

Alternative Data Transforming SME Finance

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Table of Contents

Acronyms	iii
Acknowledgements	iv
Foreword	v
Executive Summary.....	vii
Large SME Market, Credit Gaps, and Opportunities	1
The Rise of Digital SME Lending	5
4.1 SME Marketplace Lenders	8
4.2 Technology, E-commerce, and Payment Giants	15
4.3 Supply Chain Finance Platforms.....	18
4.4 Mobile Data-Based Lending Models.....	20
Digital Lenders and Bank Convergence: The Future of SME Finance	23
5.1 Advantages and Challenges for Digital SME Lenders	23
5.2 Advantages and Challenges for Banks	23
5.3 Collaborative Partnerships Gaining Momentum.....	24
5.4 The Rise of the Digital SME Banker/Lender.....	28
Alternative Data Policy Issues and Challenges	31
6.1 Data Privacy and Consumer Protection Issues	31
6.2 Opt-in Models as Opposed to Opt-out Models	31
6.3 Credit Reporting Service Providers.....	32
6.4 Cyber Security	32
6.5 Pricing Transparency.....	33
6.6 Balancing Integrity, Innovation, and a Competitive Marketplace	33
Conclusions and Recommendations.....	35
Endnotes	39
Annex 1 - Alternative SME Lender Business Profiles.....	45



Acronyms

ACH	Automated Clearing House	MYOB	Mind Your Own Business
API	Automated Programming Interface	O2O	Offline-to-online
APR	Annual Percentage Rate	OECD	Organisation for Economic Co-operation and Development
B2B	Business-to-business	OSHA	Occupational Safety and Health Administration
B2C	Business-to-consumer	P2B	People-to-business
B2G	Business-to-government	P2P	Peer-to-peer
CBA	Commercial Bank of Africa	PAFI	Payment Aspects of Financial Inclusion
CDR	Call detail records	POS	Point-of-sale
CRM	Customer relationship management	ROA	Returns on assets
CRF	China Rapid Finance	ROE	Returns on equity
EDC	Electronic data capture	RBS	Royal Bank of Scotland
EFL	Entrepreneurial Finance Lab	RMB	Renminbi
EFTPOS	Electronic funds transfer at point of sale	SBI	State Bank of India
FICO	Fair, Isaac and Company	SCF	Supply chain finance
FINRA	Financial Industry Regulatory Authority	SME	Small and Medium Enterprise
GIS	Geographic Information System	SMS	Short message service
GPFI	Global Partnership for Financial Inclusion	UK	United Kingdom
GPS	Global Positioning System	UPI	Unified Payment Interface
IFC	International Finance Corporation	UPS	United Parcel Service
ICCR	International Committee on Credit Reporting	US	United States
KCB	Kenya Commercial Bank	VAT	Value-added tax
KYC	Know Your Customer	WEF	World Economic Forum
MSME	Micro, Small and Medium Enterprises		
MVNO	Mobile Virtual Network Operator		

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FOREWORD

Access to financing remains one of the most significant constraints for the survival, growth, and productivity of micro, small, and medium enterprises (SMEs). The G20 countries, in developing their Global Partnership for Financial Inclusion, made SME finance one of its core workstreams. Realizing the benefits to employment, innovation and the provision of many key goods and services depends on including SMEs, not only individuals, in countries' financial inclusion strategies.

Digital SME finance, using alternative data, offers an extraordinary opportunity for addressing both sides of this problem. Growing digital finance will call on all the G20 High Level Principles for Digital Financial Inclusion.

The world's stock of digital data will double every two years through 2020, fueled by the phenomenal intersection of and growth in mobile, cloud, big data, electronic payments, and social. By 2020, 60 percent of this digital data will come from developing economies. Analytic and processing capabilities are making great leaps, dispersing data-driven intelligence faster across these new digital ecosystems at plummeting transaction costs. Smart mobile devices are making this information, computing power, and intelligence accessible to SMEs and their financiers around the world.

Every time SMEs and their customers use cloud-based services, conduct banking transactions, make or accept digital payments, browse the internet, use their mobile phones, engage in social media, buy or sell electronically, ship packages, or manage their receivables, payables, and record-keeping online, they create digital footprints. This real-time, and verified data can be mined to determine both capacity and willingness to repay loans.

A rapidly growing crop of technology-focused SME lenders are putting the use of SME digital data, customer needs, and advanced analytics at the center of their business models, setting forth new blueprints for disrupting the SME lending status quo. This report takes stock of the range of data, and the range of institutions using the data. It considers the opportunities alternative data presents to narrow the financing gap for SMEs. It also notes the new issues and potential risks raised by this massive increase and diversification of data supply to financial sector stability, and to consumer protection.

This report was undertaken for the GPFi by the SME Finance Forum and World Bank Group, with support from German Government, the Silicon Valley Community Foundation, and the Swiss State Secretariat for Economic Affairs (SECO).

Natascha Beinker

German Co-Chair, Global Partnership for Financial Inclusion
German Federal Ministry for Economic Development and Cooperation (BMZ)

Executive Summary

Access to financing remains one of the most significant constraints to the survival, growth, and productivity of micro, small, and medium enterprises (SMEs).

The SME credit gap has proven to be an enduring structural feature across both developing and developed markets, even in countries that have enacted a variety of policy measures to support SMEs and enhance financial inclusion more broadly. In the world's developing markets, about half of the estimated 400 million SMEs,¹ or 180 to 220 million SMEs, still have unmet credit needs totaling US\$2.1 to US\$2.6 trillion.²

The credit gap results from both demand and supply side problems. Many SMEs are reluctant to seek or cannot access credit due to: the reams of financial documentation and collateral requirements for obtaining a loan; high costs and interest rates; and multi-week decision timeframes.

Many banks consider SMEs to be high-risk clients, as well as high-cost clients to acquire, underwrite, and serve. Revenues per client are lower relative to larger non-SME corporate clients. SME information is also often opaque. Therefore, many banks limit most of their lending to the largest of the small firms. In the wake of the global financial crisis, increased capital and liquidity requirements, new regulations including those posed by Basel III,³ and shrinking returns on equity have made banks' SME lending challenges even more daunting. Compounding these challenges are the limited SME coverage by credit reporting service providers, weak contract or bankruptcy laws and judiciaries, and high SME informality in developing markets.

Digitizing SME finance and making use of transactional and alternative data offer an opportunity for addressing both sides of this problem. Therefore, this report focuses broadly on digital data for SME lending which includes new uses of both traditional data (bank, accounting, transactional, and sales data) as well as alternative data (online ranking and social media, mobile, and individual data, such as psychometric testing).

According to the International Data Corporation (IDC), the world's stock of digital data will double every two years through the year 2020. It will be fueled by the phenomenal intersection of and growth in mobile, cloud, electronic payments, and social media. Importantly, the IDC also says, by 2020, 60 percent of this digital data will come from developing economies.⁴ Analytic and processing capabilities are making similar leaps, dispersing data-driven intelligence faster across these new digital ecosystems — and at plummeting transaction costs.⁵ Smart mobile devices are making this information, computing power, and intelligence accessible to SMEs and their customers around the world.

REPORT SOURCES AND FOCAL POINTS

The report draws on ongoing primary and extensive secondary research covering:

- 800+ innovative digital SME lenders, and digital commerce, payments, and service providers in more than 60 countries across developed and developing markets (many emerging only within the last five years);
- Recent alternative SME financing developments and trends; and
- Ongoing discussions with digital SME lender principals and industry leaders.

The report focuses exclusively on the opportunities in digital SME data underpinning SME lending that is largely unsecured or secured by assets other than real estate — and the kinds of SME digital lending platforms which are using it. (Digital SME data does, however, include consumer data highly relevant to assessing the risk of micro and small firm SME owners.)

The report does not address issues of equity, reward, donation crowdfunding, or consumer and real estate alternative financing platforms — except in cases where a particular lending platform offers any of these types of financing in addition to SME lending.

The term "SME" as used throughout this report includes micro, small, and medium enterprises. (See Endnote 1 for SME definitions and other SME market information, data sources, and estimation methodologies presented in this report.)

Each time SMEs and their customers use cloud-based services, conduct banking transactions, make or accept digital payments, browse the Internet, use their mobile phones, engage in social media, get rated online, buy or sell electronically, ship packages, or manage their receivables, payables, and recordkeeping online, they create and deepen the digital footprints they leave behind. SMEs' own, real-time, and verified data — unprecedented volume, variety, and velocity — also means more data can be used for credit decision purposes.

A rapidly growing group of technology-focused SME lenders are putting the use of SME digital data, customer needs, and advanced analytics at the center of their business models, thereby setting forth new blueprints for disrupting the SME lending status quo. They can also offer more transparent, faster, easier, and better-tailored financing solutions that today's increasingly tech-savvy SMEs seek.

SMEs are often willing to share their data in exchange for value, that is, access to credit and other value-added tools that help them grow and become more productive. No longer are SME lenders limited to just underwriting a borrower based on dated, often incomplete financial statements, missing or limited credit bureau information, or collateral that substitutes for a deeper understanding. Instead, they are now able to develop a more comprehensive view of the borrower's business — one that illuminates previously invisible SME strengths and weaknesses.

The basis for this amplified view is a real-time flow of the SME's digital footprint from the borrower to the lender that creates and continuously updates a rich model of the business.⁶ Digitally native lenders leverage the advances in computing power to match smart algorithms to these massive data streams, including banking transaction information and money flows— and at increasingly lower costs. Data is gathered in a variety of ways, including through: partnerships between Fintech providers and banks; Fintechs with direct access to transactional data via bank Automated Programming Interfaces (APIs); or the use of screen scraping technology.⁷ The more diverse the data and the faster the data can be analyzed, the more predictive its value will be.

This report identifies the landscape of alternative data being increasingly used to expand access to SME finance. It also explores some of the new operating models and the new breed of SME digital lending originators. It also looks at collaborative partnerships that are harnessing alternative and transactional data. and the report concludes by listing potential areas that policymakers and regulators need to understand in order to enhance SME access to finance.

