] participating digital financial services providers to contribute data about their fraudulent and non-fraudulent accounts and transactions."^{xliv} This data will include fraud detection algorithms and scoring, and compliance management for anti-fraud regulations.





Example 6.2.1: Level One Project FRMS (The Bill and Melinda Gates Foundation)

FRMS is one of the two shared core layer of the Gates-Foundation-led “Level One Projects.”^{xlv}, a model used for a country-level digital financial services (DFS) system. This is “designed to dramatically reduce the cost of transactions, adjusting the economics to encourage aggressive attempts to bring the poor into the formal economy.”^{xlvi} The fraud control system, is an integral part of this effort, creating a level playing field for all players, by building one common digital platform across the world.

Cause 6.3: Consumers are unable to deal with fraud due to lack of information or awareness on the subject.

Mitigation Approach 6.3.1: Improving customer awareness of fraud schemes^{xlvii}. (Implementer: Service Provider)

As the CGAP study shows, financial services providers can provide customers with security product tips and security advice. In addition, alerts through SMS, radio announcements, newspaper ads, and social networking sites can be utilized. It is effective in the short run and can be introduced by any single financial services provider. Various kinds of alerts can be flexibly introduced depending on financial capacity. Since this approach can be introduced by any provider depending on budget and expertise, this is relatively less burdensome for providers to implement. Additionally, complementary actions from regulations may be needed to mandate that all providers to take sufficient mitigation measures.





Example 6.3.1: Banco WWB (Colombia) and M-PESA (Kenya)

According to CGAP, Banco WWB in Colombia “mandates that agents and sales officers provide product security tips to customers upon opening an account or registering for mobile money.”^{xlviii}

CGAP found that Safaricom’s M-PESA utilizes “SMS alerts, radio announcements in local dialects, newspaper ads, and other efforts to improve customer awareness.”^{xlix}

Cause 6.4: Consumers are unable to deal with fraud due to lack of redressal mechanisms

While there are more general mechanisms and forums to address consumer disputes, various emerging markets lack resources and entry points for consumers to take issues of credit fraud for redressal. Given the financial and technological nature of the digital credit market, unique risks arise, and therefore, specific mechanisms that address these unique challenges must be designed.

Mitigation Approach 6.4.1: Establishing redressal mechanisms to address fraud disputes and setting minimum standards for recourse and staff qualifications. (Implementer: Regulator)

Recourse mechanisms are less developed and less visible than in traditional financial services. For this reason, consumers often do not know where or how to seek recourse when they have an issue with their financial product. There should be clear points of access for consumers to reach customer service agents and/or report claims and issues that they encounter with the product.

It is effective to reduce the fraud risk in the short run and can be introduced by a single financial services provider. However, it may be





costly for digital credit providers to introduce new mechanism and/or hire qualified staff in the longer term. Complementary actions from regulations may also be needed in order to incentivize or mandate digital financial services providers to implement redressal mechanisms.

Example 6.4.1: ABSA (South Africa) and F-Road (China)

According to CGAP, ABSA operating in South Africa “places a temporary hold on a customer account if it becomes aware of a SIM swap. The customer has 36 hours to authenticate and advise ABSA if the SIM swap was legitimate.”^l

CGAP reported that F-Road in China utilize “a SIM overlay card, in which a thin SIM is placed on top of the customer’s regular SIM, so that financial activity is tied to the overlay card while phone activity is tied to the regular SIM. The data sent through the overlay card are encrypted, so only the FSP has access to the data.”^{li}





SECTION IV

Assessment and Comparative Analysis of Mitigation Approaches



STAGES

Stage One: Research Gaps

The mitigation approaches are divided into two categories for assessment: those that have been studied and tested and those that remain untested. Untested mitigation approaches illustrate where research gaps exist. Further research on identified yet unstudied approaches will help determine each approach's potential to protect consumers, ability to scale across economies, and limitations. **Recommendations subsequently fall into two categories: research recommendations associated with untested risk mitigation approaches and risk mitigation priorities associated with analysis of risk mitigation approaches based on evaluations.**


Stage Two: Assessment of Risk Mitigation Approach

Available research and evaluations provided an opportunity to assess the mitigation approaches. Extrapolating from evaluations, the assessment considers how each mitigation approach impacts the overall focus areas and goals of CEGA's fintech priorities. The specific criteria for assessment include:

Minimizing consumer risk: Team team evaluated the efficacy of the approach based on its ability to minimize or eliminate the identified consumer risk.

Facilitating financial inclusion: The team evaluated the saliency of each approach's contribution to supply side and demand side financial inclusion indicators. Concerning the supply side (providers or regulators who implement the mitigation approach), financial inclusion relies on limiting costs for implementers such that they are not deterred from providing financial services or developing the market for fintech. Concerning the demand side (consumers who interact with the mitigation approaches), financial inclusion relies on limiting the burden that the mitigation approach poses on consumers such that they are not driven away from the market.

Maximizing welfare: The team evaluated the value that each mitigation approach added to the lives and economic opportunities of communities served. Analysis determined mitigation approaches' ability to generate material and social well-being by creating a secure environment to access digital financial products.





ANALYSIS OF MITIGATION APPROACHES

Mitigation Approach 1.1. 1: Setting interest rate cap through regulation

To assess interest rate cap regulations, we looked at a study by the International Monetary Fund on the impact of the new Financial Services Law in Bolivia on financial stability and inclusion:

Minimizing consumer risk: Interest rate caps protect consumers from credit traps that result from predatory lending practices. Governments set interest rates based on the market. Lenders either keep their interest rates under the cap or pay a fee to consumers. Consumers are able to pay back their loans because they are not burdened by large interest rates and accumulating debt. In order to minimize financial risk to consumers, interest rate is calculated according to the market.

The difficulty that governments face, however, is determining the interest rate limit. Governments need a lot of information about market conditions and lenders' response to decreased interest rates in order to set and modify the interest rate cap. According to the IMF study the cap should be set at a reasonable level, which means "high enough to allow lenders to make a profit but low enough to eliminate excess profit due to a lack of competition. If set well below the market rate, this can limit access to credit, reduce transparency, and decrease product diversity and competition, thereby adversely affect financial inclusion." Failure to properly calculate the interest rate as per market conditions, would mean this approach would not be effective.

Facilitating financial inclusion: Interest rate caps can adversely affect financial





inclusion. High interest rates are sometimes a way for lenders to protect themselves against risks associated with lending to unbanked and underbanked consumers. If caps are set too low, providers may be unable to recover their costs of supplying the loan. Interest rate caps also limit lenders' profitability which lead to market exit. Decreased product diversity and competition hurts consumers as well, limiting low-income populations' access to finance.

