

# BIG DATA, SMALL CREDIT

The Digital Revolution and Its Impact  
on Emerging Market Consumers



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## THE RAPIDLY EVOLVING MARKET FOR CONSUMER CREDIT

We are on the verge of massive change. Technological advances in credit assessment are poised to deliver huge impact by bringing formal, accessible, and affordable credit to hundreds of millions of aspiring middle-class consumers in emerging markets. At the forefront of this change is a burgeoning new field that we're calling "Big Data, Small Credit" (BDSC).

Around the world, many emerging-market consumers remain severely limited in their access to formal financial services, particularly unsecured credit. In India alone, in 2014, more than 400 million people borrowed money—but fewer than one in seven were approved for a formal loan.<sup>1</sup> Indeed, this experience of being "invisible" to formal lenders is prevalent among billions of "thin file" or "no file" consumers living in nearly all of today's emerging markets.

But these consumers may not remain "invisible" to formal lenders for long, thanks in part to their rising use of technology. Well over 650 million adults in India—four out of every five—already have a mobile phone in their pocket, and most of these will be smartphones by 2020. More than 240 million Indians have access to the Internet and social media.<sup>2</sup> Seven in 10 users of mobile broadband smartphone in India regularly stream videos on their phones; six in 10 use social networks.<sup>3</sup> And every time these individuals make a phone call, send a text, browse

the Internet, engage social media networks, or top up their prepaid cards, they deepen the digital footprints they are leaving behind.

These digital footprints are helping to spark a new kind of revolution in lending. In the last few years, a cluster of fast-emerging and innovative firms has begun to use highly predictive technologies and algorithms to interrogate and generate insights from these footprints. These BDSC firms are using varied forms of nontraditional data—from mobile call data records and bill payments to Internet browsing patterns and social media behavior—to create a new way to assess consumer risk, determine the creditworthiness of previously “invisible” consumers, and consequently offer convenient, quicker, and often cheaper loans to the previously underserved. Their prime offering: unsecured, short-term, small-ticket consumer credit served at a dramatically lower cost than traditional loans.

Currently, in India alone, BDSC firms and their technologies have the ability to vastly expand the number of individuals who could gain access to formal credit by nearly 100-160 million new consumers.<sup>4</sup> In the world’s six biggest emerging economies—China, Brazil, India, Mexico, Indonesia, and Turkey—BDSC has the potential to help between 325 million and 580 million people gain access to formal credit for the first time<sup>5</sup>, creating a market opportunity that is too big to ignore.

Moreover, if any individual with a basic feature phone can be assessed based on these digital footprints, then this “credit movement” could rapidly encompass every adult in the world.

The social impact also promises to be profound. BDSC offerings can spur the entry of many millions of aspiring middle-class consumers into the formal credit system. The conversion of a formerly “invisible” consumer

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*The conversion of a formerly “invisible” consumer into a formal customer not only accords dignity and respect but also opens the door to formal savings and insurance services, as well as financial management tools*

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into a “visible” and formal consumer not only accords dignity and respect but also opens the door to formal savings and insurance services, as well as financial management tools. It also allows low- and middle-income households to better capture opportunities and manage economic shocks.<sup>6</sup> Indeed, the advent and rise of BDSC services serves to strengthen the continued growth story of the world’s emerging markets—a mega economic trend of the 21st century.

In the rest of this section, we explore some forces that are shaping the digital revolution in financial services, and delve into the opportunities and challenges facing the cohort of promising BDSC firms. In the two sections that follow, we turn to the users of BDSC services themselves, sharing the results of our in-depth research into “early adopters” in Kenya and Colombia. We report on the motivations, behaviors, and experiences of these aspiring and middle-class consumers who are already taking advantage of these new offerings—and explore their views on two salient issues facing this field in the future: privacy and trust. Finally, in the last section, we offer parting thoughts on what each of several key stakeholder groups—innovators, financial services providers, “data owners”, and regulators—must do in order to optimize the benefits and efficiencies, and also guard against the challenges, of this rapidly evolving but early field.



# *Big Data, Small Credit* is at the Intersection of Three Significant Global Trends



Unprecedented digital and mobile access from the “supercomputers” in our pockets, and associated digital footprints



Rapidly escalating processing power that matches smart algorithms to massive data streams



Billions of global consumers who remain “invisible” to formal financial services

Figure 1

## THE DIGITAL REVOLUTION AND FINANCIAL SERVICES

Historically, there has been a marked disconnect between what developing-market consumers need and the relatively limited set of products and services that are available to them from formal financial services firms. Under the old dynamics and economics of banking—the high costs of serving these consumers via traditional models, the relatively small transaction values involved, and the difficulty of knowing and assessing many of these consumers through traditional means (e.g., credit bureaus)—very few of these products and services have been appropriate, affordable, or accessible to this huge but underserved market.

The digital revolution is rapidly changing these dynamics and creating new opportunities to address many of these longstanding barriers in financial services. Indeed, an additional billion “off the grid” individuals are expected to come online in 2017 alone.<sup>7</sup> Meanwhile, mobile phone penetration is skyrocketing: GSMA estimates that more than six in 10 global smartphone connections will come from developing regions within five years.<sup>8</sup> The advent of the low-cost Android smartphone is expected to further change the dynamics of financial access; it should also expand the variety of services that individuals demand.<sup>9</sup> Since 2010, consumers in India have been able to download and listen to a Bollywood film song for Rs1 (or just over one U.S. cent).<sup>10</sup> Reports show that, in countries like the Philippines, Thailand, and Indonesia, social networks and, in particular, Facebook accessed via mobile phones are the very definition of the Internet.<sup>11</sup>

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*Together, these consumer, data, and digital revolution trends are helping to change the landscape of inclusion and reach, offering the promise that billions of previously “invisible” consumers can be “visible” for the first time<sup>13</sup>*

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As a result, the amount of digital information generated by and about consumers on a daily basis has exploded—creating a steep rise in available “big data,” a trend that has been well documented. CSC estimates that in 2020, data production will reach 35 zettabytes—or 35 billion terabytes of data—which is 44 times greater than the data produced in 2009.<sup>12</sup> Seventy percent of this data is being generated by individuals, not companies—and not just in the developed world, but everywhere.

In turn, processing power is also increasing exponentially. Smartphones now possess more processing power than what was at NASA’s disposal when they sent the first men to the moon. As a result, companies across industries as diverse as financial services, consumer packaged goods, and healthcare are racing to develop advanced analytics capable of finding patterns and structure within the mass of digitized data being produced—and using what they learn to create and tailor new offerings for consumers and markets.

Together, these consumer, data, and digital revolution trends are helping to change the landscape of inclusion and reach, offering the promise that billions of previously credit “invisible” consumers can be “visible” for the first time.<sup>13</sup> The nascent BDSC field sits at the intersection of the explosion of digital data, the rapid development of analytics capable of mining this data for meaningful insight, and the aspiring middle-class consumers who are becoming digital and discoverable for the first time. As this intersection, new opportunities and new consumer value propositions are being created that have the potential to enable formal financial services to viably reach and better serve these suddenly “visible” and marketable consumer segments.

## THE BDSC ADVANTAGE: LOWER COST, BETTER REACH

Extending loans in underserved markets has always been challenging. In the absence of easy-to-access information about the creditworthiness of unbanked or underserved individuals, lenders have had to go to great lengths to assess the likelihood of repayment. Indeed, the difficulty in collecting adequate predictive data on underserved consumers in a cost-effective manner has plagued credit providers for decades.

That is now changing. Already, there is great activity in the BDSC space. A recent report by the Center for Financial Services Innovation (CFSI) identified more than 40 companies in several countries that use big data analytics or underwrite based on credit scorecards using nontraditional data, while a Consultative Group to Assist the Poor (CGAP) report put the number that operate in the emerging markets at 36.<sup>14</sup>

Recent research suggests that using advanced analytics and nontraditional, large data sets to assess credit worthiness offers a substantial cost advantage when it comes to providing credit in emerging markets. In countries where traditional data doesn't exist for the majority of consumers, it can dramatically lower the cost of identifying, assessing, and reaching underserved consumers. CGAP, building on McKinsey and Co. analyses, estimates that digital data analytics can reduce the marginal costs of providing a \$200 loan in Tanzania by more than 40 percent.<sup>15</sup> Assuming such cost savings are reflected in their offerings, these economics should further accelerate the affordability and uptake of the products and services offered by these companies.

It should also open up large and newly viable consumer segments, and make smaller loan ticket sizes profitable. All told, our estimates suggest that the BDSC market approach could reach between 625 million and 1 billion emerging-market consumers who are currently unable to access formal credit.<sup>16</sup>

## THE ABCDs OF EARLY BUSINESS MODELS: ALGORITHMS, BIG DATA, CONSUMERS, AND DISTRIBUTION

While the BDSC field has the potential to significantly alter the economics of credit in emerging markets, its success will depend in large part on surmounting a series of challenges. Some of these challenges are integral to BDSC firms' innovation positioning; for instance, proving their algorithms' predictive ability, which in turn depends on their data sources, is clearly a make-or-break proposition. Some are part of their competitive positioning: how successful they are at navigating the often-long B2B sales cycles and convincing incumbents to provide access to their data and consumers. Still others are part of their strategic decision-making but lay mostly out of their control—for example, the speed of digital penetration of country markets and their regulatory evolution. Below, we identify the “ABCDs” of the BDSC field: four factors that we believe will determine the success or failure of firms and their business models in this market.