Key findings include:

- **Banks have valuable data, but are often not using it:** Banks have a highly valuable repository of SME data, including SME owners' customers' daily transaction data that provides reliable real-time visibility into SME cash flows and credit capacity. However, most banks lack the ability to create innovative SME lending models from it. The data often resides in a patchwork of legacy systems and data silos that make it difficult and costly to access. This gap has created an opening for digital SME lenders to capture this market segment.
- **Digital SME lenders are developing new relationships with SME customers and their data:** In some cases, non-bank digital SME lenders insert themselves between banks and their SME customers, and forge fundamental changes in SME customer expectations. SMEs are embracing the digital world more and more every day. Increasingly, many SMEs are more tech-savvy, more sensitive to slower service and paper-intensive loan applications, and more willing to shop around for unmet and unserved financing needs.
- **New SME digital data streams are becoming more readily available and accessible:** Digital SME lenders leverage vast and expanding stores of data, including from electronically verifiable, real-time sales, bank account money flows and balances, payments, social media, trading, logistics, business accounting, and credit reporting service providers, as well as a wide range of other private and public data sources used in the SME credit assessment process.
- **There are a wide range of digital SME originator lending business models:** The new digital SME lending originator business models that take advantage of the expanding universe of SME digital data vary widely. This report highlights these business models, selected players, and the digital SME data they use. It includes marketplace lenders, tech, e-commerce, and payment giants which are extending SME lending into their non-banking digital ecosystems where they are already dominant. It also includes supply chain financing firms, mobile micro-lenders graduating to SME lending, and innovative banks.
- **Digital SME lending is becoming more of a global trend:** That these innovators are sometimes simultaneously launching nearly identical products in developed and developing markets alike demonstrates just how profoundly alternative data and technology are leveling the playing field. As such, they are enabling new digital SME lenders in many parts in the world to leapfrog traditional bank SME financing barriers.⁸

- **Digital SME lender-bank collaboration is also a growing part of the future of SME finance:** Banks may have been blind to digital SME lenders at first, and digital SME lenders may have said they would replace banks. However, both parties now have come to a simple conclusion: there are limits to what each player can do on their own and there is strength in collaborating. Apart from partnerships with banks, some non-bank digital SME lenders are instead partnering with each other, tech giants, cloud-based SME service providers, or alternative lenders in other sectors. In other cases, they are securing their own banking licenses, suggesting some new non-bank digital SME lenders still plan to forge an alternate path, thereby bypassing traditional legacy banks altogether. A vital characteristic of these collaborations is a sharing of each partner's SME digital data. This facilitates the development of new and innovative SME credit decision models and expanded access to credit.
- **Access to data is no longer the problem in SME lending:** Digital SME lenders have dispelled the long-held notion that SME lending is not achievable in a scalable, efficient, and profitable manner. In an increasingly digital economy, these lenders are beginning to demonstrate that access to data is unlocking many of the earlier challenges to expanding SME lending. The digital economy has also given rise to an ever-evolving set of value-added cloud-based services to help SMEs with their finances, business planning, productivity, legal issues, data backup and security, file sharing, web conferencing, website builds, on-line marketing, business training, e-commerce, payments, loyalty programs, business intelligence, and more. To increase customer engagement and help their SME customers be more successful, banks and other SME lenders have started partnering with these platforms to offer SMEs these applications individually, together, or wrapped up with other core products and services.
- **However, access to data for SME lending brings new challenges:** With the abundance of alternative data, there are new issues of what to use, how to use it, and how to do this responsibly — while also respecting privacy and other important rights of SMEs.

These new entrants bring new complexities, risks, and ways of thinking about the SME financing value chains, as well as new agenda items for policymakers and regulators.

This report identifies some of the key digital data agenda items emerging as these innovations gain market traction to advance the stakeholder dialogue. The various policy theme areas that have surfaced for stakeholder consideration and further discussion, include:

- Data privacy and consumer protection issues
- Opt-in as opposed to opt-out models
- Credit information sharing
- Cyber security and data
- Pricing transparency
- Balancing integrity, innovation and a competitive marketplace

While a proportionate and enabling policy and regulatory framework will be need to support the use of alternative data for credit decision-making, it will also be important to implement the various checks and balances. Addressing these issues will require:

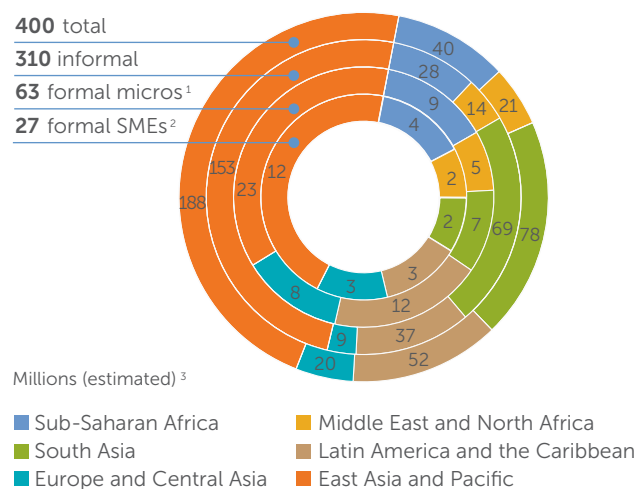
- A review of existing rules and regulations in place in order to improve the availability of reliable data for the purpose of enhancing SME financing, including access to bank data transactional information.
- Facilitating enhancements to improve credit information infrastructure, including SME credit reporting and access to data by alternative lenders.
- Increasing cooperation of various regulators, not only on a national level but also on a regional and international basis — especially to support innovative financing for SMEs involved in global value chains as well as oversight of alternative lenders operating in several markets.
- Involving policymakers in market competition rules.
- Understanding the challenges and balancing act required to address consumer protection, data privacy and the implications for increased cyber security measures in light of the use of new alternative data, new players and increasingly interconnected partnerships.

Large SME Market, Credit Gaps, and Opportunities

SMEs provide an extraordinarily large number of customers and prospects for financial services in developing markets. SMEs number an estimated 400 million in the global developing markets (Figure 1). Most (93 percent) are formal or informal micro firms. In addition, informal firms outnumber formal firms by a ratio of 3.4 to one.

About half of these SMEs (200 million) have unmet credit needs totaling approximately US\$2.1 to US\$2.6 trillion (Figures 2 and 3). They also maintain an estimated US\$14.6 to US\$17.8 trillion in cash balances (deposits), of which US\$3.3 to US\$4.1 trillion are held outside of banks. They hold the remainder, or US\$11.2 to US\$13.8 trillion, in current, savings, and investment deposit accounts (Figure 4).

Figure 1: Global developing markets' formal and informal SME market size



1. Registered firms with 1-4 employees
2. Registered firms typically with 5 to 249 employees
3. Margin of error ranges from plus or minus 9.1% to 10.0% for each developing region, and plus or minus 9.4% for the global developing market total

Source: IFC Enterprise Finance Gap Database (2011); Global Payments Experts LLC (GPE) analysis

Deposit account balances and transaction flows provide real-time visibility into SMEs' rolling net cash flows for credit decisions, which are often superior to out-of-date and unreliable SME financial statements. They provide indicators about incoming sales, outgoing expenses, debt payments, whether the business is growing or contracting, and how well the SME is handling overdrafts.

SMEs in developing markets also spend an estimated US\$8.0 to US\$10.0 trillion annually on business-to-business (B2B) transactions (Figure 5). Digitization of these payments provides valuable insights into SME supply chains for credit decisions.

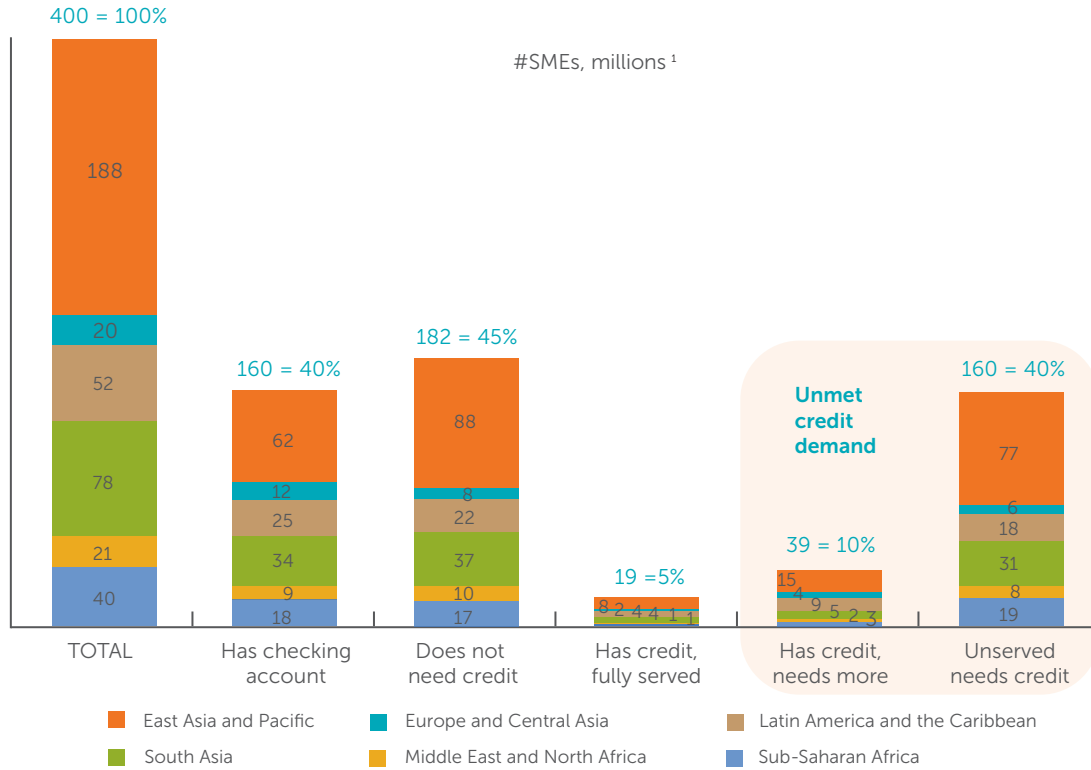
The size of the SME banking market is enormous. The consulting firm, McKinsey & Company, estimated that the global developing markets' SME banking revenue alone reached US\$367 billion by 2015 (Figure 6).⁹