Maximizing welfare: Many digital credit lenders operate outside of the formal financial sector, and regulations do not apply to them. Informal lending practices can threaten the welfare of low income consumers. In general, interest rate cap regulations do not govern digital credit providers. Economic welfare could benefit from broadening regulation to currently informal sectors.

Mitigation Approach 1.3.2: Designing alternative credit scoring methods

To assess alternative credit scoring methods, we looked at two reports; one by the World Bank on consumer protection and oversight frameworks and one by PWC on the non-banking finance market.

Minimizing consumer risk: 'Big Data' and advancements in technology mean that alternative credit scoring models have tremendous potential. Alternative credit scoring models can prevent overindebtedness dependent on the following features:

- *Regulatory compliance:* Providers should use consumer data in compliance with all regulations governing consumer credit evaluation. The potential transaction costs associated with compliance of financial regulations would act as a burden on development of viable and sustainable





enterprises that design and implement these models.

- *Predictive power:* As observed in a study on Non-Banking Finance Companies: The Changing Landscape “Different sources of data have varying levels of predictability, a fact which must be considered while evaluating which type of data should be used”. When using alternative sources of data, it is crucial that such data is able to provide futuristic insights into customer behavior, particularly in relation to likelihood of repayment. Misinterpretation and misuse of data can leave consumers vulnerable and expose them to greater financial risk.
- *Integration with traditional sources of data:* Financial institutions must realize that the alternate sources of data constitute only one part of the credit scoring process and must assess the compatibility of various sources of alternate data with their existing credit underwriting mechanisms. This will help them develop a more complete picture of their customers' creditworthiness, thus reducing the default rate.

Facilitating financial inclusion: Alternative credit scoring models enable lenders to reach a diverse and widespread audience. In emerging markets like India and Kenya, few people have financial footprints. Alternative credit scoring provides a mechanism to determine creditworthiness without relying on past formal financial activities. Lenders are able to scale their products because physical infrastructure is not an issue. They only need access to consumer data which they can access digitally.

Maximizing welfare: Alternative models make it easier for lenders to include consumers who are traditionally excluded from the formal credit systems due to their lack of credit history. By using different kinds of consumer data and creating systems to meet specific needs and cultural contexts, these models can stem





discriminatory practices and contribute financial outcomes for populations who would otherwise be left out.

Mitigation Approach 2.1.1: Establishing Know Your Customer norms

To assess Know Your Customer norms, we looked at research by Next Billion on the Level One Project, a prototype of a payment system meant to protect consumers.

Minimizing consumer risk: KYC norms have the potential to become an integral part of financial regulatory systems. When implemented well, they alleviate credit burdens by customizing products that meet consumer needs. KYC norms can be effective dependent upon the following features:

- *KYC methods:* Many KYC regulations were created before much of the modern technology world as we know it existed and thus the means of collecting information about customers is generally outdated. Moving loan applications online reduces risk by automating the process, increasing reliability and repeatability of the process. Automated online processes can easily be updated to keep up with regulation changes. Additionally, automated online processes are quicker and easier for both loan officer and borrower.
- *Efficiencies of Online Systems:* Most emerging markets have moved to a predominantly online system. In digital credit markets, online systems have the potential to better achieve cost product efficiencies:
 - *Customization of requirements:* Online verification systems can be customized to suit any individual bank's needs. This streamlines the process, reducing the cost of loan origination, and the process is quicker and easier for both customer and provider. Flexibility to





banks to tailor their requirements, within reasonable bounds of regulation, can achieve significant gains by minimizing transaction costs both to the provider and the consumer.

- *Constant updating:* information pertinent to customers can be updated any time regulations change or new databases become available. Online systems can be updated quickly and painlessly with new regulations or changes of existing rules. This can be a cost effective, transparent, and timely system that meets the needs of consumers.
- *Consistent process:* Because the verification system is automated, it happens the same way each time. This eliminates the possibility of human error throughout the lending process.
- *Enhanced, real-time verifications:* Online loan applications can check additional data-sources for up-to-the-minute verifications, giving lenders a more complete borrower profile. It is not practical to add extra verifications to manual loan application process, which consumers complain is already too time-consuming and slow.

Facilitating financial inclusion: KYC norms enable a quick, cost effective and transparent processes to deploy and operate digital finance products. Providers benefit from improved relationships with customers. They understand their customers better and are able to use their knowledge to improve products, which prevents products from being misused. Consumers benefit from better products that respond more directly to individual, unique needs. Because many digital credit consumers lack financial literacy and experience, they do not always know what types of financial products they need. KYC norms bridge the gap in consumer needs and product features.





Maximizing Welfare: KYC norms improve the economic health of consumers. Lenders can better match financial products to consumer needs, which leads to improved livelihoods. The financial system functions better with the implementation of KYC norms.

Mitigation Approach 2.1.2: Obtaining user feedback on product and service

To assess obtaining user feedback, we looked at a study by CGAP evaluating outcomes for consumers who accesses M-Shwari's complaints and user feedback mechanism via Safaricom's call center:

Minimizing consumer risk: M-Shwari's complaints and feedback mechanism "has been credited within Safaricom for reducing non-performing loans through proactive support to and consultation with delinquent borrowers." Granting users an easy way to provide and receive feedback encourages the consumer to use the credit product more effectively, thereby reducing credit burden born by product misuse.

Facilitating financial inclusion: While more consumers may enter the market if information about the financial product is accessible, the supply side of the market may suffer. CGAP notes that in order for M-Shwari to generate the connection between consumers and agents, it relies on "Safaricom's impressive call center." The costs to providers of this service may be burdensome, however, it behooves providers for consumers to use their product better. Financial inclusion relies on providers making the product and service available, so financial inclusion would not be improved if providers viewed the costs of





obtaining user feedback as too high.

Maximizing welfare: CGAP found that consumers were unaware of each of the companies involved in their financial product. Because multiple organizations including a credit provider, a cash transfer provider, a bank and a mobile company are usually all involved in the product offering, consumers were confused about who to contact to provide feedback or seek more information. Even with the existence of communication centers, however, consumers still did not always understand who to seek information from due to lack of coordination across implementers. While consumers know and trust certain providers, like M-PESA and M-Shwari, they are less familiar with other parts of the ecosystem handling their credit products.

Mitigation Approach 2.2.1: Conducting financial literacy trainings on how to navigate digital financial services

To assess financial literacy trainings, we looked at three evaluations; one by the J-PAL and Innovations for Poverty Action on Tablet based financial literacy trainings in Colombia; one by Innovations for Poverty Action on 'rule of thumb' financial literacy programming in India; and one by Drexler et al. on 'rule of thumb' financial literacy programming in the Dominican Republic.