### Algorithms

As one might expect, there is still substantial experimentation with data algorithms, the key business ingredient that provides accurate predictive value on segmentation and repayment. Although multiple variables can yield signals, it can be hard to parse the contribution of each variable to the end score. Firms like Cignifi use algorithms based on anonymized mobile phone call data records (CDRs) and SMS patterns. A recent case study of Airtel and HFC Bank in Ghana suggested “Airtel customers using SMS heavily tended to have more frequent, higher-value transactions in their HFC accounts; the value of monthly banking transactions was three times higher for those in the top quartile than for those in the bottom. This points to the potential value of SMS usage as a proxy for an



individual's discretionary income, as well as a powerful marketing avenue through which to reach high-utilization customers.”<sup>17</sup>

Already, like Cignifi, many of these firms are developing the ability to assess the creditworthiness of previously unbanked consumers at a significantly lower cost compared to the brick-and-mortar banking industry cost. Several firms have suggested that their algorithms now outperform traditional credit scoring algorithms (such as FICO scores) in the markets they target, even though FICO and similar industry incumbent scores have had decades of refinement. As these algorithms continue to be tested across markets, segments, and services, their quality and accuracy will likely continue to improve—and continue to bring down the costs of identifying and assessing good credit risks throughout the developing world.

Moreover, in the event they are used as supplementary scores, these new credit scoring approaches add new dimensions—such as social network behavior, mobile phone usage patterns, and even “gamified” experiments—to existing scores to reveal more sophisticated consumer behavior and preference patterns. Already, in addition to *de novo* algorithms, firms like Lenddo are combining their scores with traditional credit bureau scoring to unlock more accuracy and create more powerful credit bureaus as a result. Nonetheless, firms will continue to experiment and refine; no single definitive standard has emerged yet.

## Big Data

Our analysis of firms suggests that they are working with varied data sources to do their scoring (see Figure 2). Some of these sources are readily available in the public domain. Others require partnerships with telcos (as in the case of call data records or CDRs) or with banks (when using the latter's proprietary data sources) to refine and scale their consumer segmentation and scoring approaches. Still other innovative providers are building their data libraries directly from consumers—like Entrepreneurial Finance Lab (EFL), which aims to build a quasi-big data repository by aggregating consumers' psychometric test results. It is not yet clear from which of these sources the strongest signals of predictive value will emerge—but the promise inherent in these varied sources of data and their combinatory power is considerable. Unlike credit bureaus, which have longstanding data access agreements across the financial sector and elsewhere, BDSC firms face uncertainty about the continued availability of the data required to power their algorithms. This factor might force these firms to use primarily proprietary data from companies that currently own this data, or rely on data directly provided by consumers. It also suggests that BDSC companies can find a competitive advantage in reliably acquiring this data, and having the technology to process and clean (what is often messy) data at scale.

It is also possible, even likely, that entirely new considerations—such as new forms of nontraditional data not yet in existence—will emerge. The power of new sources of data to yield predictive signals is the very platform upon which this space is built. Which kinds of data will prove the most predictive when it comes to evaluating creditworthiness, and which will remain at best supplementary, remains to be seen.

## Consumers

To be sure, BDSC offerings are still very young—most are less than five years old—though many of the companies providing these services have experienced rapid growth in a short period of time. M-Shwari, for example, reached 7.2 million unique consumers with its bank-linked saving accounts within 24 months of its launch, which allowed it to disburse 20.6 million cumulative loans (with a 2.2 percent default)<sup>18</sup> Lenddo—a service built on the notion that a person's social media activity can be a high-quality proxy for their creditworthiness—assessed hundreds of



# Multiple Data Types

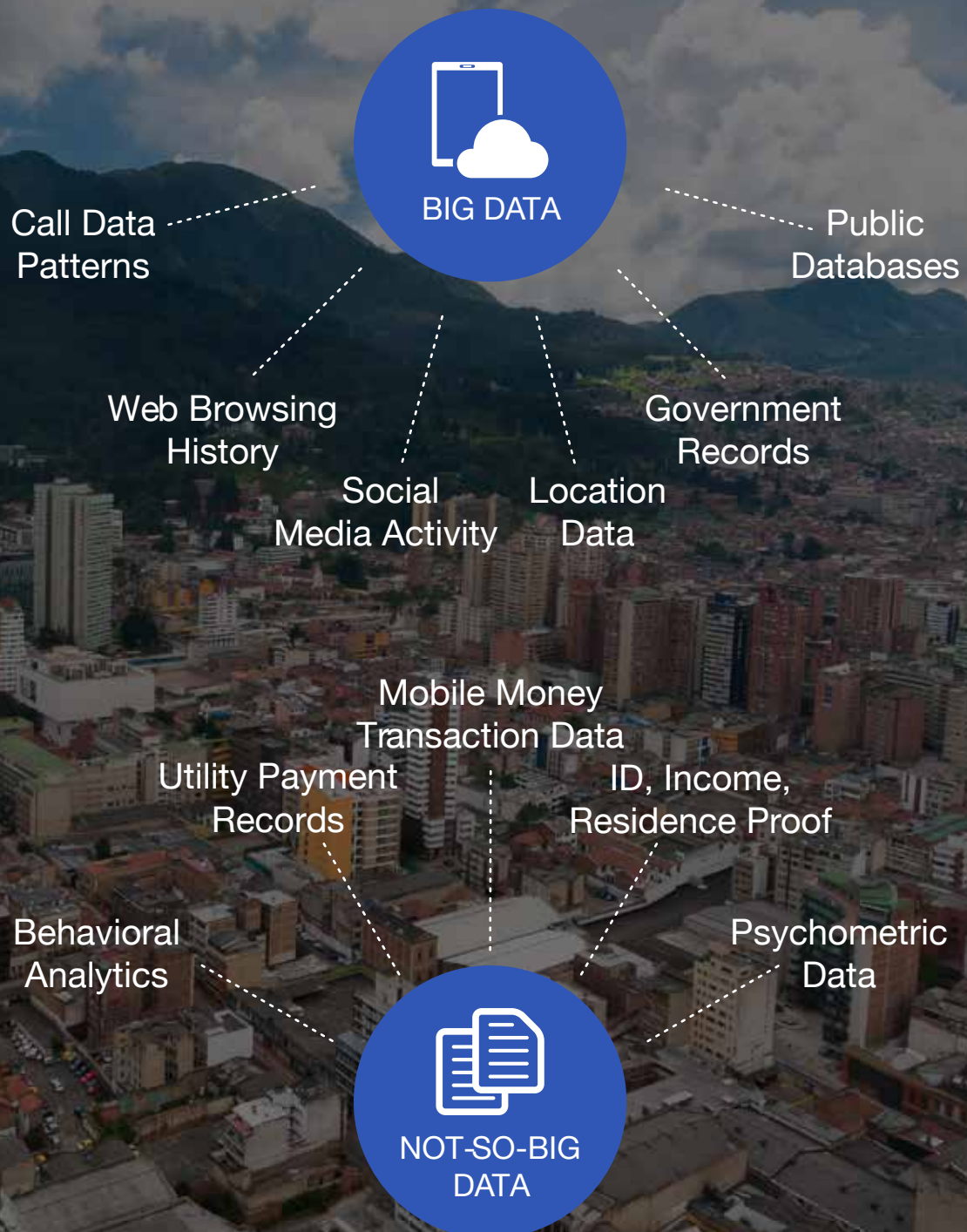


Figure 2

thousands of loan applications throughout the Philippines, Mexico, and Colombia during its first four years of operation.<sup>19</sup>

All of the BDSC providers we met with in the course of developing this report confirm that there is clear consumer demand for unsecured, formally provided, reasonably priced credit for short-term purposes. The main questions are, which previously unbanked consumers will prove to be early adopters, which will turn out to be difficult segments to reach and score, and how will their opinions and behavior change over time? Given that these are new consumer segments for formal lending, much remains to be learned about them. Indeed, that is the focus of the following two sections of this report.



## DISTRIBUTION

There is still no consensus on an optimum model for how young BDSC firms can reach these millions of new consumers. As a consequence, BDSC business models vary widely: some BDSC firms engage directly with consumers, others rely on access provided by incumbents, and a few have tried both combinations. These routes can be circuitous: for instance, Lenddo relies on social media companies' APIs to gain access to the consumer, although they must get consumers to opt in.<sup>20</sup> Currently, some BDSC firms are positioned as direct lenders to consumers, and others are structured as pure data science companies offering algorithm-driven services to telecommunications companies, banks, insurance companies, microfinance organizations, and other incumbents.

Solving the distribution issue will likely take time, as well as continued experimentation with both partnerships and direct lending. However, the desire to "own" the consumer relationship will operate in tension with the need to partner with, or sell to, bigger players—particularly since the latter option may accelerate impact at scale.

## AN EVOLVING FIELD

How this field will evolve across these factors cannot yet be known. Yet, BDSC firms are certain to continue to experiment with, tweak, or even pivot their business models many times over to respond to such challenges and sustain competitive advantage. The winners will create better algorithms and products, more engaging consumer value propositions, and shift to meet (or be ahead of) evolving regulations and market dynamics. We should also, of course, expect some of these models to fail, which is a natural part of any market evolution.

Meanwhile, BDSC firms aren't the only ones evolving. The needs and wants of BDSC consumers are also changing—and BDSC firms will need to be willing and able to adapt to ever-shifting consumer behavior and demand. Current consumers are already responding to and interacting with BDSC offerings in unanticipated ways. And not all consumers are happy with their loan experience. For BDSC to fulfill its promise of serving new "formal" consumer segments, it is critical to listen to the voice of the early adopter. This is what we turn to in the next section.





## BDSC EARLY ADOPTERS: WHY AND HOW DO THEY BORROW?

“Rose,” a 46-year-old shop owner in Nairobi, Kenya, lives in a household of six and did not complete her high school education. But she earns roughly 15,000 KSH (\$167) per month, which is 60 percent more than the average Kenyan. And she has been saving money in a bank account for the long term, hoping someday to open a chain of shops.