The income mix is typically 40 percent deposits and 60 percent loans (including business credit cards and the assumption that overdrafts are included in the loan versus the deposit book).¹⁰

Leading SME banks can generate returns on assets (ROAs) that are three times that of overall bank ROAs (three to six percent versus one to three percent);¹¹ SME banking returns on equity (ROEs) of 25-33 percent;¹² and SME lending profits that are on average 35 percent higher than returns on overall bank loan portfolios.¹³

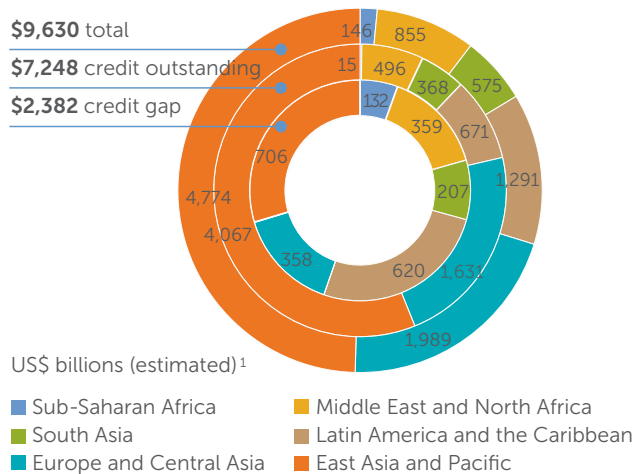
However, to achieve these returns, a sound, profitable SME banking model must tackle the challenges of three key risks simultaneously – credit risk, excessive cost to serve, and lower revenue per account relative to large corporate clients. Since the majority of credit and deposit accounts are small, lending, relationship management, and distribution costs must be radically lower than corporate banking costs, and cross-sell of non-credit products are essential for driving up revenue per client, offsetting higher risk, and improving credit quality.

Figure 2: Global developing markets' formal and informal SME credit demand



1. Margin of error ranges from plus or minus 9.1% to 10.0% for each region, and plus or minus 9.4% for the global market total
 Source: IFC Enterprise Finance Gap Database (2011); GPE analysis.

Figure 3: Global developing markets' SME credit demand opportunity value



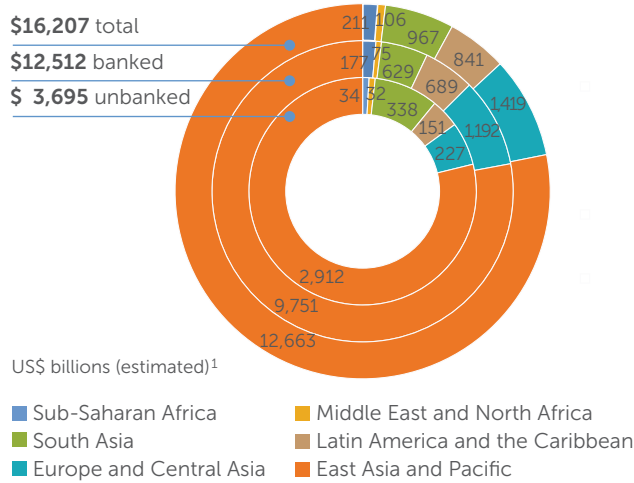
1. Margin of error ranges from plus or minus 9.4% to 10.3% for each region, and plus or minus 9.8% for the global market total. Includes all formal and informal SMEs.

Sources: IFC Enterprise Finance Gap Database (2011); McKinsey & Co. (August 2010), "Assessing and Mapping the Gap in Micro, Very Small, Small, and Medium Enterprise (MSME) Finance;" "Two trillion and counting;" GPE analysis.

Leading edge SME banks also carve out SMEs as a separate stand-alone business with its own profit center, credit policy and lending ecosystem, unique target customer, value proposition, and coherent systems of essential product, credit, and operational capabilities. They develop clear target market sub-segmentation and simple, tailored product value propositions, placing a high priority on the micro-small mass market opportunity, and manage risk through an innovative, strongly predictive, technology-led Retail credit-scoring lending approach and risk-based pricing. Last, but not least, successful alignment of SME relationship, credit risk, cost control, and credit policy dimensions requires sustained top executive support, commitment, and ongoing investment.

Globally, on average, the SME banking market accounts for 27 percent of retail banking net revenues¹⁴ (this climbs to as high as 50 percent when banks capture the owner's household banking relationship as well¹⁵). However, at most banks, much of this revenue today is concentrated in deposits, cards, and merchant payment services; bank SME lending is often perceived as too costly and risky, making it difficult for banks to pursue this opportunity. The SME segment is also a large and heterogeneous group which is hard to assess. In

Figure 4: Global developing markets' SME cash balances opportunity value



1. Margin of error ranges from plus or minus 6.7% to 10.5% for each region, and plus or minus 10.1% for the global market total

Sources: IFC Enterprise Finance Gap Database (2011); McKinsey & Co. (August 2010), "Assessing and Mapping the Gap in Micro, Very Small, Small, and Medium Enterprise (SME) Finance;" GPE analysis.

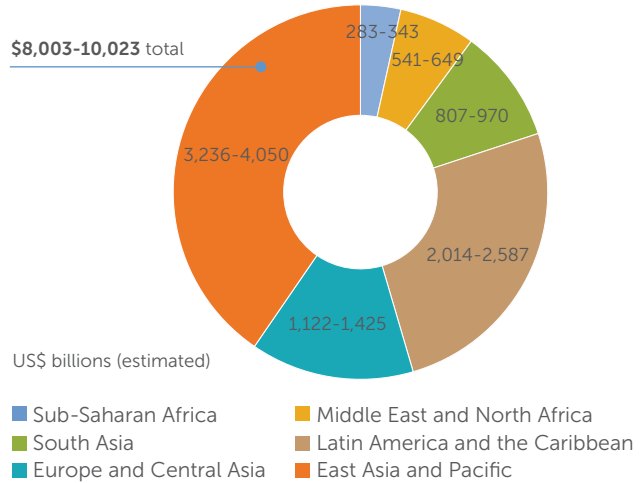
addition, new provisioning requirements and Basel III add a further deterrent to regulated banks attempting to weigh the potential benefits and costs of increasing SME finance.

Often banks that do provide SME credit insist on audited financial statements, tax returns, and collateral requirements, which most micro and small firms cannot provide. In addition, customer acquisition frequently involves using expensive brokers or middlemen, underwriting that is heavily collateral-based, and a tedious manual process requiring a lot of paperwork that often stretches to six weeks or more in duration. Fear of rejection can also deter even credit-worthy SMEs from applying.¹⁶

This in turn results in high costs to lend to SMEs. Given the low revenue per account relative to large corporate clients, this limits most SME lending to the perceived safety and comfortable margins involving the tiny segment of the biggest of SMEs. This narrow view severely limits banks' ability to capture the biggest slice of the SME opportunity.

Bankers are trained to mitigate risk, not perpetuate it. Faced with the challenge of managing a high volume of small credits (typically, 80 percent of the loans generate 20 percent of the loan value) and credit information opacity, credit risk

Figure 5: Global developing markets' SME B2B spending opportunity value



Source: Visa Commercial Expenditure (CCE) Index; GPE analysis.

executives worry that these challenges will lead to adverse selection; top executives worry they will not earn sufficient returns above their 10 to 15 percent cost of capital (Figure 7).

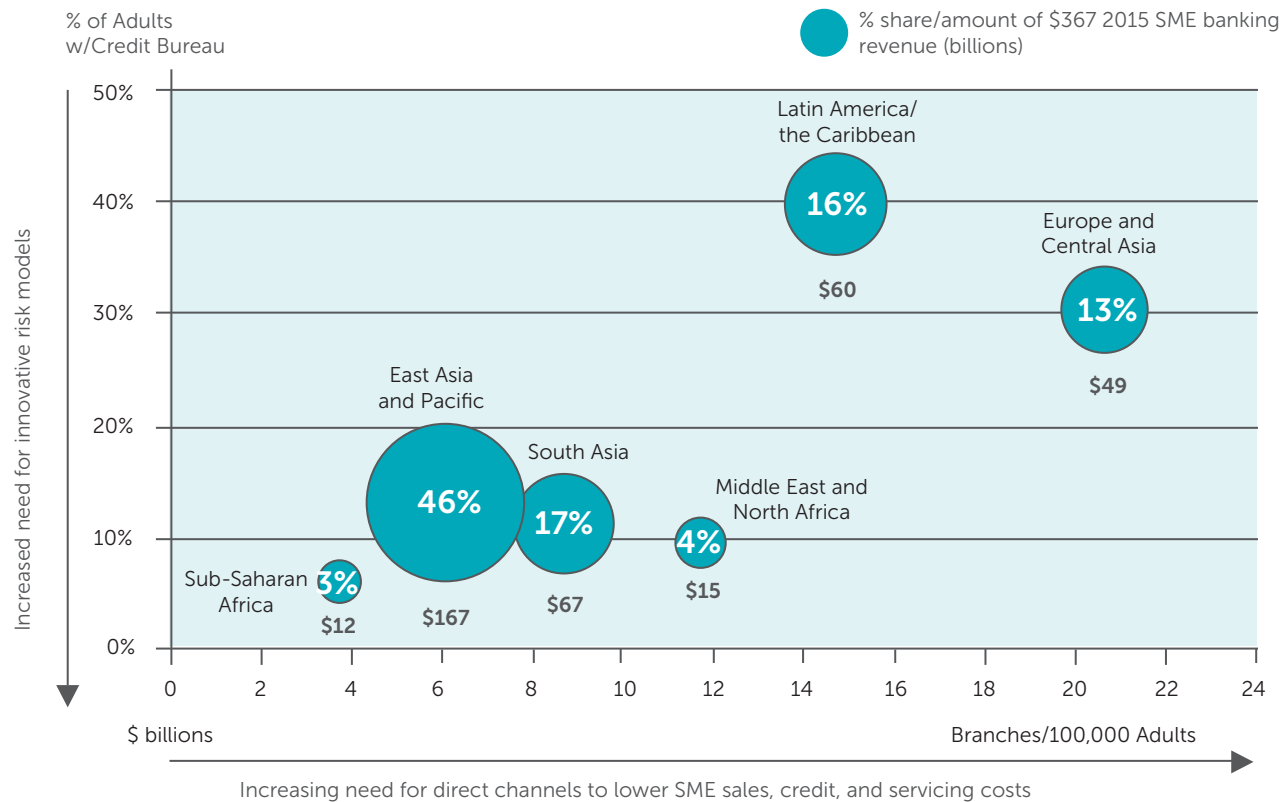
In the wake of the global financial crisis, increased capital and liquidity requirements, new regulations, and shrinking returns on equity, banks' SME lending challenges are even more daunting. As noted, limited SME coverage by credit reporting service providers, weak contract or bankruptcy laws, and high SME informality in emerging markets compound banks' challenges to offer SME finance.