Minimizing consumer risk: Financial literacy programs have been implemented as a solution to protect financially inexperienced consumers from misusing financial products and consequently experiencing poor economic outcomes. While many financial literacy programs have been found to have no significant impact on customers, simple programs appear to work. A study of rule of thumb





training proved to improve financial practices. Another study by IPA, however, found that phone trainings for micro-entrepreneurs did not improve business practices or profitability. For this reason, mitigating consumer risk through financial literacy varies greatly according to the complexity or simplicity of the program and its delivery.

Facilitating financial inclusion: Financial literacy programs are costly to both consumers and providers. Programs, no matter the structure, take time to complete and participate in. J-PAL tested a program that called participants to share financial literacy information, and only 48% of participants who picked up the phone call actually listened to the whole message. The burden of the program appears to outweigh the benefits for the participants. Providers also incur costs to set up financial literacy trainings which may deter them from participating.

Maximizing welfare: As previously stated, financial literacy is proven effective only when provided in a certain, simplified manner. However, if effective, the results improve economic well-being. J-PAL's evaluation of LISTA, a tablet based financial literacy program, found that "LISTA... had significant impacts on financial knowledge, attitudes toward formal financial services, adoption of financial practices, and financial outcomes. They also reported more trust in banks and other community members and professed more optimism. Importantly, LISTA participants demonstrated a greater ability to put their knowledge into practice than those in the comparison group. They were more likely to set savings goals and felt more capable of teaching others how to use ATMs. These women also reported saving more, both formally (immediately following tablet use) and informally (immediately following tablet use and one year after the program was initiated)." This positive economic improvement in the lives of the target





population is tempered by failures in program design and delivery.

Mitigation Approach 4.1.1: Improving agents' liquidity management

To assess improved agent liquidity, we looked at research by CGAP on consumer risk mitigation.

Minimizing consumer risk: Poor liquidity practices prevents consumers from getting their funds. This has huge implications in emerging markets because most house cash-based economies. Ensuring that agents who disburse funds actually have cash provides a solution for consumers accessing their funds right when they need them.

Facilitating financial inclusion: When agents are unable to disburse funds, consumers are forced to move from one disbursement point to the next until the consumer has the requisite amount of cash. Improved agent liquidity reduces costs that consumers face in trying to access their funds which could bring more consumers into the market. Additionally, producers are able to scale this approach at a low cost.

Maximizing welfare: Many low income consumers are borrowing in order to meet an immediate need, like a medical emergency. If they are denied funds, they are unable to address their financial need. Improved agent liquidity ensures that consumers are able to meet their needs and are not forced to look elsewhere for loans, like to a family member or associate. This improves social and economic welfare.





Mitigation Approach 4.2.1: Enabling account to account interoperability between financial and mobile providers

To assess interoperability, we looked at research by GSMA on interoperability in Tanzania.

Minimizing consumer risk: Interoperability has the potential to increase the efficiency of payment systems, preventing disbursement delays. Contributing to the digitization of cash in the ecosystem, interoperability makes payments more efficient and advances financial inclusion by bridging the gap between banked and unbanked consumers. Account-to-account coordination is especially relevant because the financial industry is growing and the number and types of accounts has increased. The GSMA study found some key conditions of successful launch of interoperability that help minimize consumer risk. The efficacy of this approach depends on:

- *“Solid operational foundations:* Strong and secure mobile money operational foundations reinforce not only customer trust, but also that of partners. Interoperability requires providers to integrate, and by extension expose, their system. A core tenet for a successful partnership relies in the mutual trust that both providers have robust and reliable systems and foundations. Going forward, the GSMA’s Code of Conduct for Mobile Money Providers can become a more efficient method to demonstrate commitment to operational best practices”
- *“Risk mitigation and management:* Interoperability adds a layer of complexity, and identifying and mitigating associated risks is crucial. Providers must have the capacity to develop and agree upon multilateral rules to make sure that risks are being mitigated, customers are protected,





and settlement is managed properly, among others.”

- *“Delivering a customer-centric experience:* Customer experience remains critical for interoperability to scale. If the customer journey is overly complicated, customers will continue to find alternative solutions for cross-net transactions—either reverting to cash or a multi-SIM solution”.

Facilitating financial inclusion: “Implementing interoperability is complex, both commercially and technically, and also requires resources and investments,” which makes it difficult to achieve at scale. Some emerging country contexts, lack the economic capabilities to support an interoperable system. While interoperability may improve the quality of product delivery, it may come at the cost of competition. Not all providers in a digital credit marketplace will have the capacity to implement an interoperable system.

Maximizing welfare: The providers who are likely to leave the market because of high costs to implement interoperability are likely those who “efficiently facilitate low-value transactions.” With a decrease in the quality and number of low-value digital credit offerings, consumers of low-value credit will suffer. More low-income individuals who would only borrow in small installments would be excluded, diminishing economic well-being and welfare.

On the other hand, interoperability may improve economic health by ensuring that users can access their funds immediately. It also makes all of the credit products better and more efficient because they work together.





Mitigation Approach 5.2.2: Obtaining consumer consent for use of their data

To assess obtaining consumer consent for data usage, we looked at an evaluation by CGAP on data usage in mobile credit scoring in Tanzania.

Minimizing consumer risk: CGAP and FirstAccess study determined that consumers were very interested in how their data was used; however, "concluded... that consumers' desperation for a loan overruled consumers desire to protect their data." Consumers would not be willing to turn down a loan in order to protect their data. Because consumers will consent to any data settings, this approach is unlikely to protect consumer data or diminish privacy breaches.

Facilitating financial inclusion: Low financial literacy and limited space to explain data usage can be overcome by simple messages. CGAP research shows that simple and informal SMS messages and brochures are effective at conveying necessary security and data usage information to consumers. Providers can continue testing which messages are most salient to provide consumers with relevant information. The simple nature of this system supports financial inclusion because neither party is burdened by the supply of these messages and both can benefit.

Maximizing welfare: With increasing scope and potential for abuse, it's necessary to protect the security and privacy of individuals' data whilst still encouraging the free flow of information and the sharing and use of data for innovation and social benefits. Obtain consumer consent for use of data contributes to welfare by providing users with dominion over their information.





Mitigation Approach 6.1.1: Setting regulation to clarify liability in case of fraud and procedures for claims

To assess fraud procedure regulation, we looked at research by Reaves et al. on data leakage where researchers hacked digital financial service providers to expose their security vulnerabilities.