In the past, Rose has borrowed money from microfinance institutions, from a Chama (an informal cooperative that pools and groups savings), and from family and friends. Her loans have ranged from 1,000 KSH (\$11) to 30,000 KSH (\$335), and most of that money has been used for her business. Rose thinks carefully about who she borrows from, however. “I only borrow from people I know,” she said. “We can even talk in Swahili or Luo [and they] live near me.” She considers sharing certain private information a normal part of taking out a loan. But there are some categories she would never share, including information about her family’s medical history, the websites she visits, and her emails.



Rose's preferred and trusted lender has historically been the Chama, in part because she is very familiar with the group's activities. Apart from the Chama, Rose trusts state banks and mobile money services. In general, she only trusts financial organizations "if they tell me about all the charges in advance."

Rose learned about M-Shwari from a TV advertisement and signed up—but she did not apply for an M-Shwari loan until she had an emergency. Her mother died and she needed money to pay for the funeral. "I first turned to my brothers and sisters, but nobody seemed to have money," she explained. "So I asked for 7,000 KSH (\$80) from M-Shwari, was granted the loan, and received money within hours." Rose told her daughter about M-Shwari as well, and it is now their preferred lending service.

Rose said M-Shwari is the best lender in an emergency situation because it is simple and fast, unlike formal financial institutions. "Last holiday when I was on safari and ran out of gas, I borrowed 4,500 KSH (\$50) from M-Shwari and fueled the car...as the bank was some distance away." Her recent loans have all been relatively small: 1,000 to 5,000 KSH (\$12 to \$56). Rose describes the M-Shwari experience as "smooth" because she has received all the money she wanted to borrow. She is happy with its services.

## THE VOICE OF THE CONSUMER

Rose is an example of a consumer once thought to be "invisible" to financial services providers who is now "digital and discoverable" thanks to BDSC. Indeed, she is a BDSC early adopter—one of hundreds of thousands of individuals currently testing out these new products and services in emerging markets.

Rose is fairly typical of the BDSC early adopters we surveyed. She's urban, and also more educated and more financially savvy than the average consumer in her market. She owns a smartphone and uses it for calls and texts—but also for social media, financial transactions, and other applications. She has a comfortable income but encounters occasional, abrupt financial needs that require loans. She is aware of her borrowing options and seeks out the most appropriate and convenient services. In other words, BDSC services are not helping Rose become "financially included" as much as "financially better served."

Despite growing literature about the rising BDSC field, very little has been captured about the individuals who use these services: aspiring middle-class consumers in developing markets who are now gaining access to needed short-term credit in new ways and more easily than ever before. In order to better understand this large and emerging consumer cohort, we commissioned in-depth research into their behaviors and preferences.<sup>21</sup> This research featured individual interviews with more than 300 adults living in major cities in Kenya (a low-income country) and Colombia (a middle-income country). Seven in 10 were current users of BDSC services; the others were aware of and had access to these services but had not yet pursued them.

This section offers a profile of these current and potential users of BDSC services in these two emerging markets, illustrating a broad range of use cases, borrowing behavior, consumer preferences, and concerns. Understanding the needs and motivations of such "early adopters" in markets where BDSC services are gaining traction is key to the design of tailored, cheaper, and more appropriate products and services—as well as to future business models. These early adopters alone already represent a very attractive and underserved consumer segment, and a sizable opportunity.

And this is only the beginning. If BDSC models become true mainstream models, eventually there will be more and more consumers unlike Rose in the mix, as the services expand to become more mass market and include additional, low-middle income consumer segments. In other words, widespread adoption of BDSC models should bring into the fold many consumers who are new to formal unsecured credit—consumers who have thus far remained “invisible” despite the rapid advances in financial technology and services. Their opinions have not yet been taken into account in building out and extending financial services ecosystems. As BDSC products gain traction, it is our hope that many millions of these consumers will also be brought into the fold.

## EARLY ADOPTERS: YOUNG, SAVVY, AND EDUCATED

Not surprisingly, given the digital nature of most of the products available, the vast majority of interviewees were younger and more educated than the national average (see Figure 4). For instance, 70 percent of the Kenyans we interviewed were 34 years of age or under, and 91 percent had at least a secondary diploma or vocational training. In Colombia, those percentages were 68 and 97 percent, respectively. In both countries, nine out of 10 interviewees were “comfortable” with their income. In Colombia, 84 percent were able to save or buy expensive goods after meeting their basic needs; in Kenya, it was 77 percent.<sup>22</sup> In other words, these early adopters already represent an attractive consumer segment for any lender.

Interviewees were frequently self-employed but also more stably employed compared to the general population and more savvy with respect to both financial service providers and mobile smartphone use: 50 percent of Kenyans interviewees (versus 6 percent in Kenya as a whole) and 78 percent of Colombians (versus 30 percent) owned a smartphone. They used these smartphones for a wide variety of transactions, from phone calls to social media to financial



## Who We Spoke to—and Why

Our consumer research was driven by the belief that critical insights into the present and future of the BDSC field will come from listening to the voices and the perspectives of the individuals using these services themselves. These voices are critical for understanding:

- How these new services fit into consumers’ financial behaviors and credit aspirations
- The BDSC value proposition for users, and how they plan to use these funds
- Their concerns about multiple issues related to BDSC services, from service quality and convenience to trust and privacy

Bringing these perspectives to light at an early stage of the BDSC field’s evolution could help shape the commercial evolution of the emergent BDSC space and the policies established to support it. It might also contribute to the creation of a balanced architecture that encourages risk, innovation, and entrepreneurship, while also valuing privacy, ensuring protection, and enhancing trust.

To be sure, the consumers we studied are all early adopters, and we have little doubt that BDSC user dynamics will evolve over time. Additionally, our sample cannot be considered nationally representative of either Kenya or Colombia. However, our research revealed valuable information about consumer perspectives and early experiences that should nonetheless prove highly valuable to those invested in the evolution of the field.

## How Consumers Use Their Mobile Phones Daily

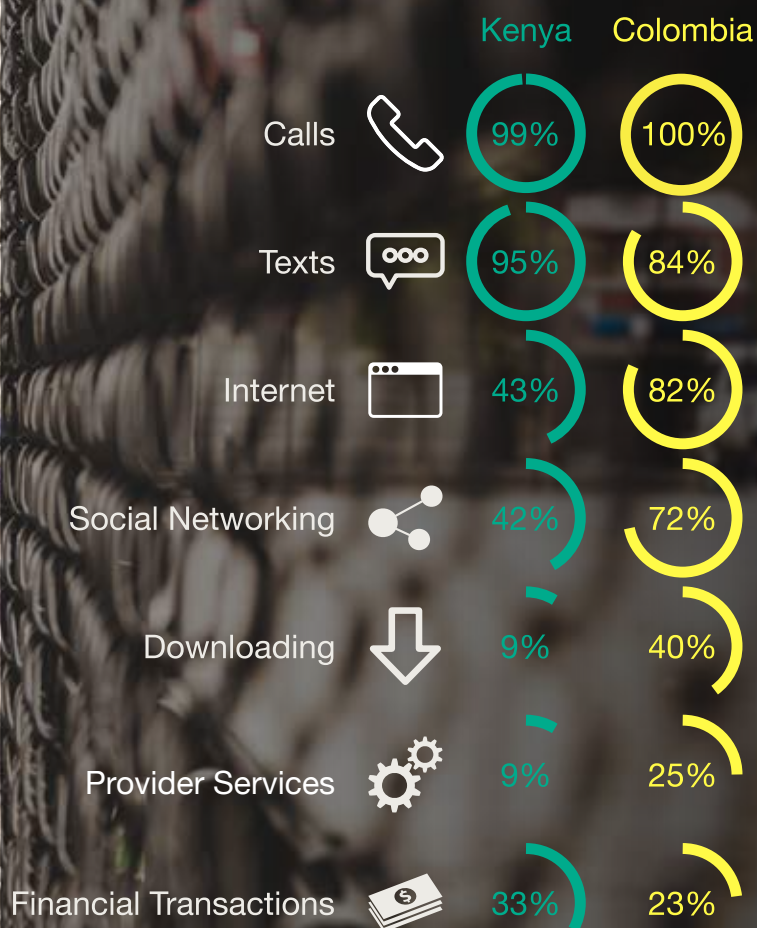


Figure 3

transactions. These findings are consistent with what one would expect among early adopters of a product that is both new and digital in nature.

Indeed, the digital proficiency of these early adopters was notable. In both countries, the majority of interviewees reported conducting three to four different kinds of operations on their smartphones each day (e.g., browsing the Internet, using social networking sites, and making financial transactions). They also demonstrated comfort with advanced services, including downloading applications, requesting on-demand services, and navigating menus and choice architecture.

Of particular note in Kenya was the pervasiveness of mobile payments and financial transaction applications (which is not yet the case in Colombia). In Kenya, 50 percent of respondents accessed digital media exclusively on their smartphones. In Colombia, access was spread more evenly between phone and computer. In both countries, social media formed the bulk of new media use: 64 percent of the Kenyans and 46 percent of the Colombians interviewed indicated this as their favorite online activity.<sup>23</sup> Seven out of 10 interviewees had an account with at least one social networking site, and Facebook and WhatsApp were the leaders among these sites in both countries.<sup>24</sup>



# The Early Adopters

Young, Educated, Employed, and Savvy



are 34 years of age or under



are stably employed



have secondary or higher education



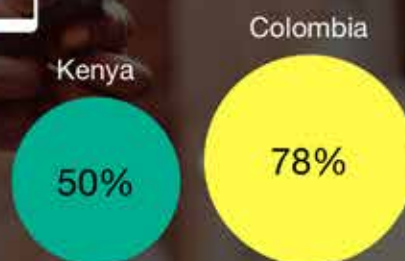
In Kenya, 8 out of 10 men



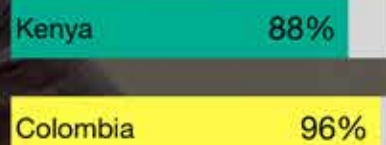
In Colombia, 5 out of 10 women



are the head of the household



own a smartphone



can cover basic expenses and save

Figure 4

In other words, these BDSC early adopters tend to be younger, more educated, banked, smartphone savvy, stably employed or income-generating, and more risk-tolerant than the average consumer.

