

enable competitors an opportunity to compete on the merits of the prices, quality, variety and innovation of their services.

Overall, the perfect should not become the enemy of the good. A desire to set up the perfect national interoperable system should not be allowed to become so complex to negotiate or costly to impose that it significantly delays addressing important competition problems, where they exist. Interoperability likely serves a very precise policy function, which is to address growing or entrenched dominance of the lead player, so if this can be achieved, its most critical benefits will be realised.

### **3.6 Customer data and risk-based financial services**

Data is of increasing importance to mobile financial services. It is central to improving financial inclusion for more advanced services, such as lending and insurance. Data and its management is also key to profitability, and as a result, it is valuable. Control over access to data, then, is an important commercial and regulatory policy issue.

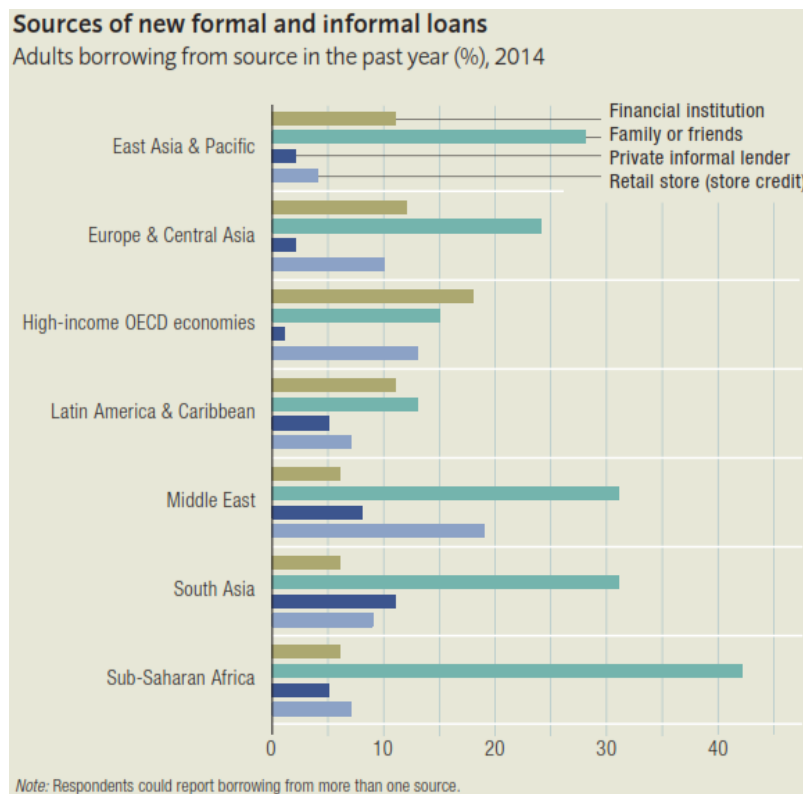
#### **3.6.1 Borrowing practices of the unbanked**

People in lower income regions borrow as often or even more than in higher income countries (section 2.1). Life is precarious and emergencies happen more often, and goods that are public and taken for granted in higher income countries (e.g., health and education) and necessary to advance are provided privately and require investment.

The difference between the wealthier countries and the poor is who they borrow from – and on what terms and conditions. People in lower income countries borrow markedly more from family and friends, and relatively little from formal financial institutions such as banks, microcredit lenders and mobile credit providers (Figure 17). They also borrow from informal money lenders at high rates of interest.

The lack of access to formal financial institutions for loans results from a combination of high cost to banks of building and maintaining bricks and mortar branch networks, lack of credit histories to inform lending decisions, costly due diligence compared to the small amounts involved, and time, cost and legal uncertainty of arranging collateral. Where banks do make loans available, large numbers of people do not avail themselves of such finance because of the burdensome process involved in securing approval and cost of legal fees.

Figure 17. Who do the rich and poor borrow from?



Source: Global Findex database 2014

In this context, mobile credit enters the market with an extraordinary potential to transform financial inclusion, bringing people into the formal lending market. Distribution costs are low because the customer is already identified, the telecommunication network and many agents are already in place, people have handsets, and the technology allows multiple automatized micro-loans at tiny marginal cost.