Minimizing consumer risk: Regulation ensures that consumers are aware of fraud liability practices and that liability is determined fairly. Regulations that place fraud liability on providers would address consumer fraud liability. Right now, consumers are largely held responsible for fraud. Shifting liability to providers through regulation could alleviate the consequences of fraud. However, regulation would not protect consumers against fraud. Researchers from the University of Florida found that even when taking measures to protect their data, consumers still faced data breaches. Making consumers more aware of their liability is unlikely to change outcomes because data leakage is occurring even when consumers are employing good practices.

Facilitating financial inclusion: Setting new regulations on fraud would take a huge amount of coordination. Governments would need to involve all stakeholders that contribute to digital credit including lenders, mobile companies, and banks. The costs to ensure proper coordination in order to effectively draft and implement the fraud requirements may burden the government and implementers. Additionally, shifting fraud liability on to providers could deter them from lending.





Maximizing welfare: Consequences of fraud impact low income communities disproportionately because they lack a safety net to support them when they face financial damage. Insuring against fraud in a way that the burden does not fall only on the consumer improves welfare. Removing some of the vulnerability that low income consumers have creates better outcomes for these populations.





SECTION V

Recommendations



RESEARCH

Tracking consumer risk enabled us to identify the tools available to stem risk. We recommend resources are allocated to studies that fill the below research gaps. Providers and regulators are implementing these approaches as illustrated by the examples, so there is ample opportunity to study the salience of these methods. Researchers could seek out the specific implementers cited in the examples in order to examine the associated approach.

- 1.1.2: Providing innovative and incentive driven structures for interest rates and loan terms.
 - 1.1.3: Sending SMS with summary product information and ensuring customers understand lending terms.
 - 1.2.1: Developing fair and competitive markets through coordinated market regulations.
 - 1.2.2: Harmonizing market conduct rules and oversight for all comparable credit offerings for all providers and channels.
 - 1.4.1: Establishing a licensing process for digital credit lenders and setting strict penalties for manipulation.
 - 3.1.1: Establishing transparency standards through regulation and private sector practices.
 - 3.1.2: Establishing standard definitions for the cost of digital credit and all bundled services.
 - 3.1.3: Providing user education at sign-up about the product and how to calculate a loan limit.
 - 5.1.1: Establishing regulations on standard minimum security practices in handling consumer data to ensure privacy.
 - 5.1.2: Establishing industry standards on provider use of consumer data.
 - 5.2.1: Regulating standards for handling security breaches.
 - 6.2.1: Establishing Fraud and Risk Management Service.
 - 6.3.1: Improving customer awareness of fraud schemes.
 - 6.4.1: Establishing redressal mechanisms to address fraud disputes and setting minimum standards for recourse and staff qualifications.
- 

RISK MITIGATION PRIORITIES

Based on the evaluations and studies of each approach, we scored them against our criteria. The three point scale (1= Harmful; 2= No Impact; 3= Beneficial) measures how well each approach fulfills each criteria. The rank shows the strength of the approaches in each area. The scale can be used to match priorities to risk mitigation.

For example, 'Setting regulation to clarify liability in case of fraud and procedures for claims' maximizes welfare but does not facilitate financial inclusion. If interests are primarily welfare, this approach meets those interests.

Mitigation Approach	Study	Minimizing consumer risk	Facilitating financial inclusion	Maximizing welfare
1.1.1: Setting interest rate cap through regulation.	International Monetary Fund ⁷⁴	1	1	2
1.3.1: Designing alternative credit scoring methods.	World Bank, ⁷⁵ PWC ASSOCHAM India ⁷⁶	3	3	3
2.1.1 Establishing Know Your Customer norms	Next Billion ⁷⁷	2	3	3
2.1.2: Obtaining user feedback on product and service.	CGAP ⁷⁸	3	2	2
2.2.1: Conducting financial literacy trainings on how to navigate digital financial services.	J – PAL & Innovations for Poverty Action, ⁷⁹ IPA, ⁸⁰ Keeping it Simple: Financial Literacy and Rules of Thumb ⁸¹	2	1	2
4.1.1: Improving agents' liquidity management.	CGAP ⁸²	3	3	3
4.2.1: Enabling account to account interoperability between financial and mobile providers.	GSMA ⁸³	2	2	2
5.2.2 Obtaining consumer consent for use of data.	CGAP ⁸⁴	1	3	3
6.1.1: Setting regulation to clarify liability in case of fraud and procedures for claims.	Mo(bile), Mo(bile)Problems: Analysis of Branchless Banking Applications in the Developing Worlds ⁸⁵	2	1	3



SECTION VI

Appendices

CONSUMER PROTECTION LANDSCAPE MAP

Mapping the consumer risk landscape includes the following topics that together provide an overview of consumer risk and risk mitigation strategies:

Primary risks consumers face in the fintech space

Causes that drive consumer risks

Mitigation approaches that allay consumer risks and causes

Examples of mitigation strategies that have been implemented

Risk	Cause	Risk Mitigation Approach	Example
Credit traps and Overindebtedness.	1.1: Lenders set higher interest rates than traditional banking.	1.1.1: Setting interest rate cap through regulation.	Financial Services Law (Bolivia)
		1.1.2: Providing innovative and incentive driven structures for interest rates and loan terms.	KAITE with EcoCash (Zimbabwe), Agribusiness Systems International and GADCO with TigoCash(Ghana), SmartMoney (Tanzania), Zoono (Zambia)
		1.1.3: Sending SMS with summary product information and ensuring customers understand lending terms.	M- Shwari (Kenya)
	1.2: Informal moneylending industry operate outside of formal financial services regulations.	1.2.1: Developing fair and competitive markets through coordinated market regulations.	Association of Banks (Peru), Banking and Finance Services Act (Zambia)
		1.2.2: Harmonizing market conduct rules and oversight for all comparable credit offerings for all providers and channels.	Bank Negara Malaysia's Consumer Market Conduct Framework (Malaysia)
	1.3: Credit scoring algorithms are flawed.	1.3.1: Designing alternative credit scoring methods.	Vodacom (Tanzania)
	1.4: Providers use price manipulation where they have hidden fee structures or "teaser" rates.	1.4.1: Establishing a licensing process for digital credit lenders and setting strict penalties for manipulation.	Reserve Bank (India), Draft Framework on Branchless Banking (Zambia)
Unnecessary burden of credit that fails to meet consumer needs, due to misuse or poor usage of credit products.	2.1: Providers lack know your customer processes that help them assess user needs and challenges.	2.1.1: Establishing Know Your Customer norms.	National biometric platform (India)
		2.1.2: Obtaining user feedback on product and service.	M-Shwari (Kenya)
	2.2: Users make poor decisions based on misinformation and misaligned incentives between provider and consumer.	2.2.1: Conducting financial literacy trainings on how to navigate digital financial services.	The Indian Government (India)
Misinformed consumers due to lack of transparency.	3.1: Providers fail to communicate product terms clearly, and poor customer decisions follow.	3.1.1: Establishing transparency standards through regulation and private sector practices.	National Financial Inclusion Strategy (Paraguay)
		3.1.2: Establishing standard definitions for the cost of digital credit and all bundled services.	TechnoServe, Vodacom, CGAP and Arifu (Kenya)