This dynamic is an important one, with precedent in recent financial services mass-market adoption. For instance, although today large swathes of M-PESA consumers come from low-income, rural, and unbanked households, they were not among its early adopters. Indeed, Safaricom first marketed M-PESA to the young, urban middle class. Consequently, when M-PESA was not yet two years old, its early adopters were largely tech-savvy, banked, educated consumers with significant discretionary income. Critical to the success of M-PESA's mass-market adoption were these early adopters, who forged an aspirational brand and achieved critical mass to fuel network effects.<sup>25</sup>

## BORROWING BEHAVIOR

Borrowing money was a critical aspect of the financial lives and financial behaviors of interviewees in both countries. At the moment, these early adopters are using BDSC products mainly as additional or supplementary tools for transactions where existing (formal and informal) tools fail, so they have quickly found value in the marketplace.

These early adopters were overwhelmingly banked (80 percent in Kenya, 99 percent in Colombia) and already had relationships with formal financial institutions of some sort. In Kenya, most had mobile money accounts.<sup>26</sup> They used banks for large transactions and long-term savings, and mobile money for P2P transfers, short-term savings, and everyday payments and purchases.<sup>27</sup>

Even though Kenyan interviewees charted as relatively affluent and comfortable, one common aspect across both Kenyan and Colombian interviewees was that they had all applied for loans multiple times and taken out loans when they were granted. Nearly 60 percent of their borrowing was originally driven by the need to cover unforeseen expenditures and debt repayment. However, as Figure 5 shows, once they had borrowed, they spent nearly 80 percent of their loans on such needs. Kenyan consumers, in particular, still faced multiple occasions where they had short-term or emergency borrowing needs—the number one reason for borrowing among interviewees—and they viewed BDSC services like M-Shwari as far more convenient and responsive to those needs than any other option in the market.

Even though Kenyan early adopters were wealthier and more savvy than average Kenyan consumers, and 80 percent had bank accounts, they still faced day-to-day cash flow and borrowing needs that these banks could not fulfill, signaling a volatility in incomes even at higher income segments.<sup>28</sup> This was particularly so for the women who participated in our survey.

In Colombia, although there was less emergency borrowing, expenditures to invest in consumers' businesses or homes (e.g., bicycles, car payments) or even routine expenditures (e.g., education, school fees) accounted for 70 percent of borrowing. In other words, even among this segment, and even in Colombia, borrowing is a key tool in managing and offsetting volatility—rendering the ability to access quick, timely, and convenient services as very important.<sup>29</sup>

It is also worth highlighting that the ecosystem for credit and banking services is very different in Kenya than it is in Colombia. As Figure 6 shows, though informal lenders—including family members, friends, neighbors, and co-ops—dominate the Kenyan lending market, BDSC and mobile money services are the second most common source of loans. Indeed, three out of four interviewees borrowed at least part of the time via mobile channels. In



## Top Uses for Loans

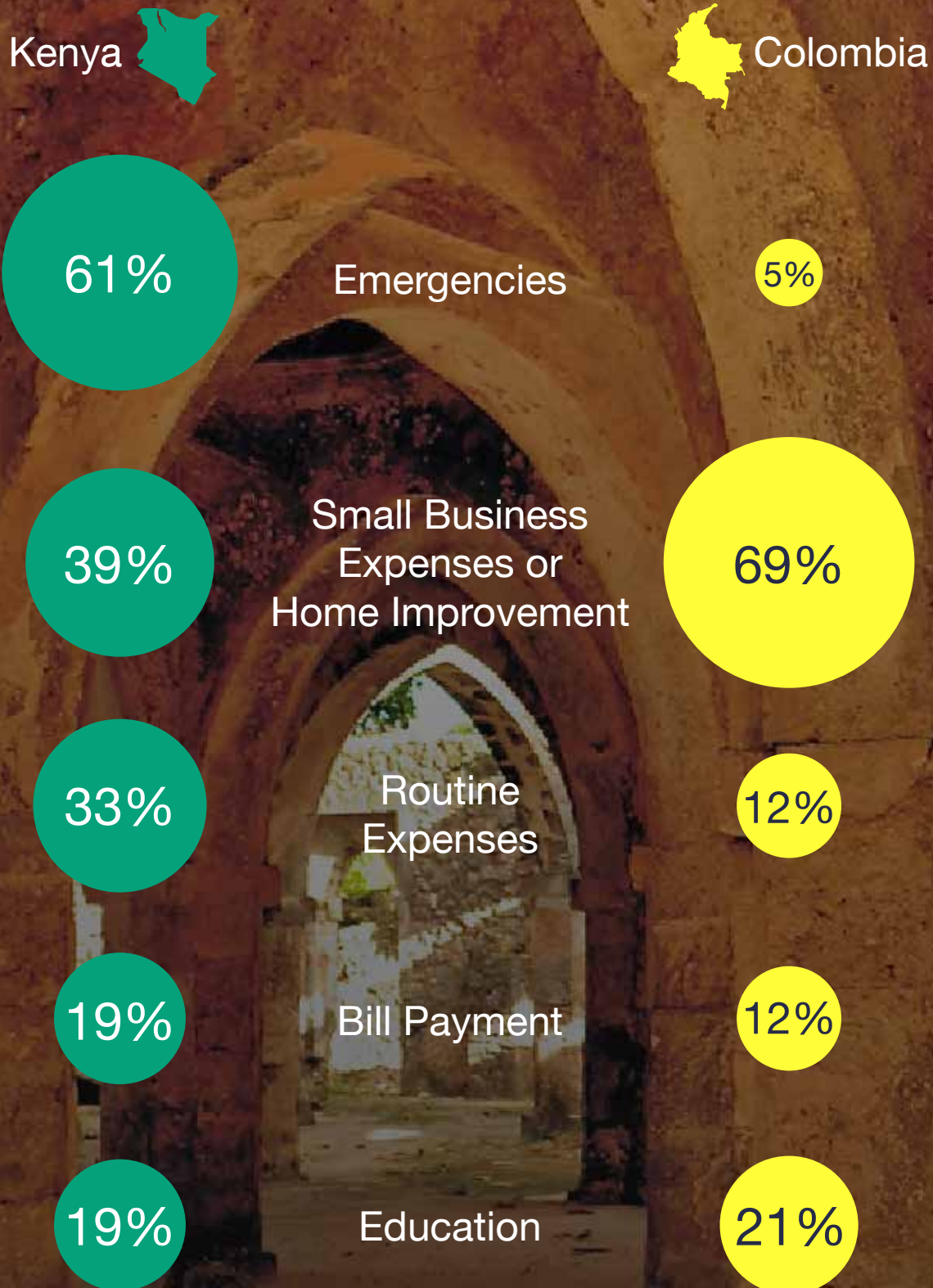


Figure 5



## Where Participants Applied for Loans

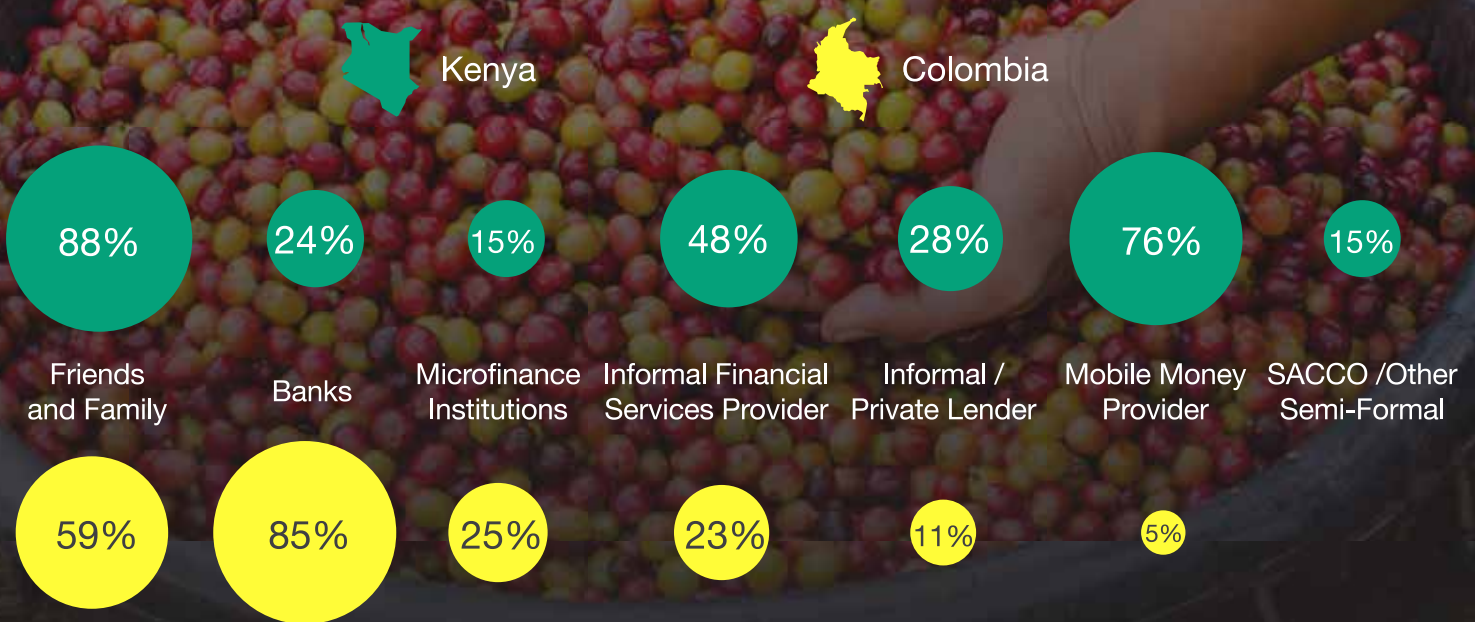


Figure 6

Colombia, 85 percent had applied for loans from banks, reflecting a stronger preference for and trust in the formal financial system.<sup>30</sup> Still, nearly six in 10 preferred to rely on other people, such as friends or family, for their loans. BDSC services competed well in these ecosystems for small loans, because of their faster and more simplified loan processes, and relatively low interest rates. Indeed, in Colombia, the top reason participants did not borrow from banks for shorter-term credit was high interest rates, cited by more than 20 percent of respondents.