The key missing piece is the assessment of the customer’s ability to repay. This is doubly difficult where the customer has not borrowed before in the formal sector. If he or she has borrowed before, it may have been before credit bureaus were established in the country and started collecting data. Even if credit bureaus were already collecting data, they likely only collected ‘negative’ data about defaults and not ‘positive’ data about successful repayments. It is in the face of such poverty of data on the customer’s creditworthiness that mobile money customer data enters the scene.

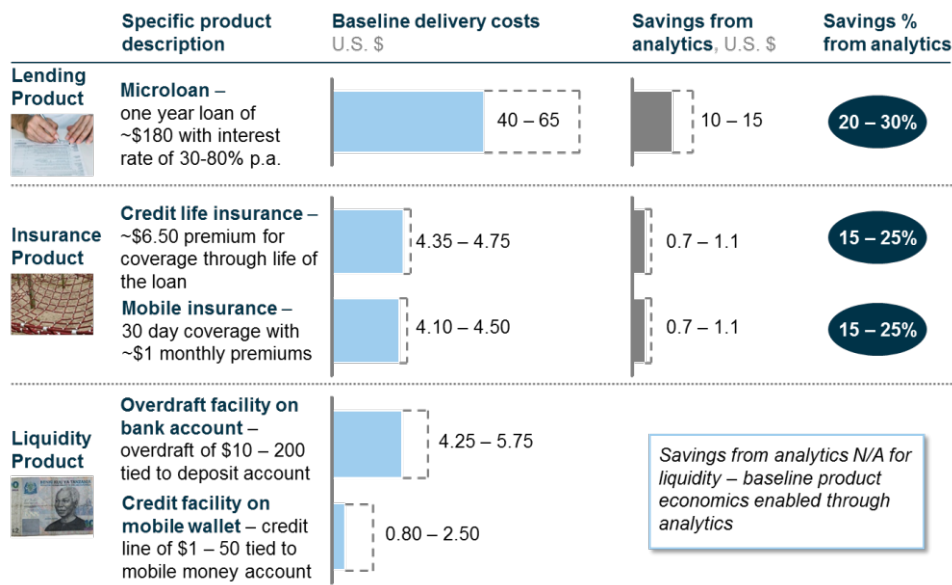
### 3.6.2 Mobile money transaction data and risk-based financial services

Digital activity leaves vast ‘data exhaust’ that can be immensely useful in evaluating risk and reducing cost of lending and insurance.<sup>104</sup> A recent study in Tanzania conducted by CGAP and McKinsey found that using non-traditional data and advanced analytics could reduce the delivery costs of basic microloans of around USD 180 by 20-30 per cent. The majority of savings would be generated from lower underwriting costs, loan application costs, collections costs and risk costs. The same study found that use of such data could reduce delivery costs for one-year credit life and mobile insurance by 15-25 per cent due to lower customer acquisition costs and more effective underwriting.<sup>105</sup>

<sup>104</sup> Mayer-Schonberger, V. and Cukier, K., 2013, *Big Data: A Revolution That Will Transform How We Live, Work and Think*.

<sup>105</sup> CGAP, December 2014, *Projecting Impact of Non-Traditional Data and Advanced Analytics on Delivery Costs*: [www.slideshare.net/CGAP/projecting-impact-of-nontraditional-data-and-advanced-analytics-on-delivery-costs](http://www.slideshare.net/CGAP/projecting-impact-of-nontraditional-data-and-advanced-analytics-on-delivery-costs). Chen, Gregory, and Xavier Faz. 2015. *The Potential of Digital Data: How Far Can It Advance Financial Inclusion?* Focus Note 100. Washington, D.C.: CGAP, January: [www.cgap.org/sites/default/files/Focus-Note-The-Potential-of-Digital-Data-Jan-2015.pdf](http://www.cgap.org/sites/default/files/Focus-Note-The-Potential-of-Digital-Data-Jan-2015.pdf).