CONSUMER PROTECTION LANDSCAPE MAP

Risk	Cause	Risk Mitigation Approach	Example
Lack of timely access to required funds.	4.1: Delays in loan disbursement due to fund availability.	4.1.1: Improving agents' liquidity management.	Agents and runners (Bangladesh), EasyPaisa (Pakistan)
	4.2: Delays in loan disbursement due to weak transaction mechanisms.	4.2.1: Enabling account to account interoperability between financial and mobile providers.	Airtel, Tigo, M-PESA and Vodacom (Tanzania)
Consumer security and privacy breaches.	5.1: Systems vulnerabilities lead to attacks on user data and sensitive information.	5.1.1: Establishing regulations on standard minimum security practices in handling consumer data to ensure privacy.	Banking Act (Tanzania), Central Bank (Kenya), Data Protection Laws (Ghana), Data Protection Laws (Uganda), Reserve Bank (India)
		5.1.2: Establishing industry standards on provider use of consumer data.	Security Standards Council (United States)
	5.2: Providers fail to communicate how they use consumer data.	5.2.1: Regulating standards for handling security breaches.	eIDAS Regulations (European Union)
		5.2.2: Obtaining consumer consent for use of their data.	Credit reporting laws (Kenya), Mobile Privacy Principles (GSMA)
Fraud liability.	6.1: Consumers are held responsible for fraudulent account activity.	6.1.1: Setting regulation to clarify liability in case of fraud and procedures for claims.	The Indian Government (India)
	6.2: Fraudulent activity is mishandled.	6.2.1: Establishing Fraud and Risk Management Service.	Level One Project FRMS (Gates Foundation)
	6.3: Consumers are unable to deal with fraud due to lack of information or awareness on the subject.	6.3.1: Improving customer awareness of fraud schemes.	Banco WWB (Colombia), M-PESA (Kenya)
	6.4: Consumers are unable to deal with fraud due to lack of redressal mechanisms.	6.4.1: Establishing redressal mechanisms to address fraud disputes and setting minimum standards for recourse and staff qualifications.	ABSA (South Africa), F-Road (China)





SCORECARD FOR CONSUMER PROTECTION PROPOSALS

Directions on Scoring


- Each box is 1 point
 - Add up each column for total point count; the higher the score, the stronger the case
-

Part 1: Relationship to the goal: Will the project contribute to consumer risk reduction?

Addresses one or multiple identified consumer risks (1 pt each)

- Credit traps and Over-indebtedness
- Unnecessary burden of credit that fails to meet consumer needs, due to misuse or poor usage of credit products
- Misinformed consumers due to lack of transparency
- Lack of timely access to required funds
- Consumer security and privacy breaches
- Fraud liability
- Section Score

Addresses one or multiple causes of consumer risks (1 pt each)

- Lenders set higher interest rates than traditional banking
 - Informal moneylending industry operate outside of formal financial services regulations
 - Credit scoring algorithms are flawed
 - Providers use price manipulation where they have hidden fee structures or “teaser” rates
 - Providers lack know your customer processes that help them assess user needs and challenges
 - Users make poor decisions based on misinformation and misaligned incentives between provider and consumer
 - Providers fail to communicate product terms clearly, and poor customer decisions follow
 - Delays in loan disbursement due to fund availability
 - Delays in loan disbursement due to weak transaction mechanisms
 - Systems vulnerabilities lead to attacks on user data and sensitive information.
 - Providers fail to communicate how they use consumer data.
 - Consumers are held responsible for fraudulent account activity
 - Fraudulent activity is mishandled
 - Consumers are unable to deal with fraud due to lack of information or awareness on the subject
 - Consumers are unable to deal with fraud due to lack of redressal mechanisms
 - Section Score
 - Part 1 Total Score
- 



SCORECARD FOR CONSUMER PROTECTION PROPOSALS

Part 2: Need: Does the project address research gaps?

Addresses one or multiple unstudied risk mitigation approaches (1 point each)

- Providing innovative and incentive driven structures for interest rates and loan terms
- Sending SMS with summary product information and ensuring customers understand lending terms
- Developing fair and competitive markets through coordinated market regulations
- Harmonizing market conduct rules and oversight for all comparable credit offerings for all providers and channels
- Establishing a licensing process for digital credit lenders and setting strict penalties for manipulation
- Establishing transparency standards through regulation and private sector practices
- Establishing standard definitions for the cost of digital credit and all bundled services
- Providing user education at sign-up about the product and how to calculate a loan limit
- Establishing regulations on standard minimum security practices in handling consumer data to ensure privacy
- Establishing industry standards on provider use of consumer data
- Regulating standards for handling security breaches
- Establishing Fraud and Risk Management Service
- Improving customer awareness of fraud schemes
- Establishing redressal mechanisms to address fraud disputes and setting minimum standards for recourse and staff qualifications
- Section Score

Addresses no unstudied risk mitigation approaches (1 point)

- Yes
- Section Score

Part 2 Total Score





SCORECARD FOR CONSUMER PROTECTION PROPOSALS

Part 3: Relevance: Does the project contribute to previous research?

Addresses one or multiple previously studied risk mitigation approaches (1 point each)

- Setting interest rate cap through regulation
- Designing alternative credit scoring methods
- Establishing Know Your Customer norms. Obtaining user feedback on product and service
- Conducting financial literacy trainings on how to navigate digital financial services
- Improving agents' liquidity management
- Enabling account to account interoperability between financial and mobile providers
- Obtaining consumer consent for use of their data
- Section Score

Contributes to the previous research in new ways (1 point)

- Yes

Addresses no previously studied risk mitigation approaches (1 point)

- Yes

Part 3 Total Score

Part 4: Measurement methods: Does the project include methods to measure key indicators?