All in all, banks in several markets face challenges addressing SME financing needs. SMEs, for their part, are frustrated with the entire customer experience and with banks' lack of responsiveness to SME product and service needs. This creates negative perceptions of banks which can be a broader issue than a lack of credit.¹⁷

A World Economic Forum (WEF) report released in June 2015 predicts that incumbent financial institutions will come under attack in areas where the greatest sources of customer friction meet the largest profit pools.¹⁸ Banks' failures to effectively serve SMEs have made them highly vulnerable to competition from the new breed of digital SME lenders.

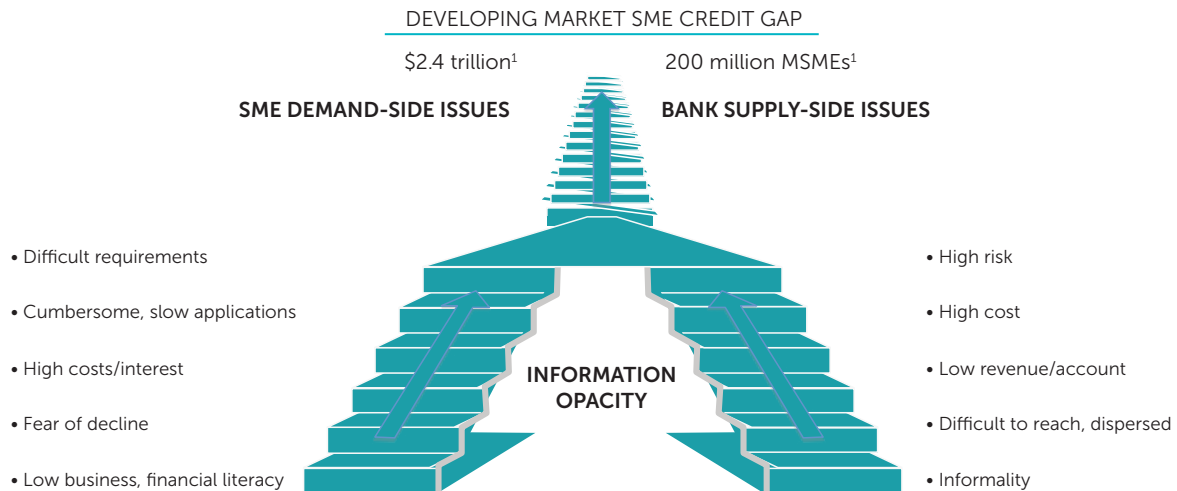
4 ALTERNATIVE DATA TRANSFORMING SME FINANCE

Figure 6. Three critical inputs – credit bureau coverage, SME client reach through branches, and the size of the SME banking revenue pool – help inform SME banking and lending business models and strategies



Sources: Mckinsey & Co. (August 2010), "Assessing and Mapping the Gap in Micro, very Small, and Medium Enterprise (MSME) Finance;" World Development Indicators. World Bank (as of 2014); GPE analysis

Figure 7: Credit executives worry about adverse selection; top executives worry they won't earn sufficient returns above their 10-15% cost of capital



Sources: IFC Enterprise Finance Gap Database (2011); McKinsey & Co. (August 2010), "Assessing and Mapping the Gap in Micro, Very Small, Small, and Medium Enterprise (MSME) Finance;" "Two trillion and counting;" GPE analysis. Margin of error is +/- 9.8% for the credit gap; 9.4% for # MSMEs. Includes all formal and informal SMEs.

The Rise of Digital SME Lending

Fueled by digitization, the aftermath of the global financial crisis, and the size of the SME banking prize, nimble, disruptive new entrants are unbundling SME banking relationships, nowhere more so than along the credit and payments value chain.

Digital SME lenders have begun to reach an important level in several markets, especially given rapid growth rates. They are no longer truly outside of the mainstream financial sector; rather, they are beginning to represent a whole new way to offer SME finance. China SME lenders dominate the rest of the world in terms of volume, reaching 8.6 times those of the United States (U.S.) and 23.4 times those of the United Kingdom (U.K.) in 2015. In the U.S., 2015 alternative SME lending volumes reached an estimated 4.3 percent share,¹⁹ whereas in the U.K., 4.3 percent of all new SME loans issued in 2015 were provided by digital SME lenders (Figure 8).²⁰

SME digital lenders are establishing themselves as serious SME finance players. While traditional banking players still dominate SME lending, the new digital SME finance lenders are growing rapidly. Unencumbered by legacy systems and processes, they are open to exploring cloud-based options and diverse digital data streams. They have engineered their solutions to begin to better address the credit needs of SME customers today, as well as to reduce their risks. This includes a greater digital end-to-end solution, with front-end, simple online and mobile customer interfaces feeding digital back-end systems and processes with automated risk analytics, as well as improvements in decision-making, client management and collection practices.²¹

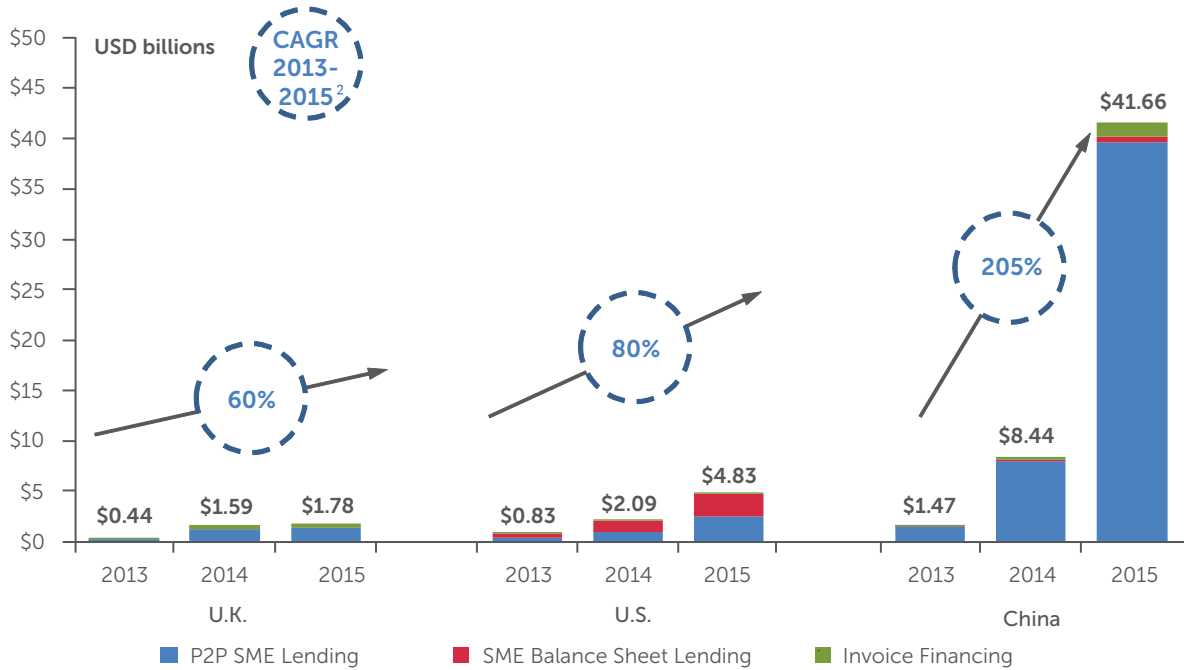
SME-focused digital lenders are also beginning to drive changes in SME customer expectations. Their simple and quick application processes allow SMEs to apply on any device at any time, with much or all of the data collection automated. When faced with long-form bank applications that require the submission of paper-intensive documentation and an often multi-week decision timeframes versus the streamlined processes of the innovators, many SME owners will choose the latter.

All SMEs stand to benefit from access to digital SME finance. Medium and small SMEs will enjoy faster and better SME lending decisions from a more comprehensive view of their business, and many micro and informal SMEs will gain access to formal credit for the first time through the enhanced visibility into their cash flows, payments, and trading as well as innovations that grant credit based on the financial strength and credit of large corporations that buy their products or services.