BDSC is in its infancy in Colombia, and growing somewhat faster in Kenya. But in both markets, early adopters are driving uptake and growth. The demand for BDSC services as a substitute for existing services, both formal and informal, is strong among these segments. They find the convenience, the speed, and the service attractive, and they tailor their BDSC usage to small transactions. In Kenya, BDSC typically functions as the first formal lender, replacing or supplementing informal sources. In Colombia, BDSC is replacing either the private bank or the informal lender.

Overall, consumers indicate strongly that BDSC offers them a convenient, formal alternative to the informal sources they usually borrow from—and so they find the value proposition attractive.

However, whether BDSC services will deepen and expand in these markets will depend in large part on whether consumers grow to trust these services. In the long run, BDSC success will to a large extent be determined by whether consumers gain confidence in the way that BDSC lenders use their private information.



## BDSC EARLY ADOPTERS: THEIR EVOLVING TRUST CALCULUS

“Erika,” a 26-year-old aspiring marketing executive in Bogota, Colombia, works full time as an office assistant while trying to finish her college degree. She lives in a household of four and earns about 800,000 COP (\$385) a month. She has had a savings account with Banco Colpatria for 10 years but uses it only for basic transactions.

In the past, Erika has applied for loans with financial institutions and also asked friends and family for money. Her prior loans have ranged from 1,000,000 COP (\$480) to 4,000,000 COP (\$1,924). When applying for a loan, she wants an institution that is recognized in the market, has lent money to other people she knows, and has a rapid turnaround: “I’m looking for transparency in financial institutions, where they provide more information about their portfolio on the Internet, where it can be easily accessed.”

Erika believes that sharing private information—including her email address, phone number, employment details, and financial history—is a normal part of the loan application process. She’s willing to disclose information she would normally only share with her husband, such as social media information, if it speeds up the loan process, which is her top selection criteria when it comes to choosing a loan provider.

In recent years, the related issues of privacy and consumer trust have risen to the forefront of public debate, largely due to the unprecedented access that governments, companies, and civil society now have to the digital footprints that billions of people create when they transact and communicate online. While the ability to process and analyze personal data has the potential to unlock tremendous insight into consumers around the world, as we have argued earlier in this report, it also continues to trigger concerns about privacy. Where should the line be drawn when it comes to the use of personal data?<sup>31</sup> Does that line differ when it is for marketing and advertising versus collecting information on opt-in services? What rights do individuals have when it comes to controlling and protecting their personal information—not just from people who mean harm, but also from people who might mean good?

As with other sectors like healthcare, education, and telecommunications, many of the financial services available today—from online lending to mobile payments—involve frequent exchanges of confidential consumer information over digital pathways. Much of this information is stored, creating significant repositories of data on billions of individuals.

Despite this large digital exhaust trail, currently, those of us in the financial inclusion field know almost nothing about the way potential emerging-market consumers think about confidential information, privacy, and trust—particularly in the realm of these digital financial services. Are they aware that they are providing personal data in exchange for services? To what extent—if at all—do privacy considerations affect their decision-making or willingness to engage with providers who use these new forms of scoring? Do consumers perceive a tradeoff between participation and protection in the formal financial system? And what related trust issues do BDSC services pose for such consumers?

There has not been a systematic effort to understand emerging-market consumers' attitudes toward privacy, trust, and the tradeoffs they perceive or are willing to make in order to secure BDSC—or indeed other financial—services.<sup>32</sup> But these issues are rising on the agenda of regulators, consumer protection advocates, BDSC providers, their business partners and investors, and many others in this ecosystem.<sup>33</sup> Understanding consumer perspectives on data confidentiality, what components of their data should remain private (and over what time horizon), and what level of privacy they are willing to give up could have an impact on BDSC market regulation, usage protocols, and ultimately the sustainability of BDSC business models themselves.<sup>34</sup>

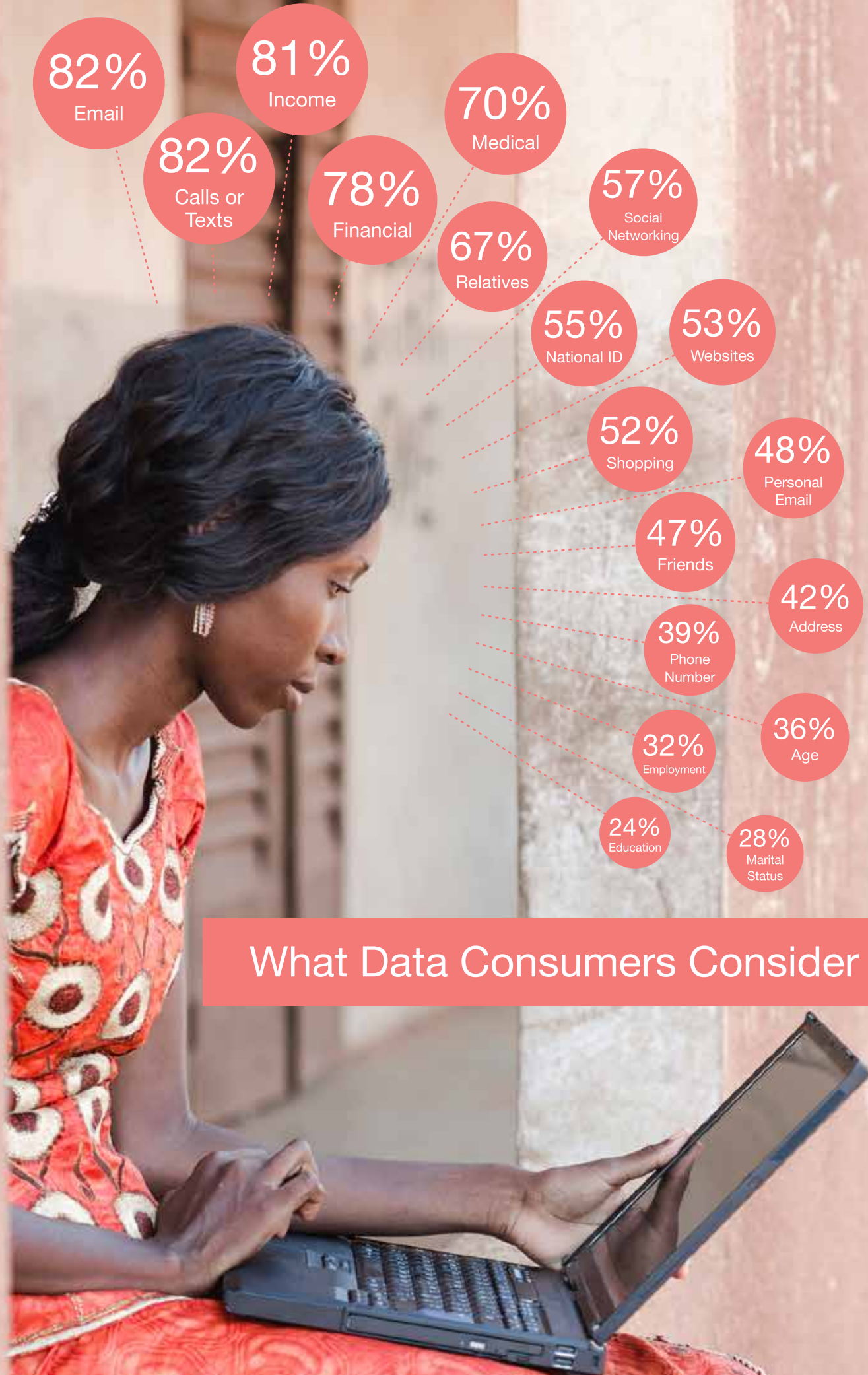
## TRUST, PRIVACY, AND CREDIT: THE BOTTOM LINE

Our consumer research in Kenya and Colombia strongly suggests that early adopters are well aware of the issues and tradeoffs around confidential information, trust, and privacy that they face when engaging with financial service providers in general, and BDSC offers in particular. Three key insights stood out from the perspectives of the BDSC consumers we interviewed in Colombia and Kenya, each critical to how they engage with these issues.<sup>35</sup>

### **1. Consumers think of privacy on a continuum, with some information ranking as “more private” and some as “less private.”**

As Figure 7 shows, the consumers we interviewed ranked their financial history and income level, the content of online/mobile phone communication, medical histories, and family particulars as their most private information. They reported that they typically would only share this information outside their immediate, trusted circle of family and friends in the event of an emergency. Conversely, almost nine in 10 consumers across both countries had little or no concern about sharing their national identity documents in exchange for financial services, even though five in 10 ranked national IDs as private information.





## What Data Consumers Consider Private

Figure 7

As the ID example indicates, both Kenyan and Colombian consumers share nuanced views about what they do or do not consider private. In other words, they understand well the value of their personal data and its requirements for different services (e.g., voter registration, “know your customer”). This should underscore their ability to exercise agency in financial transactions, especially in instances when they are making tradeoffs and decisions about sharing and using this data.