Minimizes consumer risk: Addresses problems faced by the consumer (1 point)

- Yes Facilitates financial inclusion [consumer's perspective]:
Would the consumers be so burdened by the cost of accessing the tool that they leave the market? (1 point)
- No Facilitates financial inclusion [implementer's perspective]:
Is the cost of providing the service so high to implementers that they leave the market? (1 point)

Maximizes welfare: Improves economic opportunities for the target population (1 point)

- Yes

Part 4 Total Score

Total Score (Parts 1-4):



SECTION VII

References

REFERENCES

Document References:

1	Heng, Dyna. <i>Impact of the New Financial Services Law in Bolivia on Financial Stability and Inclusion</i> , "IMF Working Paper." 2015, https://www.imf.org/external/pubs/ft/wp/2015/wp15267.pdf
2	<i>Ibid.</i>
3	Cadena, Ximena, and Antoinette Schoar, <i>Remembering to Pay? Reminders vs. Financial Incentives for Loan Payments</i> , idea42 and MIT, 2011, http://aschoar.scripts.mit.edu/aschoar2016/wp-content/uploads/2016/07/Remembering-to-Pay-Cadena-Schoar-April2011.pdf
4	<i>Ibid.</i>
5	<i>Ibid.</i>
6	<i>Ibid.</i>
7	<i>Innovative Digital payment Mechanisms Supporting Financial Inclusion Stocktaking Report</i> , The World Bank Group's Payment System Development Group, http://www.afi-global.org/sites/default/files/publications/stocktaking-of-innovative-digital-payment-mechanisms-supporting.pdf
8	Cadena, Ximena, and Antoinette Schoar, <i>Remembering to Pay? Reminders vs. Financial Incentives for Loan Payments</i> , idea42 and MIT, 2011, http://aschoar.scripts.mit.edu/aschoar2016/wp-content/uploads/2016/07/Remembering-to-Pay-Cadena-Schoar-April2011.pdf
9	<i>Innovative Digital payment Mechanisms Supporting Financial Inclusion Stocktaking Report</i> , The World Bank Group's Payment System Development Group, http://www.afi-global.org/sites/default/files/publications/stocktaking-of-innovative-digital-payment-mechanisms-supporting.pdf
10	<i>Innovative Digital payment Mechanisms Supporting Financial Inclusion Stocktaking Report</i> , The World Bank Group's Payment System Development Group, http://www.afi-global.org/sites/default/files/publications/stocktaking-of-innovative-digital-payment-mechanisms-supporting.pdf
11	Cadena, Ximena, and Antoinette Schoar, <i>Remembering to Pay? Reminders vs. Financial Incentives for Loan Payments</i> , idea42 and MIT, 2011, http://aschoar.scripts.mit.edu/aschoar2016/wp-content/uploads/2016/07/Remembering-to-Pay-Cadena-Schoar-April2011.pdf
12	Cook, Tamara, and Claudia McKay, <i>How M-Shwari Works: The Story So Far</i> , April 2015, https://www.cgap.org/sites/default/files/Forum-How-M-Shwari-Works-Apr-2015.pdf



13	<p><i>Global Financial Development Report: Financial Inclusion, 2014</i>, http://siteresources.worldbank.org/EXTGLOBALFINREPORT/Resources/8816096-1361888425203/9062080-1364927957721/GFDR-2014_Complete_Report.pdf</p>
14	<p><i>G20 High-Level Principles on Financial Consumer Protection</i>, Organization for Economic Co-operation and Development (OECD), October 2011, https://www.oecd.org/g20/topics/financial-sector-reform/48892010.pdf</p>
15	<p><i>Case Study: Empowering and protecting Financial Consumers: Bank Negara Malaysia's Consumer and Market Conduct Framework</i>, Alliance for Financial Inclusion, http://www.afi-global.org/sites/default/files/publications/afi%20case%20study%20malaysia.pdf</p>
16	<p><i>Global Survey on Consumer Protection and Financial Literacy: Oversight Frameworks and Practices in 144 Economies</i>, The World Bank, 2014, http://documents.worldbank.org/curated/en/775401468171251449/pdf/887730WP0v20P10port0CPFL0Box385258B.pdf</p>
17	<p><i>Non-Banking Finance Companies: The Changing Landscape</i>, ASSOCHAM India & PWC, https://www.pwc.in/assets/pdfs/publications/2016/non-banking-finance-companies-the-changing-landscape.pdf</p>
18	<p><i>First Access and Vodacom Tanzania Ink Financial Inclusion Deal</i>, CSR Wire, March 2014, http://www.csrwire.com/press_releases/36806-First-Access-and-Vodacom-Tanzania-Ink-Financial-Inclusion-Deal</p>
19	<p><i>Global Financial Development Report: Financial Inclusion, 2014</i>, http://siteresources.worldbank.org/EXTGLOBALFINREPORT/Resources/8816096-1361888425203/9062080-1364927957721/GFDR-2014_Complete_Report.pdf</p>
20	<p><i>Regulatory Approaches to Mobile Financial Services in Latin America</i>, Alliance for Financial Inclusion, August 2014, http://www.afi-global.org/sites/default/files/publications/afi_lac_special_report_en_annex_low_res.pdf</p>
21	<p><i>ITU Focus Group on Digital Financial Services: Main Recommendations</i>, International Telecommunications Union, March 2017, https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/201703/ITU_FGDFS_Main-Recommendations.pdf</p>
22	<p><i>RBI Releases Guidelines for Licensing of Payment Banks</i>, Reserve Bank of India, November 27, 2014, https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=32615</p>
23	<p><i>Republic of Zambia: Diagnostic Review of Consumer Protection and Financial Literacy</i>, The World Bank, October 2012, http://documents.worldbank.org/curated/en/189281483674576175/pdf/111725-WP-P123485-PUBLIC-v1-ASBTRACT-SENT-ZambiaCPFLVoll.pdf</p>





24	<i>RBI Releases Guidelines for Licensing of Payment Banks</i> , Reserve Bank of India, November 27, 2014, https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=32615
25	<i>Paraguay National Financial Inclusion Strategy (2014-2018)</i> , December 2014, http://www.afi-global.org/sites/default/files/publications/paraguay-2014-2018-national-financial-inclusion-strategy.pdf
26	<i>Digital Credit: Consumer Protection for M-Shwari and M-Pawa Users</i> , CGAP, April 21, 2015, http://www.cgap.org/blog/digital-credit-consumer-protection-m-shwari-and-m-pawa-users
27	<i>Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks</i> , CGAP, June 2015, http://www.cgap.org/sites/default/files/Focus-Note-Doing-Digital-Finance-Right-Jun-2015.pdf
28	<i>Ibid.</i>
29	<i>Mobile Money Choosing a technical model for A2A interoperability: Lessons from Tanzania and Pakistan</i> , GSMA, December 2015, http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/01/2015_GSMA_Choosing-a-technical-model-for-A2A-interoperability_Lessons-from-Tanzania-and-Pakistan.pdf
30	<i>Ibid.</i>
31	<i>The Impact of Mobile Money Interoperability in Tanzania: Early Data and Market Perspectives on Account-to-Account Interoperability</i> , GSMA, September 2016, http://www.gsma.com/mobilefordevelopment/programme/mobile-money/the-impact-of-mobile-money-interoperability-in-tanzania-early-data-and-market-perspectives
32	<i>Ibid.</i>
33	Reaves, Bradley, et al. <i>Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World</i> , University of Florida August 2015, https://www.usenix.org/node/190885
34	<i>ITU Focus Group on Digital Financial Services: Main Recommendations</i> , International Telecommunications Union, March 2017, https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/201703/ITU_FGDFS_Main-Recommendations.pdf
35	<i>Republic of Zambia: Diagnostic Review of Consumer Protection and Financial Literacy</i> , The World Bank, October 2012, http://documents.worldbank.org/curated/en/189281483674576175/pdf/111725-WP-P123485-PUBLIC-v1-ASBTRACT-SENT-ZambiaCPFLVoll.pdf
36	<i>Mobile Identity: A Regulatory Overview</i> , GSMA, January 2015, http://www.gsma.com/personaldata/wp-content/uploads/2015/01/Personal-Data-Regulatory-Overview-2014.pdf
37	<i>Mobile Privacy Principles: Promoting Consumer Privacy in the Mobile Ecosystem</i> , GSMA, 2016, http://www.gsma.com/publicpolicy/wp-content/uploads/2016/10/GSMA-Privacy-Principles.pdf