While the rapidly unfolding digital SME finance landscape constitutes a global laboratory, unique local market conditions and digital data availability catalyze localized innovation solutions. This in turn flows back up to enrich the global innovation laboratory. The future of digital SME finance no longer flows just from West to East, but also increasingly from East and South to West and North; likewise, the flow between developed and developing markets is a two-way exchange. Perhaps most interesting, developing countries' leapfrogs to mobile have made their SMEs even more open to technology adoption than their peers in developed economies. Such rapid growth in SME digital footprints is likely to propel an acceleration in digital SME finance. Another factor that has led to rapid growth and innovation in some developing markets such as China or Kenya has been a lack of or weaker regulatory/legislative regimes and implementation capacity. However, there are also risks associated with lack of regulation with respect to the goals of financial stability and a level playing field.

Digital SME finance firms are also increasingly collaborating with each other, tech giants, banks, digital payment firms, and SME cloud service firms to expand into new SME lending products (for example, adding invoice financing, lines of credit, or commercial property financing or adding personal loans or mortgages to serve the owner's household), enrich their SME data streams through direct data sharing, and efficiently reach new SME customers. In these ways, they are spreading a new generation of digital financing, business intelligence, and business development tools to SMEs across the globe. In addition, even highly commoditized areas, such as credit scoring and payments, are facing growing

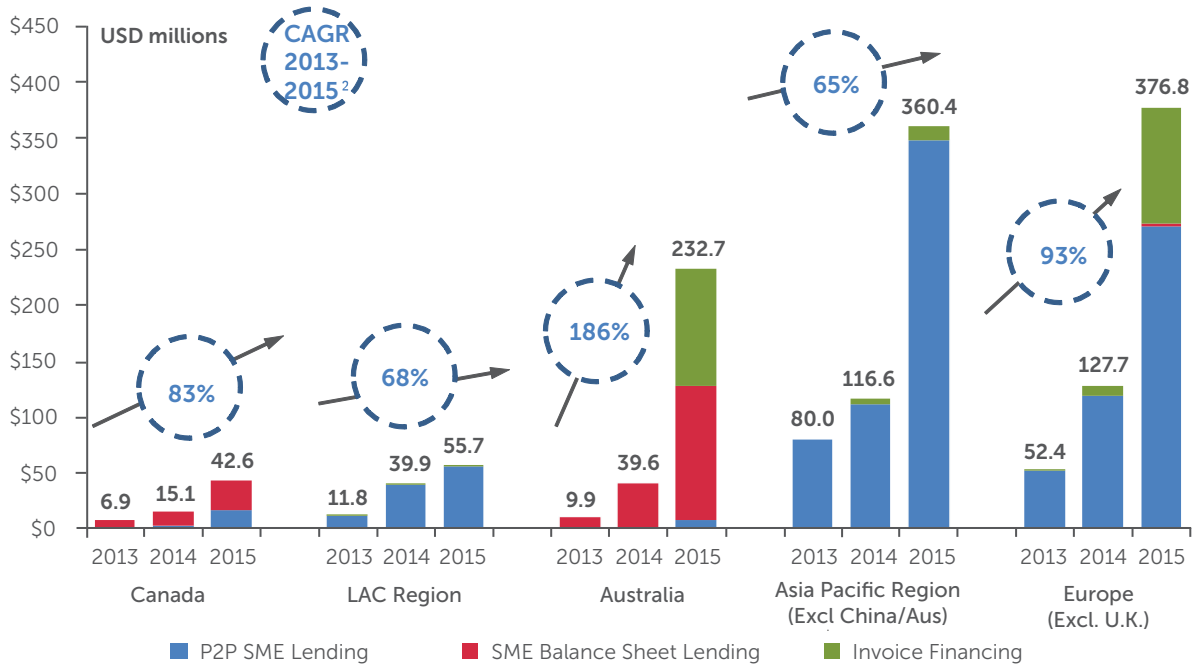
Figure 8: Alternative SME lenders' volume growth:¹ top three countries



1. Excludes P2P SME real estate lending and digital SME lending by banks and tech, e-commerce, payments, and supply chain financing giants
 2. CAGR = compounded annual growth rate

Sources: "Harnessing Potential: The Asia-Pacific Alternative Finance Benchmarking Report" (March 2016), "Pushing Boundaries: The 2015 UK Alternative Finance Industry Report" (April 2016), Cambridge Center for Alternative Finance et.al.; GPE analysis

Alternative SME lenders' volume growth:¹ other global regions



1. Excludes P2P SME real estate lending and digital SME lending by banks and tech, e-commerce, payments, and supply chain financing giants
 2. CAGR = compounded annual growth rate

Sources: "Harnessing Potential: The Asia-Pacific Alternative Finance Benchmarking Report" (March 2016), "Breaking New Ground: The Americas Alternative Finance Benchmarking Report" (April 2016), and "Sustaining Momentum: The 2nd European Alternative Industry Report" (September 2016), Cambridge Center for Alternative Finance et.al.; GPE analysis

digital competition. Further, new players continue to emerge globally.

However, from a policy stand point, data fragmentation and the potential for a few large players to “capture” or “control” access to SME data could create monopolies and an attendant potential for anti-competitive practices that might lock in SME clients to a single lender. Over the medium to long-term, policymakers and regulators will need to ensure that client data and access to credit information sharing are open and accessible to a broader range of SME lenders.

Digital data availability has largely been the driving force behind the growth in alternative lending over the last few years. Digital SME lenders, including some digital banks, use new types of data for determining creditworthiness to target a certain segment of SMEs that are underserved by banks. There is also evidence that they can analyze all of this data and issue credit much faster — and at much lower underwriting and servicing costs than traditional banks. This is especially true for those market niches that fall outside of the risk appetite for the more traditional banks. In these instances, the value of speed and convenience is enough for SMEs to take advantage of alternative lending models even when costs are similar.²² Further, the more diverse the data and the faster the analysis of the data, the more predictive its value (Figure 9).

While powerful analytics and scoring of many different sources and types of data are a fundamental pillar of the majority of these SME digital lenders and can increase the

predictive power of any SME scoring model, it is also important to note that not all the scoring technologies or data have the same predictive power across all situations.

While some variables commonly work across all markets, there is no perfect “one size fits all” complete solution. The source, degree of strength, and quality of the data, ability to capture the data in systems, credit bureau coverage, local payment or business practices, cultural norms, and bank or lender business lines, mix, and strategies are all factors that can make data highly predictive in one market, lender, or situation and not at all in another.

In addition, making use of alternative data requires putting together exceptional and experienced teams of data scientists and underwriters and developing a scoring technology approach (particularly when working with unstructured data like text from social media sites), that becomes progressively more precise and accurate as it draw lessons from steadily expanding data and underwriting decisions.

Another factor to keep in mind is that the earliest digital SME lenders were launched in 2006-2007; most have launched only within the last five years. While a select few launched in the midst of the 2008 financial crisis and weathered well during the slow economic recovery period, no digital SME lenders have been stress tested through a full economic down cycle. In addition, just like online and telephone banking, digital channels always attract a higher degree of fraud attempts and less creditworthy customers that all of these lenders must guard against.

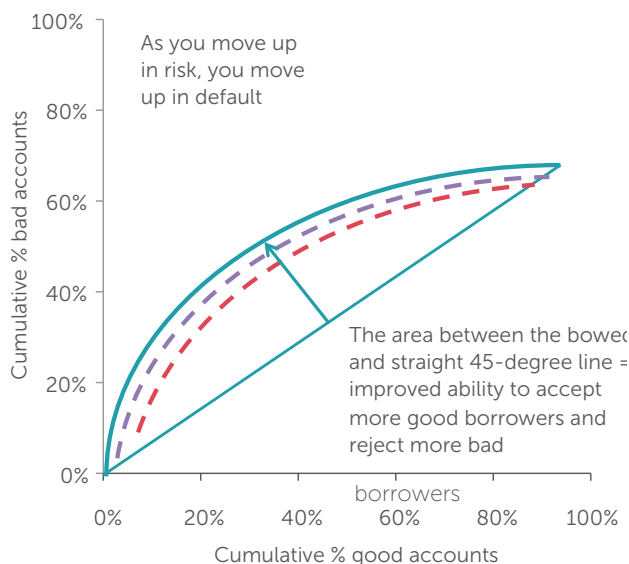
For all of these reasons, it is important to stress market forces are still testing these business models and their use of alternative data. While they show considerable promise and early proven reliability (where performance data is available), the testing, learning, and adaption process is ongoing.

The rapidly evolving new generation of online finance companies and digitized data make strict categorization of these new business models difficult. Indeed, the lines between them are blurring as they collaborate with each other and traditional banks, extend into new lending products, and respond to changing regulatory regimes.

There are four general institutional models using alternative digital SME data streams for SME lending decisions.²³ In addition, new “digital bank”-alternative finance partnerships are also becoming more of a key trend.

- **SME marketplace lenders** broadly describe non-bank digital lenders originating loans to SMEs through intermediary platforms, which connect SME borrowers to investors, directly to their own balance sheets, or from a combination of the two. These lenders digitally access and

Figure 9: More data, more diverse data = better risk models



Source: Global Payments Experts LLC.

substitute alternative SME data for missing conventional credit data, or enhance conventional credit data with alternative data. As such, they can expand the pool of credit-eligible SMEs and greatly simplify, speed up, and lower the cost of SME credit applications, underwriting, and portfolio management.

- **Tech, e-commerce, and payment giants** are leading global and/or country companies that have their origins in online marketplaces, search engine providers, payments, e-commerce, social networking, or computer technology. They are leveraging their diverse, massive alternative data streams generated from their own platforms or via their many partnerships. In this way, they are now offering loans and other financial services to their millions of captive SME customers.
- **Supply chain platforms** support SME financing during financial transactions — purchase orders, invoices, receivables, other claims, as well as related pre-shipment and post-shipment processes — between buyers and sellers trading and collaborating with each other along the supply chain. Triggers from the physical supply chain underpin each financial transaction. Emerging cloud-based digital supply chain platforms (including the use of blockchain²⁴) to gain visibility and insights into the different parts of the complex trade flows between buyers and sellers (for example, invoices, accounts payable, procurement data, historical business cash flows, shipping history, bills of lading, economic indicators, and taxes paid). This is done by digitizing documents and transactions and applying big data science and analytics to make credit decisions. They also leverage the financial stability and strength of bond-rated, large corporates who buy SME products or services. As such, they can offer SME financing faster and often at a lower cost.