## **2. Most consumers are willing to exchange their data—even their most closely held, confidential data—in exchange for bigger or better loans.**

As Figure 8 shows, the consumers we interviewed were willing to share multiple kinds of data, even those items they ranked as more private—including mobile phone use, social networking use, general Internet use, and bank account activity—to improve their chances of getting a loan or to increase the size of that loan. In the case of Colombian consumers who borrowed from Lenddo, we found that roughly 70 percent were willing to share information on their social media activity and web browsing history with Lenddo to improve their chances of getting a loan or getting a bigger loan.<sup>36</sup> This finding is mirrored in the CGAP work with First Access in Tanzania: “Many consumers noted that the need for a loan would supersede concerns for privacy, making clear why it is important for providers to develop standards for informed consent and data protection up front in product development.”<sup>37</sup>

In other words, for these emerging-market consumers, the availability of formal, convenient, unsecured, short-term, small-dollar credit was more important than privacy—which makes the BDSC value proposition very compelling. In and of itself, this consumer view of the tradeoff between privacy and credit is a significant finding, and comes at a key time in the development of this industry. Yet it is not entirely surprising, given that BDSC early adopters are more familiar with financial institutions and already expect that they will need to provide personal data in order to secure credit. Indeed, in Kenya, only 5 percent of all participants interviewed said they felt uncomfortable when a financial institution asked them to share their private information as part of their “know-your-customer” or KYC process.

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*Meaningful consumer trust in financial institutions in low- and middle-income markets takes time to build and effort to sustain*

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It is worth noting, though, that as the market deepens and broadens, we would expect the current calculus to evolve for both established and new consumers. When we asked non-BDSC users in Colombia what private information they would divulge in exchange for a better chance to get a loan, or to get a bigger loan, there was markedly less willingness to share social networking data (although still a majority agreed). There was also somewhat lower willingness to share Internet data usage, and, conversely, much higher willingness to share information on bank account use. It is likely that certain segments will become more concerned about transparency, consumer protection guidelines, privacy protocols, and opt-out models that circumvent informed consent. While we cannot predict how these dynamics will evolve, these are important issues that warrant thoughtful consideration and monitoring over time (see Section 4).

# Information Consumers Are Willing to Share to Improve their Chances of Getting a Loan or a Bigger Loan

**7** out of **10**



Would Share Information on Mobile Phone Use

**7** out of **10**



Would Share Information on Bank Account Use

**6** out of **10**



Would Share Information on Social Media Activity

**6** out of **10**



Would Share Information on Web Browsing History

Figure 8



## Top Offenses that Erode Trust in Financial Institutions



Figure 9

**3. Consumers worry about the security and integrity of their data. They know what would constitute a violation of their trust (e.g., identity theft, selling private data to a third-party, or giving it to government tax authorities) and have strong ideas about how BDSC firms might work to enhance their trust.**

Consumer concerns about privacy—as well as their willingness to share confidential information for better financial services—are intimately connected with the issue of trust. It is clear from our interviews that meaningful consumer trust in financial institutions in low- and middle-income markets takes time to build and effort to sustain. Key elements for building that trust include transparency; a strong reputation in the marketplace; a record of honoring previous commitments; endorsement from respected persons; and responsive, rewarding consumer relationships.

Strikingly, as Figure 9 shows, a single bad experience or erroneous transaction can undo much of the trust that consumers are willing to place in a financial institution. Asked specifically about privacy issues, consumers' willingness to share private data for a loan did not diminish other important considerations. In Kenya, about 41 percent of those we interviewed were concerned about their information being given to the government revenue authorities. In Colombia, 87 percent worry their information would be accessed by criminals (and were far less concerned about tax authorities). But these considerations did not overshadow their willingness to share sensitive personal data with lenders in order to access credit.

While these concerns stem mainly from previous interactions with a variety of financial service providers, they nevertheless have important ramifications for new BDSC entrants with low brand recognition seeking to enter the market with alternative credit-scoring-based offers. Again, we expect these attitudes to change and evolve as consumers become more entrenched and experienced in the formal financial system, and as more financial services become available to them.<sup>38</sup>

## LOOKING AHEAD

In the world of fast-paced and evolving digital financial services, where confidential information is frequently and quickly transacted, the assurance of privacy and the honoring of transparency are critical aspects of the relationship framework between clients and institutions, especially by newer firms that lack the brand heft of incumbents. Indeed, these two features are foundational, underpinning both trust and sustainability.

And still, in this current moment, there is little standardized policy governing who owns what data, and how it is used, stored, and managed.

This finding carries important implications for regulators and firms serving these consumer segments—and raises important questions about how BDSC companies will navigate the issues of trust and privacy in these and other markets. How will they make certain that consumers understand their service usage agreements and products? How should they tackle consumer concerns about private information and assure them that their data is safe? Is informed consent necessary, or even enough? And how will they balance these requirements with the ability to innovate to serve?

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*BDSC models should be designed with these consumer concerns and tradeoffs in mind, not just for one transaction but for as long as these relationships are held*

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One likely implication of these findings is that BDSC models should be designed with these consumer concerns and tradeoffs in mind, not just for one transaction but for as long as these relationships are held. The field will likely evolve, at least in some countries, to require more transparency over time—giving consumers greater control over their user agreements, their ability to opt in and out, how third parties can use their data, and their options for addressing grievances should these assurances not be met. It may well be that there is a comparative advantage for companies that design their models with consumer control, transparency, and disclosure incorporated as key principles from the outset.



## DELIVERING ON BDSC'S PROMISE

Early adopters of BDSC services, for whom borrowing will continue to be a major part of their financial lives, say it offers them a compelling, convenient, and affordable borrowing alternative. Consequently, the demand for BDSC services as a substitute for or enhancement of existing services—informal and formal—is strong, particularly for small and high-frequency transactions. This represents a massive opportunity with huge potential upside—both social and commercial—if harnessed well. Indeed, this is the promise of Big Data, Small Credit.

However, these are still early days. As with all such disruptive spaces, we can expect much to change in the overall market landscape, as well as in the relationship dynamics between innovators, incumbents, and rule-makers. How will key players in the system receive the BDSC value proposition? Will regulators allow these BDSC models to continue to experiment and innovate? Will data owners and financial service providers, who currently own both data and consumer relationships, look to capture the opportunity themselves, partner with BDSC firms, or work to block these innovators? How will the field secure and maintain a trust-enhancing architecture that sets the platform for consumer financial wellbeing?

It will be awhile before we know the answers to many of these questions. Important execution challenges have to be overcome before BDSC becomes mainstream: as seasoned investors, we would be naive to expect otherwise.



# A CALL TO ACTION



## Innovators

- Focus on getting the “ABCD” elements of the business model right: Algorithms, Big Data, Consumers, and Distribution
  - Treat client data with integrity and use it only for its stated purpose
  - Give clients the option to opt out of the use of their data
  - Invest in building secure technology platforms to protect any sensitive client data that you access
- 



## Financial Services Providers

- Engage with BDSC firms to reach new, profitable consumer segments
  - Pilot new approaches quickly to stay ahead of competitors aiming at the same segments
  - Do not fear the disruption to traditional bank underwriting models that these new innovations represent
  - Leverage the trust and brand advantage but compete on user experience
- 



## Data Owners

- Share data with BDSC firms in order to build the broader ecosystem
  - Give consumers greater control of their data to allow them to make informed choices
  - Partner with the innovators to open up new lines of business
- 



## Policymakers

- Allow space for innovation to occur before regulating too heavily—e.g., follow U.S. example and issue “no action” letters on key innovations
  - Monitor closely for traction and unintended consequences
  - Above all, provide clarity on intentions and rules
  - Focus on key issues such as the systemic risk posed by easy access to credit that BDSC might facilitate, but not at the expense of allowing for early experimentation
-

It has taken decades to bolster the accuracy and acceptance of traditional credit ratings; it took many years in the U.S. for FICO to become the mainstream score. Similarly, we must be patient as BDSC innovators figure out what data sources and analytics provide the best predictors of creditworthiness, and how best to deliver formal services to consumers.

To deliver on the BDSC promise and to capitalize on the significant opportunity it can afford will require concerted action from a key set of stakeholders: financial service providers (e.g., banks, MNOs), data owners (often technology companies and data aggregators), innovative entrepreneurs, and regulators. Below, we set out the key considerations and a call to action for each of these principal groups.

## INNOVATORS: IMPROVE BUSINESS AND PARTNERSHIP MODELS

We have yet to see one business model eclipse the BDSC landscape in the way that Lending Club and Prosper have done in U.S. marketplace lending, no doubt helped by Lending Club's highly visible, multi-billion dollar IPO. There are still many active business models in this space, and we expect that diversity to continue for some time. Indeed, many of the factors driving this diversity are internal, revolving around the continued evolution and refinement of the algorithms and partnership models that are foundational to these businesses.

Can these startups create compelling use cases to convince incumbent data holders to sustainably provide access to the consumer data needed to scale new scoring methods and pursue new segments and markets? Will public-domain data sources be most valuable, or will more private, proprietary sources prove more useful? Will innovators with direct-to-consumer models prevail, or those that rely on B2B incumbent channels and distribution? How important will it be for BDSC firms to own the consumer relationship? Which consumers and segments will form the mass-market core of the consumer base? And finally, will firms capitalize on the competitive advantage likely to be gained from being transparent with consumers, secure with their data, and cognizant of their privacy concerns?

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*Innovators need to continue to refine and demonstrate their algorithms, adapt their business models, and create compelling and profitable use cases*

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There are external issues beyond BDSC firms' immediate control as well. Will the revenue generated from these consumers actually prove to be significant enough to entice incumbent financial services providers to partner in the first place, if indeed the route to success goes through B2B distribution partnerships? Will enabling policy accelerate the market adoption of the technology and digital access required for BDSC assessment to work?

Innovators should focus on the ABCD factors outlined earlier in this report, and on building out key elements of the "trust architecture" that must be created. Those that are effective at the latter are likely to build a loyal consumer base and therefore benefit from those consumers' repeat business. In addition, innovators need to continue to refine and demonstrate their algorithms, adapt their business models, and create compelling and profitable use cases that deliver quick wins for incumbent partners and for themselves.