38	Lubitz, Lenny, <i>5 ATM Scams That Can Break the Bank</i> , Investopedia, March 2016, http://www.investopedia.com/articles/pf/08/avoid-atm-scams-atm-fraud.asp
39	<i>Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks</i> , CGAP, June 2015, http://www.cgap.org/sites/default/files/Focus-Note-Doing-Digital-Finance-Right-Jun-2015.pdf
40	Reaves, Bradley, et al. <i>Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World</i> , University of Florida August 2015, https://www.usenix.org/node/190885
41	<i>Promotion of Payments through Cards and Digital Means</i> , Government of India Ministry of Finance Department of Economic Affairs Currency & Coinage Division, February, http://dea.gov.in/sites/default/files/Promo PaymentsMeans Card Digital 0.pdf
42	<i>Ibid.</i>
43	Reaves, Bradley, et al. <i>Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World</i> , University of Florida August 2015, https://www.usenix.org/node/190885
44	<i>It's the Ecosystem, Stupid – Exploring the 'Digital Poverty Stack,' Part 1</i> , NextBillion, August 2016, http://nextbillion.net/nexthought-monday-its-the-ecosystem-stupid-exploring-the-digital-poverty-stack-part-1/
45	Level One Project, https://leveloneproject.org/about-us/
46	<i>It's the Ecosystem, Stupid – Exploring the 'Digital Poverty Stack,' Part 1</i> , NextBillion, August 2016, http://nextbillion.net/nexthought-monday-its-the-ecosystem-stupid-exploring-the-digital-poverty-stack-part-1/
47	<i>Five Ways Providers Can Do Digital Finance Better</i> , CGAP, June 2015, http://www.cgap.org/blog/five-ways-providers-can-do-digital-finance-better
48	<i>Ibid.</i>
49	<i>Ibid.</i>
50	<i>Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks</i> , CGAP, June 2015, http://www.cgap.org/sites/default/files/Focus-Note-Doing-Digital-Finance-Right-Jun-2015.pdf
51	<i>Ibid.</i>
52	Heng, Dyna. <i>Impact of the New Financial Services Law in Bolivia on Financial Stability and Inclusion</i> , "IMF Working Paper." 2015, https://www.imf.org/external/pubs/ft/wp/2015/wp15267.pdf





53	<i>The Worrying Trend of Interest Rate Caps in Africa</i> , CGAP, November 2013, http://www.cgap.org/blog/worrying-trend-interest-rate-caps-africa
54	<i>Non-Banking Finance Companies: The Changing Landscape</i> , ASSOCHAM India & PWC, https://www.pwc.in/assets/pdfs/publications/2016/non-banking-finance-companies-the-changing-landscape.pdf
55	<i>Ibid.</i>
56	<i>Relaxation in KYC Norms a Big Boost for Financial Inclusion</i> , Business Standard, June 2014, http://www.business-standard.com/article/finance/relaxation-in-kyc-norms-a-big-boost-for-financial-inclusion-114061201052_1.html
57	<i>Ibid.</i>
58	<i>Ibid.</i>
59	<i>Ibid.</i>
60	<i>Relaxation in KYC Norms a Big Boost for Financial Inclusion</i> , Business Standard, June 2014, http://www.business-standard.com/article/finance/relaxation-in-kyc-norms-a-big-boost-for-financial-inclusion-114061201052_1.html
61	Digital Credit: Consumer Protection for M-Shwari and M-Pawa Users, CGAP, April 21, 2015, http://www.cgap.org/blog/digital-credit-consumer-protection-m-shwari-and-m-pawa-users
62	<i>Ibid.</i>
63	Rules of Thumb: Providing Timely Useful Financial Management Advice at Scale in India, Innovations for Poverty Action, http://www.poverty-action.org/study/rules-thumb-providing-timely-useful-financial-management-advice-scale
64	<i>The Impact of Mobile Money Interoperability in Tanzania: Early Data and Market Perspectives on Account-to-Account Interoperability</i> , GSMA, September 2016, http://www.gsma.com/mobilefordevelopment/programme/mobile-money/the-impact-of-mobile-money-interoperability-in-tanzania-early-data-and-market-perspectives
65	<i>Ibid.</i>
66	<i>Ibid.</i>
67	<i>Ibid.</i>





68	<i>Ibid.</i>
69	Bindo, Renata, <i>Operational Guidelines for Interoperability: A Customer-Centric Approach</i> , GSMA. September 2015, http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/09/2015_GSMA_Operational-guidelines-for-interoperability-A-customer-centric-approach.pdf
70	<i>Ibid.</i>
71	<i>Ibid.</i>
72	<i>Simple Messages Help Consumers Understand Big Data</i> , CGAP, September 2014, http://www.cgap.org/blog/simple-messages-help-consumers-understand-big-data
73	Addai, Abenna, and Kate Rinehart, <i>A Balancing Act: Using Innovation to Enhance Financial Inclusion while Protecting Personal Data</i> , 11 October 2016, http://www.afi-global.org/blog/2016/10/innovation-enhance-financial-inclusion-and-protect-personal-data
74	Heng, Dyna. <i>Impact of the New Financial Services Law in Bolivia on Financial Stability and Inclusion</i> , "IMF Working Paper." 2015, https://www.imf.org/external/pubs/ft/wp/2015/wp15267.pdf
75	<i>Global Survey on Consumer Protection and Financial Literacy: Oversight Frameworks and Practices in 144 Economies</i> , The World Bank, 2014, http://documents.worldbank.org/curated/en/775401468171251449/pdf/887730WP0v20P10port0CPFLOBox385258B.pdf
76	<i>Non-Banking Finance Companies: The Changing Landscape</i> , ASSOCHAM India & PWC, https://www.pwc.in/assets/pdfs/publications/2016/non-banking-finance-companies-the-changing-landscape.pdf
77	<i>It's the Ecosystem, Stupid – Exploring the 'Digital Poverty Stack,' Part 1</i> , NextBillion, August 2016, http://nextbillion.net/nexththought-monday-its-the-ecosystem-stupid-exploring-the-digital-poverty-stack-part-1/
78	<i>Digital Credit: Consumer Protection for M-Shwari and M-Pawa Users</i> , CGAP, April 21, 2015, http://www.cgap.org/blog/digital-credit-consumer-protection-m-shwari-and-m-pawa-users
79	Attanasio, Orazio, et al., <i>Tablet-Based Financial Education in Colombia</i> , J-PAL and Innovations for Poverty Action (IPA), 2015-2016, https://www.povertyactionlab.org/evaluation/tablet-based-financial-education-colombia
80	<i>Rules of Thumb: Providing Timely Useful Financial Management Advice at Scale in India</i> , Innovations for Poverty Action, http://www.poverty-action.org/study/rules-thumb-providing-timely-useful-financial-management-advice-scale