Innovative supply chain financing platforms vary widely (for example, invoice or receivables discounting, payables finance, dynamic discounting, working capital auctions, factoring, inventory finance, or pre-shipment finance), as do the funding sources for financing (for example, banks, retail and capital market investors, corporate buyers, and lenders that compete for the financing). For all concerned, however, digitization provides for more efficient SME lending models. It helps suppliers, accelerates approvals, increases SME credit access, reduces the chance of supplier or procurement fraud, and often, but not always, lowers the cost of financing for SMEs.

- **Mobile-data based lending models** offer small mobile loans based on credit scores derived from mobile calling patterns, mobile transactions, mobile e-money usage, and mobile e-money linked savings history, as well as prior credit history data.

- **Digital Bank models** are among a few traditional banks, as well as a host of new banks, that are directly developing their own in-house alternative lending systems. In this regard, they are opening up their APIs to third-party service providers, or acquiring or partnering with alternative lenders.

Leveraging data to remove friction between the customer and the institution and improve risk management are at the center of these business models and companies. This section reviews the diversity of SME alternative data used alongside conventional data. It also examines the many forms of collaboration and partnerships that are expanding the universe of accessible SME digital data through representative SME digital lender profiles. While selected company profiles are used to best illustrate the data and its application to each business model category, their inclusion is not an endorsement or promotion of any company, business model, or the reliability of a particular alternative data set.

4.1 SME MARKETPLACE LENDERS

Marketplace lenders are defined as intermediary online platforms, which connect SME borrowers to investors, SME lenders that fund loans from their own balance sheets, and hybrid lenders that fund loans from both their own balance sheets and from investors.²⁵ This section illustrates the many types of SME digital data and credit approaches emerging across this diverse SME marketplace lending sector. It draws from a large number of: peer-to-peer (P2P) SME lenders; online balance sheet lenders; payment innovators; analytic providers; identity information providers; cloud-based lending platforms supporting lenders;²⁶ SME loan broker marketplaces;²⁷ and SME cloud-based, value-added products and services firms.

This section also analyzes how the various groups of players use digital SME data, as well as how alternative data is analyzed alongside conventional credit data. Another key and growing trend concerns the partnerships developing between fintechs themselves, as well as with banks. Together, they are working to expand both the universe of digital data available to lenders' credit decision models and the pool of target SMEs that lenders can reach and serve. These new lenders and partnerships are also better enabling SME lending across borders and increasingly around the world.

4.1.1 Peer-to-peer (P2P) SME lending platforms

P2P SME lending platforms originate loans for SME borrowers online for sale to retail or institutional investors. Investors can range from retail consumers and high-net-worth individuals to institutional investors (for example, banks, hedge

funds, pension funds, family offices, governments, and sovereign wealth funds). They typically focus on longer duration loans, for example, one-to-five years. In this context, they collect upfront origination fees from borrowers and service fees from borrowers, investors, or both throughout the loan's duration. Investors earn the interest spread on loans and bear the risk of loan default. Rates are often lower or comparable to bank rates.

Most platforms use automated credit screening models (some quite sophisticated) to risk, screen, and credit-rate borrowers, set interest rates (or have investors compete in an auction to set the interest rate within a floor or ceiling set by the platform), collect loan payments, monitor and service the loan portfolios, and handle collections and recoveries on delinquencies and defaults.

Peer-to-peer SME lenders have focused on a range of both traditional and alternative data, but their ability to manage this data in new ways is what has differentiated them from other lenders. This includes the ability to auto-populate underwriting information from a variety of data sources to facilitate clients, as well as the ability to fast track credit decision-making.

The UK's largest P2P lender is **Funding Circle**. It auto-populates underwriting information through APIs from many data sources into its credit decision engine, allowing it to make very fast decisions. Although it looks at traditional data—including business cash flow, personal cash flow, collateral, and personal assets that could be liquidated if necessary - its focus on alternative metrics, such as real-time cash flow, Yelp reviews, and an owner's active online engagement with the market, is also vitally important.

Like other P2P providers, it also obtains digital SME data, insights, and customers through its SME target and data-rich referral partners, including Santander and the Royal Bank of Scotland (RBS) in the UK (banking and payment transaction data), software firms Intuit and Sage (cloud accounting and business financial data) and H&R Block (bookkeeping, payroll, taxes and other accounting data). Partnerships with online SME loan broker marketplaces, such as LendingTree and Nav, as well as government and small business associations, help Funding Circle and other P2P lenders source potential clients.

Even where players are unable to directly access data from linkages to banks, alternative approaches include the use of screen scraping²⁸ to gather data from banking and payment transaction data. India-based **Faircent** integration with Yodlee provides it with bank scraping technology. This enables Faircent, with SME permission, to digitally link and update multiple borrower deposit and credit bank account

transactions in lieu of providing bank statements or directly linking with banks. In addition, players like Faircent also tap into credit bureau data and identity information through their linkages with companies such as TransUnion. Access to the Aadhaar-based eKYC service from TransUnion allows Faircent to streamline the process of identifying borrowers and reduce the amount of verifying documents borrowers are required to submit.

User Internet and loan portal behavior can also reveal valuable insights. Lithuania-based **SAVY** evaluates the SME owner's Internet behavior, history, previous loan requests and other statistical data, for example, user behavior on the SAVY portal, of the borrower, which can reveal the intentions of the borrower. For example, the company has found that if the owner does not read information thoroughly and does everything quickly by using copy and paste functions, it means he wants to get the money as quickly as possible, and is less likely to repay it. In contrast, if he spends more time gathering information and modeling different scenarios, he more likely plans repayment of the credit.²⁹

In addition to obtaining information from banks, financial institutions, credit reporting service providers, and online accounting systems, other P2P lenders are also obtaining information along supply chains. For example, South African-based **Rainfin** provides SME loans in a partnership with M2North, a company that enables SMEs and large industrial companies to exchange procurement documents. It also acts as an electronic intermediary between large companies and their supplier base. SMEs registered with M2North opt in with Rainfin to share their existing data. This enables RainFin to assess the credit-worthiness of a business, much like performing credit checks—and provides a risk rating for the individual borrowers using its site.

RainFin uses the data to calculate things such as a business's estimated cash-flows. Also, since many SMEs using M2North have supplied large corporates, it can also access a firm's black economic empowerment status³⁰ and value-added tax (VAT) registration. RainFin's online application process includes an intelligent SME-specific credit scorecard. This scorecard reviews not only an applicant's transactional history and financial health, but also additional non-traditional data points. These can include procurement history and social media, and are used to assign the SME to one of seven risk-rating levels.

Other examples of innovative partnerships and analysis by P2P lenders and supply chains comes from US-based **Lending Club**. It is partly fueling its SME loan growth through major SME lending partnership deals struck with **Google** and Walmart's **Sam's Clubs**. This gives Lending Club ready access to millions of SMEs and their valuable data virtually

for free. For example, Google uses Lending Club to provide low-cost, two-year loans of up to US\$600,000 to its Google for Work network comprised of more than 10,000 partners. Google already knows the borrowers and provides data (for example, data on sales, contracts, income, and identification information) to Lending Club. Lending Club in turn analyzes this data to evaluate Google SMEs' creditworthiness and services the loans.

US-based **ApplePie Capital**, which lends solely to franchisees looking to start, grow, or retrofit their businesses, obtains data from its franchisor partners (such as branded gyms, beauty parlors, pizza delivery, or quick service restaurants). Franchisees follow proven business models backed by the central resources of a national or regional franchisor brand with strong incentives to see their franchisees succeed. Franchisor data includes such things as how many stores they have opened or closed over what period of time, what a store should make in volume or revenue, what it costs to build, how long it takes to break even, and other unit economics broken down by geography and store footprint size. The franchisor also provides the criteria it uses to select franchisees (ApplePie's loan customers) and the market demand size for the product or service in the franchisee's store location. Feeding this kind of predictive alternative data into its credit underwriting and credit line size models enables ApplePie to better underwrite loans to franchisees. ApplePie also leverages its partnerships with brand name franchisors for low cost borrower acquisition.³¹

Other innovative partnerships that result in new alternative data come from e-commerce platforms. Alibaba's e-commerce platform, Alibaba.com e-Credit Line, is powered by Lending Club and demonstrates the importance of collaboration. Lending Club gets direct access to Alibaba's.com large base of U.S. buyers and sellers as well as their online transaction and trade data with Chinese suppliers to more accurately assess risk, and make faster decisions. SME loans can be made entailing less risk, and at lower interest rates. With direct access to Alibaba's SME trade and sales data, Lending Club can match repayment terms to the cash-flow cycles of borrowers, vet suppliers and shipments, and transfer the funds directly to the suppliers. Lending Club is fully responsible for underwriting. The risk is then borne by a pool of institutional investors, which gain a new low-risk asset class for investment.

Another example of e-commerce analysis by P2P SME lenders includes German-based **Bitbond**. By allowing borrowers to connect their eBay and PayPal accounts (among others), Bitbond gains an understanding of the creditworthiness of the applicant. Specifically, an online seller with a carefully guarded reputation, large amounts of positive feedback,

and a good payments history on PayPal is unlikely to act fraudulently.

P2P SME lenders focusing on supply chains include companies such as India-based **LoanZen**. It caters only to private/limited company borrowers in services and manufacturing that have large, reputed clients (that is, multinational corporations [MNCs] or listed Indian corporates). SMEs across these sectors furnish their invoices on the platform and receive unsecured loans from accredited investors who are comfortable with the borrower credit profile. LoanZen then enters into a tripartite escrow agreement administered by a bank to collateralize the receivables. The invoice is not "sold;" rather, LoanZen uses it primarily to determine the volume and tenor of the expected cash flows against which to extend unsecured credit. Borrowers connect their accounting, tax, and online banking data to LoanZen's artificial intelligence-based system, which completes the credit assessment within 15 minutes.