Figure 18. Data driven cost-reductions in loans and insurance in Tanzania



Source: CGAP, December 2014, Projecting Impact of Non-Traditional Data and Advanced Analytics on Delivery Costs, available here.

Smartphones now have a wide range of capabilities<sup>106</sup> and phone use leaves a trail of data, such as phone use – quantity of use, as well as location and type (voice, SMS and data) – and locations. Airtime purchases give an indication of capacity to pay. Where users use value added services (VAS), the type and scale of these provides information about the user’s choices and, where VAS are for entertainment (e.g., ring tones), they give an indication of disposable income. Where customers are accessing the Internet, they leave vast information about their interests and, through social networking, their relationships. In addition, predictive tools such as psychometrics questioning on attitudes and abilities can help lenders build on credit scoring methods to produce a basic evaluation of entrepreneurial risk of business borrowers.

Data about a customer’s revenues and expenditure habits – his or her cash flow – enables the lender to assess the risk of the customer defaulting on the loan, and so to manage that risk better in terms of credit approvals, loan amounts, loan durations and other conditions. Data about a customer’s situation and behaviour will also enable the insurer to determine better what insurance to provide, and on what terms. Such data can be pieced together from mobile money activities. Innovative MNOs and banks can together use the customer’s mobile money transaction data history and the bank’s lending expertise to produce credit scores and instant lending decisions that determine loan amounts and terms.

<sup>106</sup> Capabilities include: communication through voice and texting/messaging, call history records, Internet access, location ID, biometrics, unique ID, touch screen, camera, graphical interface, Near Field Communications (NFC), remote monitoring and USSD menus.

**Box 8. Data analytics for mobile financial services**

Cignifi<sup>1</sup> has provided data analytics to MNOs in Mexico, Ghana and Uganda<sup>2</sup>, an airtime financing company in the Philippines and credit card company in Brazil. It develops and operates systems to analyse mobile phone data to assess customer risk, linking mobile phone customers and financial service providers. Cignifi technology helps lenders to identify potential borrowers lacking credit history, setting tiered financial products according to the level of default risk. It will also assess the probability of a consumer using a specific financial product, thereby improving acceptance and activation rates and reducing customer acquisition costs. Cignifi generates revenue per credit score generated, by product developed and success fees.

Founded in Chile, Tiaxa<sup>3</sup> supports MNOs in providing micro credit in over 20 countries in Latin America, Asia and Africa. It carries out anonymous user behaviour analytics and credit scoring, risk management, and also runs technological and commercial processes for the disbursement and collection of loans. It “analyses macro and micro business variables, such as service usage and uptake, pricing effectiveness, user consumption and top-up behaviour and user response to certain campaigns, unique user, ARPU and user NPV, net-addition analysis, churn prediction, as well as technical and operational variables, such as platform and service uptimes, throughputs, networking and processing bottlenecks, charging efficiency, among others, allow us to suggest an effective plan to our clients, which leads to sustained economic results.”<sup>4</sup> Tiaxa also provides MNOs with infrastructure, clearinghouse and revenue enhancement services.

Other firms developing ways to connect viable customers lacking sufficient credit histories or scores with access to finance by exploiting transaction behaviour and interactive communication data to assess risk include Revolution Credit<sup>5</sup> and Juntos Finanzas.<sup>6</sup>

<sup>1</sup> See <http://www.cignifi.com/>

<sup>2</sup> Cignifi has assisted International Finance Corporation (IFC) in setting up mobile credit scoring for Airtel in Uganda.

<sup>3</sup> See <https://www.tiixa.com/>

<sup>4</sup> See here.