81	Drexler, Alejandro, et al., "Keeping It Simple: Financial Literacy and Rules of Thumb", <i>American Economic Journal: Applied Economics</i> 2014, 6(2): 1-31, http://dasp.ecn.ulaval.ca/PAGEII_references_R1/Theme_3PDF/DrexlerFischerSchoar2014.pdf
82	<i>Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks</i> , CGAP, June 2015, http://www.cgap.org/sites/default/files/Focus-Note-Doing-Digital-Finance-Right-Jun-2015.pdf
83	<i>The Impact of Mobile Money Interoperability in Tanzania: Early Data and Market Perspectives on Account-to-Account Interoperability</i> , GSMA, September 2016, http://www.gsma.com/mobilefordevelopment/programme/mobile-money/the-impact-of-mobile-money-interoperability-in-tanzania-early-data-and-market-perspectives
84	Mazer, Rafe, et al., <i>Informed Consent, How Do We Make It Work for Mobile Credit Scoring?</i> , CGAP, August 2014, chrome-extension://oemmndcbldboiebfnladdacbfmadadm/ https://www.cgap.org/sites/default/files/Working-Paper-Informed-Consent-in-Mobile-Credit-Scoring-Aug-2014.pdf
85	Reaves, Bradley, et al. <i>Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World</i> , University of Florida August 2015, https://www.usenix.org/node/190885

Additional References:

2015 Mobile Insurance, Savings & Credit, GSMA, May 2016, <http://www.gsma.com/mobilefordevelopment/programme/mobile-money/2015-mobile-insurance-savings-credit-report>

Women and Mobile Money - Insights from Kenya, GSMA, December 2015, <http://www.gsma.com/mobilefordevelopment/programme/connected-women/women-and-mobile-money-insights-from-kenya>

Abhijit Banerjee, et al. *A multifaceted program causes lasting progress for the very poor: Evidence from six countries*, *Science*, vol 348, Issue 6236, 15 May 2015, <http://science.sciencemag.org/content/348/6236/1260799>

Niny, Khor, *Assessing Mandated Credit Programs: Case Study of the Magna Carta in the Philippines*, *Asian Development Bank*, November 2015, <https://www.adb.org/publications/assessing-mandated-credit-programs-magna-carta-philippines>

Deep Dive: Using pre-paid Visa card to disburse government-to-person (G2P) payments in the Dominican Republic, CEQA, October 2015

Mobile Money Deployment Tracker, GSMA, <http://www.gsma.com/mobilefordevelopment/m4d-tracker/mobile-money-deployment-tracker>





2015 Mobile Insurance, Savings & Credit Report, GSMA, May 2016, <http://www.gsma.com/mobilefordevelopment/programme/mobile-money/2015-mobile-insurance-savings-credit-report>

Banerjee, Abhijit, et al. "Six Randomized Evaluations of Microcredit: Introduction and Further Steps." *American Economic Journal: Applied Economics* vol. 7, no. 1, January 2015 (pp. 1-21), <https://www.aeaweb.org/articles?id=10.1257/app.20140287>

Catalyst Integrated Research Plan, Catalyst, January 2017

Catalyst Strategic Plan, Catalyst, December 2016

Hanouch, Michel, and Greg Chen, *Promoting Competition in Mobile Payments: The Role of USSD*, CGAP, February 2015, <http://www.cgap.org/publications/promoting-competition-mobile-payments-role-ussd>

Hwang, Byoung-Hwa, and Camilo Tellez-Merchan, *The Proliferation of Digital Credit Deployments*, CGAP, March 2016, <http://www.cgap.org/publications/proliferation-digital-credit-deployments>

Mirzoyants-McKnight, Anastasia, *Value-added Financial Services in Kenya: M-Shwari, Findings from the Nationally Representative FII Tracker Survey in Kenya (Wave 1) and a Follow-up Telephone Survey with M-Shwari Users*, InterMedia, January 2015, <http://finclusion.org/uploads/file/reports/FII-Kenya-M-Shwari-Report.pdf>

Karlan, Dean, et al. *Research and Impacts of Digital Financial Services*, Working Paper 22633, National Bureau of Economic Research, September 2016

Suri, Tavneet, et al. Documenting the birth of a financial economy, PNAS, vol. 109, no. 26, June 26, 2012, <http://www.pnas.org/content/109/26/10257.full.pdf>

Mas, Ignacio, and Dan Radcliffe, *Mobile Payments go Viral: M-PESA in Kenya*, Bill & Melinda Gates Foundation, March 2010, http://siteresources.worldbank.org/AFRICAEXT/Resources/258643-1271798012256/M-PESA_Kenya.pdf

Mas, Ignacio and Colin Mayor, *Savings as Forward Payments: Innovations on Mobile Money Platforms*, December 2015, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1825122

Karlan, Dean and Jonathan Zinman, "Expanding Credit Access: Using Randomized Supply Decisions to Estimate the Impacts", *The Review of Financial Studies*, Volume 23, Issue 1, January 2010.

Blumenstock, Joshua E., et al. "Airtime transfers and mobile communications: Evidence in the aftermath of natural disasters." *Journal of Development Economics*, Vol. 120, May 2016 (pp 157-181)

Manyika, James, et al., *How digital finance could boost growth in emerging economies*, McKinsey Global Institute, September 2016, <http://www.mckinsey.com/global-themes/employment-and-growth/how-digital-finance-could-boost-growth-in-emerging-economies>