LoanZen has also partnered with other companies to support loans to numerous linked companies such as Treebo, a technology-and-analytics-enabled hotel chain. LoanZen uses Treebo's data on their partner hotels. Such data includes past booking history, future bookings for the property, guest feedback collected digitally, and quality performance data. As such, they can then offer credit to a segment of small hotel owners that has so far not had access to such lending.

Individual behavior, as well as the social media connections of small business owners, is seen as relevant. Faircent (with borrower permission) collects alternative data from social platforms, such as LinkedIn and Facebook, to supplement its analysis. The platform's algorithms also detect good and bad credit behavior. For example, a borrower struggling to pay back his debt after spending recklessly and hitting his maximum credit limit will rank poorly on the site. Faircent also evaluates borrowers' lifestyle patterns and how he or she spends money (for example, by buying the latest phone, or frequenting a pub, among other things) by analyzing the bank account and payment transaction data collected.

In addition to social media, P2P SME lenders are also exploring the use of psychometric credit information for credit scoring and screening.³² Indonesian-based **Moldaku** analyzes potential borrowers by going through five steps in the screening process, which includes a profile screening, an anti-fraud verification with a site visit, and a psychometric credit information tool test facilitated by financial technology company **Entrepreneurial Finance Lab (EFL)**. With EFL, applicants fill out a 25-minute questionnaire administered by the lender, and in less than 10 minutes EFL

generates a credit score. The score is based on the applicant's answers to questions capturing information that can predict loan repayment behavior, including the applicants' attitudes, beliefs, integrity, and performance. EFL then analyzes the data to produce a credit score that assesses the applicant's ability and willingness to repay a loan in real time. EFL also uses alternative data such as psychometrics, digital footprints and cellphone usage information to assess the repayment risk profile associated with any individual. EFL continues to improve its psychometric credit scoring capabilities, while simultaneously innovating with new alternative data sources. These sources include mobile phone usage data (through call detail records [CDRs]), social network data (through Facebook and Twitter, for instance), and location data (through the Global Positioning System [GPS] and the Geographic Information System [GIS]).

4.1.2 China's P2P lending platforms

China's P2P lending platforms are different from their counterparts in other markets due to their unique offline-to-online (O2O) feature. In China, many small firms are informal and accounting records are not often available, borrowers are harder to vet. As a result, many Chinese platforms employ a hybrid O2O model: platforms source investors online, but do customer acquisition and credit and background checks on borrowers offline. They achieve this by partnering with non-bank financial institutions or by the platform's own agents or staff. However, this also adds considerable expense. These include visits to the borrower's place of business to take pictures of the workplace. Some platforms in other emerging markets with similar profiles have also incorporated some offline borrower authentication steps, primarily to meet Know Your Customer (KYC) requirements — such as checks on physical identification (ID) cards.

One of the earliest P2P lenders, **CreditEase** has become a leading fintech company in China specializing in small business and consumer lending and wealth management for high net worth and mass affluent investors. Its cloud-computing Big Data Innovation Center (BDIC) infrastructure, among other things, powers all credit operations for the company, enabling the company to tap e-commerce, telecommunications, bank and credit card, insurance, supply chain, and social security data for its SME and consumer credit scoring and lending decisions. CreditEase also relies on these data sets to grade borrowers for risk, and then apply risk-based pricing based on the borrower's risk grade.

Using its ten plus years of accumulated credit, fraud, and other data assets, the company has also created customized products for specific SME segments. ShangTongDai powers

online, real-time credit for sellers on partner e-commerce marketplaces, including Amazon.cn, Alibaba's Lazada, Taobao, Tmall, and AliExpress platforms, eBay, and Wish. Sellers authorize access to their ecommerce data, including transaction volume, shop size, customer comments and ratings, and business performance, as well as other third party data such as purchase orders saved in enterprise resource planning, logistics, and inventory management software or service providers they use. ShangTonDai also uses public data about the seller on the internet and social networking sites to make the lending decision.

ShangTonDai is part of the YiQiFin platform for SMEs, positioned as a "Cloud CFO" focused on enhancing clients' business capacity across a range of functions for payments, wealth management, internal financial management, and financing processes. The platform integrates elements of specific industry structures, supply chain, the internet and finance, and includes SME services such as credit analysis and working capital gap calculations from upstream and downstream suppliers, incorporating inter-bank and the third-party payment options so that clients can operate cash flow and manage budgets, and wealth management. In the agriculture segment, CreditEase lets SMEs and farmers lease rather than purchase small equipment and over 180 kinds of agricultural equipment, and even includes a livestock leasing program that lets ranchers rent cows. Most recently, in May 2017, CreditEase launched a joint venture with **Tradeshift**, one of the world's largest business commerce platforms, to deliver a trade financing app that will bring low-cost financing to millions of businesses in China. The joint venture will be extended from the electronic invoice to the upstream and downstream supply chain processes, creating a closer trade link for global sourcing and supplier interconnection.

Consumers in China have generated a tremendous amount of data, even if they lack a proper credit history. These include data from online search, social networks, online shopping and payments. With data from the digital footprints of potential clients, P2P lenders like **China Rapid Finance (CRF)** use proprietary technology to establish credit scores for them.

Like CRF, China-based P2P lender **Dianrong** has also understood the importance of tapping into and leveraging e-commerce and online activities of potential borrowers. For example, Dianrong uses data from **Ant Financial's** credit scoring service, Sesame Credit. It also links and analyzes information from potential clients' social media accounts, such as Weibo, China's equivalent of Twitter. Apart from analyzing social media usage, clients who miss a payment may potentially be embarrassed online because Dianrong.com can post public requests on social media site to demand

recovery.³³ In addition to Alibaba, Dianrong is also partnering with eBay to lend money to Chinese businesses that sell goods to U.S. customers on eBay. More recently, Dianrong partnered with **FnConn**³⁴ to launch **Chained Finance**, a new blockchain platform for supply chain finance. The platform records and authenticates every payment and every supply chain transaction, creating greater visibility into suppliers and their trading data for SME lending decisions.

4.1.3 Online SME balance sheet lenders

SME balance sheet lenders retain the portfolio and collect the interest rate spread over the lifetime of the loans. This increased return and steady cash flow comes with the risk of possible loan defaults. Many balance sheet lenders tend to focus on specialized lending, such as riskier newer or smaller SMEs, point-of-sale (POS) financing loans, merchant cash advances, or factoring; others handle the full credit spectrum. In general, the duration of these loans is shorter (for example, ranging from one month to three years) and they have higher rates than those of P2P SME lenders.

They generally mine transactional data as a key source of information in their credit scoring model. In addition to providing loan origination and risk-based loan pricing, they are also able to reduce the costs and risks associated with repayments by automating loan payment deductions from business accounts or directly from regular sales transactions on a regular basis, most often daily. Transactional data also supports ongoing risk management, and provides continuous feedback on the situation of a borrower using data analytics. Most also have a strong bank channel, wholesale funding, servicing, merchant acquiring, and/or data sharing and customer acquisition distribution partnerships. These lenders have also been the most active in bank-digital SME lender collaborations.

US-based **Kabbage** typically analyzes large numbers of transactions for each loan. It achieves this by pulling alternative data from its customers' bank accounts and/or merchant accounts, merchant acquiring processors, social networks, e-commerce sites, accounting software, shipping records (United Parcel Service [UPS], for example), and dozens of other private and public sources to gauge the risk and creditworthiness of the business seeking the loan. It also pulls updated information from these data sources daily. A typical Kabbage loan transaction, say executives, could call on 30 different data sources and up to 50 different models to score that data at any different time.³⁵ The company's underwriting engine pulls information such as business revenues, vendor payments, and tax and accounting data to assign and adjust the proper line of credit in real time.

Merchants can optionally link their Facebook, Twitter, and UPS shipping accounts, which may qualify them for fee discounts. Executives describe this data as the 'space between that data' to decide if Kabbage is going to offer the merchant capital or not. Facebook business, Yelp, Foursquare, Amazon, and eBay offer business reviews, rankings, and other rich data regarding how SMEs actually interact with their customers. For example, Kabbage has determined that customers who link to their social media information are 20 percent less likely to be delinquent than those who do not. The company has also found customer review data – how long the company has been receiving reviews, what the trajectory has been for volume and quality over time – is predictive.³⁶

Similarly, linkages with logistic and e-commerce providers are also producing relevant data. UPS shipping data can reveal how many packages an SME is shipping, how many packages are returned, the longevity of the business, and if the quantity of packages shipped is going up or down. If the company knows that someone has been shipping antique mugs for at least two years for eBay and Amazon, always ships out via two-day UPS air, has more than 500 friends on Facebook, and is always sending out deals on Twitter, then they are often a better risk regardless of the credit score.³⁷

Online SME balance sheet lenders also take advantage of analyzing e-commerce transactions and linking with players such as Malaysian-based **GAX Finance**. It partners with e-commerce portals such as Lelong.com.my and auto repair workshops to tap into their data. It is also extending its solutions to medium-to-large business-to-consumer (B2C) retailers with payment gateways, as well as SMEs offering software-as-a-service. UK-based **iwoca** allows SMEs to upload and link their e-commerce accounts (for example, eBay, Amazon, notonthehighstreet.com, and ekmPowershop). E-commerce accounts show sales, active product listings, and feedback ratings.

India-based **Capital Float's** partnerships include B2C e-commerce platforms Snapdeal, Shopclues, Paytm, Flipkart, and Amazon as well as B2B e-commerce sites Alibaba.com, Tolexo, IndustryBuying, and OfBusiness, among others. The company offers loans to SMEs on these platforms, and SME loan applicants can digitally upload their seller e-commerce trading to Capital Float. Capital Float's scoring technology also evaluates merchant customer reviews on social media and e-commerce sites. In addition, it does psychometric assessments (for example, applicants are asked questions about their ability to scale a business, attitude toward credit, and how they compare to competitors.)