## POLICYMAKERS: ARTICULATE BOLD, PRAGMATIC, AND CLEAR REGULATIONS

“Big data for anything” these days seems to raise concerns about privacy and consumer protection, and this space is no different.<sup>39</sup> Society, business, and government in both OECD and emerging markets are only starting to consider the new rules of the game when it comes to consumer data protocols, particularly those pertaining to digital privacy.<sup>40</sup> Regulators and policymakers are in a difficult position. They need to weigh the substantial potential for social inclusion and commercial benefit against real and rising concerns around protecting individual choice, control, and privacy. It is important that both develop in parallel, without one overriding the other.

We ask that regulators be bold enough to allow for experimentation and innovation in the service of unlocking new consumer markets and services—and pragmatic enough to stay close to this innovation. This implies that regulators carefully weigh the unknowns and seek information before reacting, and develop “lean,” appropriate, and smart regulation. Some regulators are already walking this path. A good example is the U.S. Consumer Finance Protection Bureau’s introduction of Project Catalyst in 2013, an attempt to unlock innovation in several areas of consumer credit.<sup>41</sup> In announcing its program, CFPB wrote: “In addition to establishing strong consumer protections and holding bad actors accountable, we also want to support marketplace innovation so that new and emerging products that are safe and beneficial for consumers can be developed. We do not want regulations to unnecessarily limit consumer-friendly developments”.<sup>42</sup> The UK’s Financial Conduct Authority’s “Project Innovate” is another example of regulation that works to introduce flexibility to the regulatory framework “to support innovation if this would bring benefits to consumers of financial services”.<sup>43</sup> In the emerging markets, Kenya and Tanzania both exemplify countries where regulators allow for experimentation at scale riding on the initial success of mobile money.

It is also important for regulators to be clear when articulating the rules of the road, so that innovators and incumbents know where they have room to innovate. Such rules have the ability to provide meaningful systemic and consumer protection without being so onerous as to stifle early stage innovation. For instance, clear guidelines for access to consumer data—and for the responsible use, sharing, and storage of data—are important. These guidelines can and should govern the exchange of data between consumers and companies, as well as among companies, ideally taking into account that such data can provide the basis of public benefit by addressing credit problems and information asymmetries in underserved markets.

Most importantly, the market needs clear signals from the regulatory sphere about privacy frameworks and protections. Currently, regulatory uncertainty has incumbents and even data sources taking a conservative stance: few want to fall afoul of perceived privacy rules in the pursuit of what many of them see, at least initially, as a relatively small revenue stream. Clearly determining one way or another what is in or out of bounds is the single most important role regulators can play, irrespective of where the boundary line is drawn.



## DATA OWNERS: KEEP DATA STREAMS OPEN

As they develop and scale, BDSC firms will require sustained access to consumer data through partnerships with the companies that own it. Most BDSC data sources, though generated by consumers, are not available currently in the public domain. Instead, they are “owned” by a private source, usually a technology company or data aggregator. Access to the full quantity and variety of data will help both innovators and financial service providers (who incur balance-sheet risk) figure out what data matched to which algorithm offers the greatest predictive power when it comes to creditworthiness. We urge data owners to provide continued access to innovators, so they can help to vastly expand BDSC services into new markets and increasing profitable opportunities.

## FINANCIAL SERVICE PROVIDERS: PARTNER WITH BDSC FIRMS

We recommend financial service providers partner with innovators and help to refine and scale their innovations. Such partnerships will help them gain valuable insight into new consumer segments and potential product offerings that might have been more difficult or taken longer to develop on their own. Though revenue streams might be small at first, companies that identify emerging-market opportunities—where massive populations of the aspiring middle class are willing to experiment with accessible, affordable, and easily testable products of the kind that BDSC provides—could win valuable first-mover advantage, loyalty, trust, and consumer insight.

## BUILDING A TRUST-ENHANCING ARCHITECTURE

Ultimately, innovation, enterprise, and regulation should all be operating in service of the consumer. While regulation is critical, so too is the willingness of BDSC firms to proactively create and sustain a trust-enhancing architecture for consumers. With new consumer lending products aimed at new mass-market segments, the imperative to create trust becomes even more pronounced. BDSC firms (and their partners) that inspire this trust will position themselves to create enhanced, long-term, competitive advantage.

The early adopters we interviewed seek such trusted relationships—and provided pointers on how they can be achieved (see Figure 10).<sup>44</sup> Overall, about 80 percent of interviewees suggested that better descriptions of how their private data will be protected would significantly increase trust, and at least 65 percent suggested that explicit opt-ins would increase trust. In Colombia, 84 percent of those surveyed said that the ability to opt out at a future date would contribute significantly to building trust. Despite often being first-time users of formal lending, these consumers have highly developed opinions on what would inspire trust—and what would undermine it.

As a result, we see an opportunity for technical and business model innovation that makes key privacy and related data protections a dimension of competition. Elements of such a stance could include consumer notice and consent, clear opt-in and opt-out opportunities, policies on minimization of data collection, clear disclosures on re-use and retention over the lifetime of the data, and adequate security against theft and criminal access. This may be more than just the right thing to do. First, it is probably a smart hedge against high-likelihood policy developments.<sup>45</sup> Second, it sends a clear signal that gaining and maintaining consumer trust is important. Doing so proactively would likely provide a differentiated position in the short run and maximize shareholder value over the long run.

# What Has a Positive Impact on Consumer Trust in Financial Institutions?

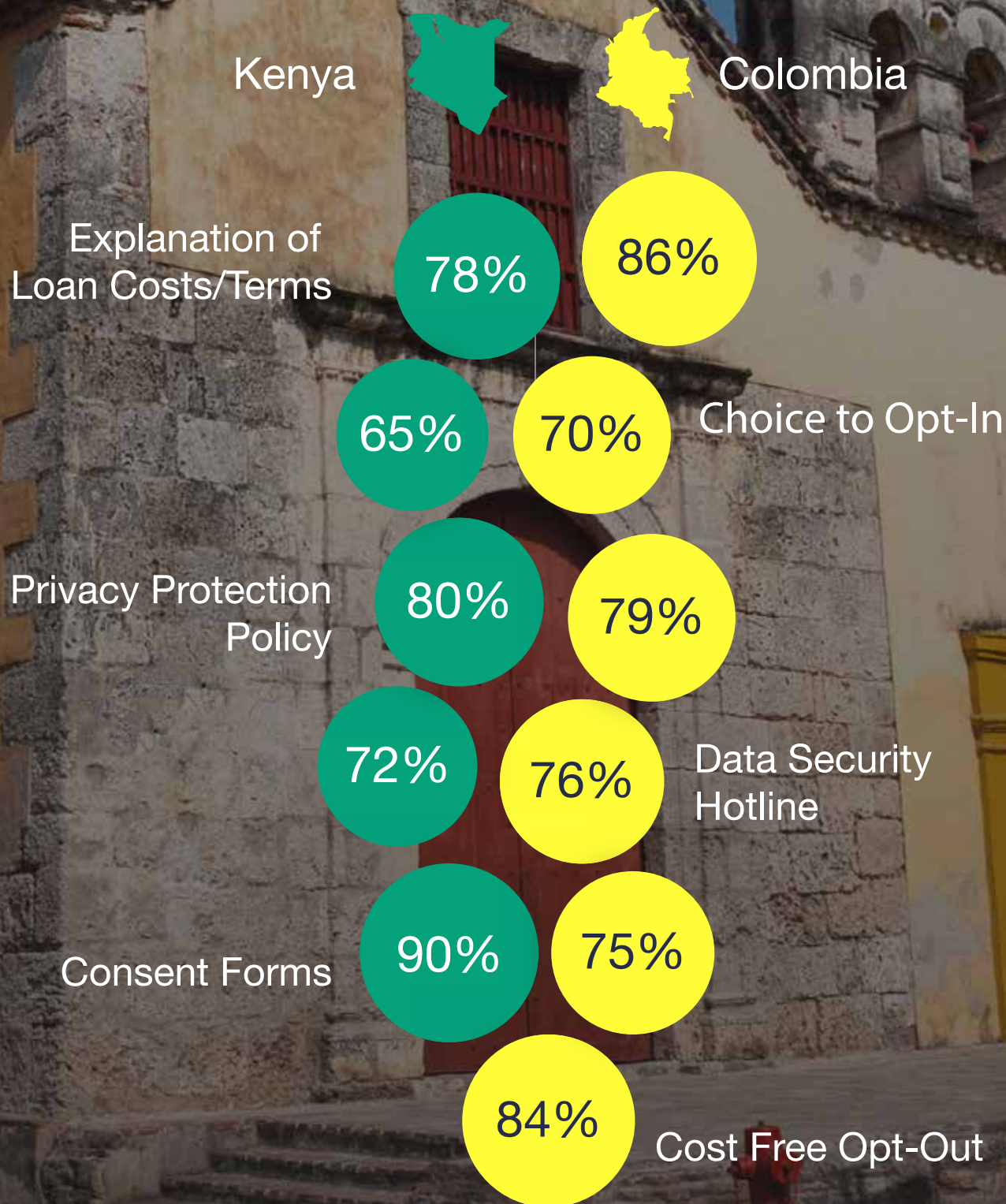


Figure 11

## CONCLUSION

At Omidyar Network, we have made several investments in this promising sector and have strong conviction about its tremendous market potential and social value. Though these are early days, there is enough to suggest that hundreds of millions of mass-market consumers may not have to remain “invisible” to formal, unsecured credit for much longer. Indeed, BDSC early adopters are already pointing the way, indicating both a nuanced understanding of their preferences and transactions and an eagerness to engage in mutually beneficial relationships with BDSC firms.