<sup>5</sup> See <http://www.revolutioncredit.com/about-us/>

<sup>6</sup> See <http://juntosglobal.com/> and Valenzuela, M., Holle, N., and Noor, W., CGAP, *Juntos Finanzas, A Case Study*, October 2015: <https://www.tiixa.com/managed-services/applied-business-analytics/>

In China, Alibaba built mobile credit products for ecommerce vendors using credit scoring based on Internet usage and other data points. The automated lending system, which does not require direct contact with the lender, qualifies borrowers for unsecured loans based on revenue growth, transaction data, rating in the industry, user ratings and purchases and poor behaviour, usage levels and repeat buyers.<sup>107</sup>

In many countries, Internet penetration and usage remains low, and people still operate predominantly on basic and feature phones rather than smartphones. Safaricom in Kenya has launched successful mobile credit offers with two banks (M-Shwari with CBA and KCB M-Pesa with KCB) with extremely high increases in the number of account holders and rapid rise in the number of loans made (see Box 9). In Tanzania in 2014, Vodacom and CBA launched M-Pawa, a MNO savings product using a true bank deposit account and offering short-term, unsecured credit from CBA. Airtel offers mobile credit through Timiza, a partnership with Jumo, a microfinance institution. Tigo recently announced

<sup>107</sup> Shrader, L., CGAP, 11 October 2013, *Microfinance, E-Commerce, Big Data and China: The Alibaba Story*: [www.cgap.org/blog/microfinance-e-commerce-big-data-and-china-alibaba-story](http://www.cgap.org/blog/microfinance-e-commerce-big-data-and-china-alibaba-story)

a credit product called Tigo Nivushe with Jumo.<sup>108</sup> MTN and Airtel in Uganda are preparing to launch similar services in Uganda.

### Box 9. Mobile credit in Kenya

Safaricom and Commercial Bank of Africa (CBA) launched the mobile credit product M-Shwari in Kenya in 2012. By combining banking expertise in assessing risk based on behaviour with management of this data, Safaricom and CBA were able to create a system that produces credit scores that could be fed into CBA information systems with pre-set lending criteria to generate instant lending decisions. As a result, a subscriber to the M-Shwari service on the Safaricom menu can apply for and obtain a loan from CBA within minutes, with the funds delivered to his or her M-Pesa mobile wallet.

As customers use this service, they build a credit history with CBA, which includes positive and negative data – which grows in its richness and usefulness to the lender with repeat loans. Subscribing to M-Shwari requires having a Safaricom subscription and includes opening a bank account with CBA, which is instantly done through cross-referencing of customer information already held by Safaricom. M-Shwari had 7.1 million active accounts in September 2015, of which 3.3 million were 30-day active.

The credit scoring algorithm and lending evaluation system appears to be highly effective. Non-performing loan rates are very small, at only about 2 per cent, compared with over 20 per cent in years past. In 2015, Safaricom and Kenya Commercial Bank (KCB) launched a similar product, KCB M-Pesa, using similar processes. By September 2015, there were 2.7 million active KCB M-Pesa customers and 1.3 million 30-day active customers.

Co-operative Bank, with 10 million co-operative members, launched MCo-op Cash mobile money in 2014, which also allowed application for loans. By December 2014, 1.42 million customers had registered for the service. After earlier launching mobile banking through M-Pesa with Safaricom and subsequent withdrawal from the relationship, in 2015 Equity Bank launched Equitel, an MVNO, and a mobile money and credit product (Equitel My Money) to its subscribers. Equitel runs across the Airtel network, but its core profit strategy is in banking services rather than mobile telecommunications. Existing Equity Bank customers can obtain their SIM cards from the bank and activate the My Money account and link between the bank account and Equitel SIM card. It reached 1.1 million subscribers by September 2015.

The M-Pesa transaction data, as well as the credit scores generated from it by algorithms, and the emerging credit history used by CBA and KCB are not available to Equity Bank, Co-operative Bank or other aspiring mobile credit lenders. M-Pesa has a dominant position in mobile money services and the vast majority of customer transaction data that can be used in this manner for credit purposes.