In order to deliver on the BDSC promise, financial service providers, data collectors, innovative entrepreneurs, and regulators will need to collaborate. And BDSC firms must continue to create offerings that are attractive to consumers, both in terms of their financial attributes and the trust and transparency that underlie them. Both the lender and the consumer must benefit.

We are enthusiastic about this new category that is rapidly taking shape. The promise is high, the economics make sense, and the prospective payoff in terms of empowering consumers to improve their lives is significant. We hope others will join us in advancing these potentially transformative innovations.



# ENDNOTES

1. Based on Global Findex survey data, 2011 and 2014. World Bank.
2. By 2020, Ericsson projects 750 MN smartphones in India (up from 130 MN in 2014) and 1.4 BN feature phone connections. See: [www.ericsson.com/res/docs/2015/ericsson-mobility-report-june-2015.pdf](http://www.ericsson.com/res/docs/2015/ericsson-mobility-report-june-2015.pdf). See also Statista for updated social media and digital access data
3. See Ericsson (Note 2)
4. Estimates based on several sources. These include financial behavior data from Global Findex 2011 and 2014. Smartphone penetration, social media, and digital access data from Google Consumer Barometer, Wikipedia, We Are Social, and Statista
5. Ibid. Our estimates suggest that by 2020, these numbers are likely to more than double in size, as smartphone penetration and Internet use rapidly accelerate in emerging markets
6. Further, many have documented the macroeconomic advantages of financial inclusion, particularly for low-inclusion countries. See, for example, IMF (2015). Financial Inclusion: Can it meet multiple Macroeconomic Goals? [www.imf.org/external/pubs/ft/sdn/2015/sdn1517.pdf](http://www.imf.org/external/pubs/ft/sdn/2015/sdn1517.pdf)
7. See: [qz.com/on/the-next-billion/](http://qz.com/on/the-next-billion/)
8. GSMA, "Smartphones and Mobile Money," 2014
9. \$30 smartphone is already available in China and India. See: [qz.com/314285/30-smartphones-are-here-and-theyre-getting-better-every-day/](http://qz.com/314285/30-smartphones-are-here-and-theyre-getting-better-every-day/)
10. Vodafone India
11. Global Web Index and Quartz data. See: [www.themediabriefing.com/article/6-global-social-media-trends-in-charts](http://www.themediabriefing.com/article/6-global-social-media-trends-in-charts)
12. See CSC (2012): [www.csc.com/insights/flxwd/78931-big\\_data\\_universe\\_beginning\\_to\\_explode](http://www.csc.com/insights/flxwd/78931-big_data_universe_beginning_to_explode)
13. While true in nearly every sector, this new visibility has particularly profound implications for financial services. GSMA records 260+ live deployments of mobile money services for the unbanked, demonstrating that in many countries the mobile phone is either usurping the bank or becoming the vital link into the banking system
14. There is a small but growing body of literature on BDSC. Notable contributions to this report came from CGAP 2015 (see Note 16), focused on BDSC firms serving emerging markets, and by CFSI, which primarily highlighted the U.S. market (Wolkowitz, Eva and Parker, Sarah. 2015. "Big Data, Big Potential: Harnessing Data Technology for the Underserved Market" CFSI)
15. Chen, Gregory, and Faz, Xavier. 2015. "The Potential of Digital Data: How Far Can It Advance Financial Inclusion?" Focus Note 100. Washington, D.C.: CGAP, January
16. See note 4. As an example of another estimate, the founders of Lenddo estimate that there are 1.2 BN adults with digital footprints who do not have access to formal credit
17. WSBI and Cignifi, "Mobile Phone Data as the Key to Promoting Financial Inclusion". See: [www.savings-banks.com/SiteCollectionDocuments/Cignifi.pdf](http://www.savings-banks.com/SiteCollectionDocuments/Cignifi.pdf)
18. Cook, Tamara, and McKay, Claudia. 2015. "How M-Shwari Works: The Story So Far." Forum 10. Washington, D.C.: CGAP and FSD Kenya
19. Interview with Lenddo
20. Interview with Lenddo
21. Mirzoyants-McKnight, Anastasia, and Gardner, Scott. "Big Data, Small Credit Study in Kenya and Colombia: Summary Report". InterMedia, December 2014. Commissioned by Omidyar Network.
22. These numbers represent interviewees who responded positively to the following categorizations: "enough money for food and clothes, can save a bit"; "enough money to buy some expensive goods"; and "enough money to buy anything". InterMedia, 2014.
23. This is followed by education (16%) and research (24%) respectively. InterMedia 2014
24. At this time, social networking sites are likely to be an extension of offline networks (used almost exclusively for general communication purposes), rather than an alternative to them
25. CGAP, and M-PESA: A Case Study of the Critical Early Adopters' Role in the Rapid Adoption of Mobile Money Banking in Kenya. 2008
26. InterMedia 2014
27. InterMedia 2014. Given the low levels of mobile money penetration in Colombia versus its ubiquity in Kenya, there were significant differences on this dimension across the two countries
28. This is consistent with recent evidence from studies of the lower and lower-middle class in emerging markets showing insecurity for individuals earning up to \$10/day. See Lopez-Calva, Luis F., and Eduardo Ortiz-Juarez. 2011. "A Vulnerability Approach to the Definition of the Middle Class." Policy Research Working Paper Series 5902. The World Bank
29. InterMedia 2014. The study found one segment that behaved uniquely: young financially stable males who use loans to repay previous loans and continually accumulate debt

30. Again, this could change when and if mobile money becomes more prevalent in Colombia
31. As a recent report showed, many U.S. consumers aren't sure about these lines. Whereas they can articulate situations in which personal data use would be inappropriate, they seem to be resigned to a lack of clarity and control over such. See: "The Tradeoff Fallacy " University of Pennsylvania, 2015. [www.asc.upenn.edu/sites/default/files/TradeoffFallacy\\_1.pdf](http://www.asc.upenn.edu/sites/default/files/TradeoffFallacy_1.pdf). An example of a different line on privacy is in the recent EU ruling on the 'right to be forgotten', or the individual's right, under certain conditions, to ask search engines to remove links with personal information about them. See: [ec.europa.eu/justice/data-protection/files/factsheets/factsheet\\_data\\_protection\\_en.pdf](http://ec.europa.eu/justice/data-protection/files/factsheets/factsheet_data_protection_en.pdf)
32. There is some tracking of privacy attitudes focused on the collection of consumer data by corporations and governments. For an example of the variation and evolution of such attitudes across multiple countries, see: [www.bigbrotherwatch.org.uk/2013/06/new-research-global-attitudes-to-privacy-online/](http://www.bigbrotherwatch.org.uk/2013/06/new-research-global-attitudes-to-privacy-online/)
33. CGAP (in conjunction with First Access) has done targeted and insightful work on understanding consumer attitudes toward products, privacy, and informed consent in Tanzania. See: [www.cgap.org/sites/default/files/Working-Paper-Informed-Consent-in-Mobile-Credit-Scoring-Aug-2014.pdf](http://www.cgap.org/sites/default/files/Working-Paper-Informed-Consent-in-Mobile-Credit-Scoring-Aug-2014.pdf)
34. See, for example, Kate McKee of CGAP's thoughtful blog post: [www.cgap.org/blog/what-if-poor-people-do-care-about-privacy-their-financial-data](http://www.cgap.org/blog/what-if-poor-people-do-care-about-privacy-their-financial-data)
35. A reminder, that since we focused on current and potential BDSC users in Kenya and Colombia, our sample was deliberately unrepresentative of these countries' populations
36. In general, Colombians are not highly familiar with mobile money, do not trust it, and are not willing to share their private information with providers even if it results in better services. Kenyans, in contrast, would share a great deal of personal information with mobile money providers—more than they would share with banks. These attitudes are likely to evolve with the market
37. CGAP 2014. See: [www.cgap.org/sites/default/files/Working-Paper-Informed-Consent-in-Mobile-Credit-Scoring-Aug-2014.pdf](http://www.cgap.org/sites/default/files/Working-Paper-Informed-Consent-in-Mobile-Credit-Scoring-Aug-2014.pdf)
38. Based on the consumer research conducted for this report, InterMedia found that "whether an institution is fully transparent is not specifically a factor" affecting trust in Kenya, whereas in Colombia, "transparency is far and away the main factor for trusting an institution"
39. It also raises questions about a number of other issues that are currently being researched including algorithmic bias and exclusion.
40. Depending on the jurisdiction, these concerns sometimes precede an adequate legal and regulatory framework on privacy. For instance, the EU has developed a detailed privacy framework, but many countries are yet to do so. In India, it is as yet legally unclear as to whether there is even a constitutional right to privacy
41. See: [www.consumerfinance.gov/blog/category/project-catalyst/](http://www.consumerfinance.gov/blog/category/project-catalyst/)
42. To implement this, CFPB proposed a policy of issuing "No Action" letters to give innovators assurance that they would not be second-guessed by regulators on key issues until the companies had a chance to test and refine their models
43. See: [www.cgap.org/blog/regulation-and-innovation-hand-hand](http://www.cgap.org/blog/regulation-and-innovation-hand-hand)
44. These consumers have varying levels of trust in formal financial institutions—oftentimes low, at least initially, for certain types of providers. In Colombia, for example, only private-sector banks garnered trust from at least 50 percent of consumers. In Kenya, amid higher trust levels overall, mobile money providers garnered more trust than financial institutions
45. For instance, and in some cases for several years, the "Fair Information Practice Principles" from the U.S., the EU "Data Protection Directive", and the OECD "Recommendation Concerning Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data" have the following attributes in common: notice and consent, data minimization, restrictions on reuse and retention, ability for notification and to correct, and adequate security
46. Please note that Figures 4, 7 and 8 present Kenya and Colombia data combined as weighted averages. Numbers in Figures 3, 5, 6, and 8 exceed 100 percent as consumers were allowed to select multiple options in their survey responses. All source data from InterMedia 2014.

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