Source: Safaricom Annual Report 2014-5

These products generate and analyse customer data, including history of mobile money deposits (usually to open a loan account a customer must have had a mobile money account for a minimum period such as six months), amounts deposited over time, the values and frequency of mobile money usage and airtime purchases and usage. For instance, a person who tops-up his or her air time regularly with a similar large amount every week is likely to be more reliable than someone who buys small amounts erratically. Thus such behaviour offers a proxy for financial stability. None of

<sup>108</sup> Gordon, C., CGAP, 2 March 2016, Tigo Nivushe, *Tanzania: 5 Ways to Build Trust in Digital Lending*: [www.cgap.org/blog/tigo-nivushe-tanzania-5-ways-build-trust-digital-lending](http://www.cgap.org/blog/tigo-nivushe-tanzania-5-ways-build-trust-digital-lending)









such data depends on smartphones or Internet use – it can all be generated from phone use over the GSM network.

Data analytics depends on sophisticated expertise. Partnerships are increasingly common between MNOs, financial institutions and data analytics firms (see Box 8). The story of how digital data can be used for mobile financial services and to drive financial inclusion is only now beginning. It is likely to extend into finding new customers, deepening knowledge of the customer’s needs and capabilities, and managing risks. The regulatory policy issues are also still in their infancy, with competition, consumer protection and security risks from data protection developing every day (see section 3.7.2).

For instance, correlations are being identified by firms such as Real Impact Analytics between a person’s social network established from call detail records (CDR) in Africa and his or her mobile money uptake. This enables providers to target customers for suitable financial services earlier and more cheaply, and to retain them and provide more useful and valuable services to them as the relationship proceeds.<sup>109</sup> These sorts of innovations reduce the gaps in accessibility, affordability and desirability (see section 1) that have historically prevented low income people from accessing financial services.

Multiple types of partnerships between data analytics firms, financial service providers, MNOs, social networking and other Internet companies can be expected to develop if allowed and motivated to do so.

**Figure 19. Financial services applications of non-traditional data and advanced analytics in developing countries**

Country	Fin. Institution (and partners)	Explanation	Type of analysis
 Kenya	 Safaricom + CBA	<ul style="list-style-type: none"> <li>Customers' mobile top-up and mobile money data are used to evaluate size of initial M-Shwari loan</li> <li>Afterward, M-Shwari repayment data determines size and access to additional lending</li> </ul>	Segmentation Predictive Modeling
 South Africa	 MTN + Bank of Athens	<ul style="list-style-type: none"> <li>Triangulate SIM card usage with bank transaction data to identify irregular patterns and weed out fraud</li> </ul>	Pattern recognition
 Mexico	Traditional retail bank + Major supermarket	<ul style="list-style-type: none"> <li>Retail bank partnered with supermarket to collect data from loyalty cards on retail spending habits</li> <li>Developed predictive models with 200 rules to use spending decisions as input into credit scoring</li> </ul>	Segmentation Predictive Modeling
 Tanzania	 Vodacom Tanzania	<ul style="list-style-type: none"> <li>Customers' mobile usage data used to assign a credit risk score</li> <li>The score can then be used to assess microloans and other financial products from First Access client institutions</li> </ul>	Automation Segmentation
 Brazil	Traditional insurance co + Major telco	<ul style="list-style-type: none"> <li>A provider of basic life and funeral insurance used mobile phone data to segment customers</li> <li>Segmentations allowed for more focused customer acquisition, exclusion of riskiest customers, and more accurate group underwriting</li> </ul>	Segmentation Predictive Modeling

Source: CGAP<sup>110</sup>

### 3.6.3 Competition and regulatory issues

Accompanying the tremendous boost to financial inclusion that is offered by such services are emerging competition concerns.

Where customer data is built up through Internet use, a variety of Internet firms may have access to data collected. When used over GSM networks, the mobile money provider has exclusive control

<sup>109</sup> CGAP, 12 March 2013, *The Power of Social Networks to Drive Mobile Money Adoption*: [www.cgap.org/sites/default/files/social\\_networks.pdf](http://www.cgap.org/sites/default/files/social_networks.pdf)

<sup>110</sup> [www.slideshare.net/CGAP/projecting-impact-of-nontraditional-data-and-advanced-analytics-on-delivery-costs](http://www.slideshare.net/CGAP/projecting-impact-of-nontraditional-data-and-advanced-analytics-on-delivery-costs)