Capital Float overlaps alternative digital data with government data like Aadhaar a identity data and the SME's profitability

parameters, such as current product usage levels, industry margins, potential future earnings, and risk parameters (such as probability of default). It combines this with conventional credit bureau metrics, and tailors its credit-scoring model for each category of potential borrower it serves. For example, many of its customers want to grow businesses they have built on e-commerce platforms, whereas others are planning to sell online for the first time and need startup capital. In this regard, small-scale manufacturers have different profiles than retailers.

Capital Float has recently launched a mobile loan application which can approve loans in less than eight minutes. Within a few months, the company is already seeing 50 percent of its applications and online browsing come in through its mobile platform. It has also struck a partnership with Payworld, a payment innovator targeting customers in remote locations, to reach India's 12 million kirana, or local neighborhood stores. In addition, Capital Float has built a customized credit model to provide credit to these retailers.

Another example of alternative data comes from receivable-based invoice financing and analysis of SME's online account data. Australia-based **Waddle** provides automated, receivables-based invoice financing and a financing add-on that uses the SME's cloud accounting (as well as bank account information) to make SME loans unusually simple. It is a fully online, cloud-based platform enabling SME owners to obtain automatic approvals (automated real-time lending) and ongoing revolving credit lines based on outstanding invoices held in their online accounting packages. Funding occurs within 24 hours. The credit line is only for SMEs that transact B2B.

Waddle links directly into accounting and banking data, allowing it to provide revolving credit lines to close cash flow gaps to better support business growth. Once the accounting application is linked, Waddle calculates a "borrowing base" (the total amount of eligible collateral) based on the business data. Waddle then establishes a fluid line of credit to the business. The more the borrower uses Waddle, maintains an excellent repayment history and demonstrates higher sales transactions, the higher the credit limit. Waddle also integrates with Xero, MYOB and QuickBooks Online. By leveraging API technology, Waddle has the ability to automate the entire lending process. Business owners that use cloud accounting are able to link their online accounts to Waddle, and can opt-in for a two-way data exchange automating every aspect of financing.

With a focus on lending to the growing mobile app developer niche, US-based **Aprenita** sources alternative data on their borrowers through direct integration with App Stores

(GooglePlay and Apple) and analytics accounts (for example, Flurry, Localytics, MixPanel, and AppsFigures), which allows it to quickly analyze past performance and future potential. Using their algorithms, Aprenita can evaluate a company's creditworthiness within a few minutes and issue funds within 24 hours. Data Aprenita accesses in the mobile apps market includes customer engagement, sales, marketing conversion, outstanding invoices from the app store, and customer feedback, among other data. The app stores also provide information about the number of times the app has been downloaded, as well as reviews by customers. Advertising networks provide data on the amount of revenue the app is generating. Other data analytics platforms reveal how many active users the app has, how much time users typically spend on the app, and data on the effectiveness of the app's marketing efforts.

POS and other merchant-based sales data are also being harnessed by marketplace lenders to facilitate access to credit. US-based **Square Capital** utilizes machine learning models. It identifies and makes offers to growing businesses it deems credit-eligible based on the SME's sales and payments growth data, the mix of the SME's new and returning customers (an indicator of how the company grows), the daily number of and size of sales tickets, and cash flow, among other information sources. The loan functions similarly to a merchant cash advance, which is a sale of future receivables. However, it is technically structured as a loan subject to lending regulations that must be paid off within 18 months of acceptance.

Iwoca also uses online payment or POS merchant acceptance accounts (for example, Magento, Skrill, Shopify, Sage Pay, Paypal, and Linnworks), as well as online accounting (for example, FreeAgent, Sage), business bank statements, VAT returns (which can be downloaded directly from the U.K. government's Her Majesty's Revenue and Customs web site), and company accounts during the application process. VAT returns provide sales history; company accounts show business profitability; payment and POS accounts capture sales and identity information; and accounting records provide a comprehensive view of the business financials.

Similarly, Capital Float uses SME mobile POS payment providers MSwipe and Pine Labs, as well as information from transportation-sharing service Uber (vehicle loans for drivers), and cloud accounting software provider Intuit. Kenya-based **Kopo Kopo** Grow Cash Advance grew out of an effort to support SME mobile money payments. This occurred after it partnered with Safaricom to acquire merchants to accept M-PESA at the point of sale (this service was later branded Lipa na M-PESA, Swahili for "Pay with M-PESA").

The company launched Kopo Kopo Grow Cash Advance in Kenya, a merchant cash advance product for its mobile money merchants. The company's merchant payment data enabled it to build a credit profile that analyzes over 200 variables to price risk and to extend unsecured loans. The product crunches hundreds of data-driven "signals" to predict a merchant's future cash flow and propensity to default. It then pre-qualifies that merchant for loan ranges tailored to the business. The merchant then selects the loan amount desired, dedicates a percentage of daily mobile money sales to repaying the loan, and digitally signs the terms and conditions. The whole process from application to loan disbursement can take minutes. Kopo Kopo automatically deducts a percentage of every single mobile money payment in order to amortize an outstanding loan. As a result, merchants do not have to remember to pay installments over the term of their loan. It gets repaid automatically, transaction by transaction, every single day.

Zoona is a top mobile money operator in Zambia. The company launched Zoona Growth to provide an affordable and accessible working capital financing package for Zoona agents. It is linked to customer usage and the growth of Zoona payments. Zoona agents may pre-qualify for the product and can access larger facilities as their payment volume grows; it is particularly popular among rural agents. Due to its relationships with its agents and mobile transaction data, Zoona has the ability to carefully perform credit scoring for individuals and manage default risks.

Australia-based **Tyro Payments**, an electronic funds transfer at point of sale (EFTPOS) provider, offers Tyro Smart Growth Funding as an SME financing service for its merchants. The financing is based on the company's cash flow, its financial health (as seen through the data streaming in from Tyro's POS), and cloud accounting tools linked to Tyro and already in use by the business.

UK-based **Worldpay** is another global payment processing provider. It now shares its data with alternative lenders to offer merchant cash advance services. It teamed with US-based **CAN Capital** to allow merchants to apply in minutes using a simple and fast application process online or over the phone. Merchants can receive funds in as little as two business days. Payments are based on a percentage of daily card revenues that are automated as daily remittances from the borrower's merchant account.

What these profiles clearly show is that SME cash advances based largely on the SME's own merchant payment history are a product that is equally viable across both developing and developed markets. In this regard, it can be slightly adjusted for local market conditions. These cases also

demonstrate that it can be introduced with a high degree of success.³⁸

In emerging markets struggling to increase payment acceptance points, there is strong evidence to demonstrate that a working capital product can be a powerful element not only in building a more compelling value proposition for merchants, but also singularly effective in growing merchant payment acceptance. Merchants are highly motivated to convert their customers from cash to electronic payments in order to build the electronic transaction history that will qualify them for credit access. For example, a Kopo Kopo analysis that compared merchant sales during a period three months prior to accessing the loan (reflecting the incentive to achieve a good first credit score), and three months after (reflecting the incentive to repay quickly and earn better terms), showed a 42 percent higher transaction growth among Grow Cash Advance merchants.³⁹

Another group using similar data are the hybrid funding SME platform lenders that combine funding elements of both SME balance sheet lenders and P2P business models. These lenders fund loans from their own balance sheets as well as from investors. They lend their own capital directly to SMEs, but also access institutional investor capital or securitize their loans to fund a portion of their portfolios. In terms of alternative data usage, both online SME balance sheet lenders and hybrid funding SME platform lenders gather similar data.

Like online SME balance sheet lenders, hybrid SME lenders are using similar alternative data to support lending models. US-based **OnDeck** is the leading online SME balance sheet lender with hybrid funding. According to OnDeck's proprietary credit scoring model, it analyzes more than 2,000 data points from over 100 external data sources and 10 million SMEs in its proprietary database. It then creates an SME business credit profile. This data ranges from cash flow and transactional data to public records, as well as its own extensive internal historical performance data.

Similar to examples of other marketplace SME lenders, companies like OnDeck also facilitate the credit application process. It integrates with online accounting and banking transactions as well as POS merchant data to better analyze data, such as transaction frequency and volume, seasonal sales, expenses, and customer revenues. The company then analyzes personal and business credit histories from credit reporting service providers. It also scans public and legal records for past lawsuits or liens, and reviews Occupational Safety and Health Administration (OSHA)⁴⁰ records for violations. Finally, it considers the health of an applicant's industry and region, and checks online business reviews from sites such as Yelp, Angie's List, and Google Places. In

order to take into account different types of SMEs, OnDeck applies one of a dozen different statistical models to the data depending on business age, industry and geography.

However, unlike the other marketplace SME lenders, OnDeck is also able to underwrite a wider range of credit products, which gives it a cost advantage in acquiring customers. OnDeck can now: underwrite a short duration loan to a relatively new business; provide a line of credit product to a business with sporadic cash flow needs; or arrange a bank-like, multi-year loan to a mature business. OnDeck receives automated electronic repayments from its borrowers either on a weekly or daily basis, giving it extensive insights into its borrowers' cash flows. This feature enables it to quickly offer loan adjustments to those borrowers having trouble — or to revamp its model if a batch of loans begins to experience difficulties.

4.2 TECHNOLOGY, E-COMMERCE, AND PAYMENT GIANTS

The world's digital giants now moving into financial services and SME lending have their origins in online marketplaces, search engines, payments, social networking, e-commerce, or computer technology. What ties them together is that they already have millions of captive SME customers, began as all-digital companies, and use digital means and big data to offer new financial services, with a notable focus on SME finance.

Compared to other alternative SME lenders, they control extensive data about SMEs and the customers they serve and can allocate large investments in developing their financial services initiatives. They strive to offer top-notch digital services and experiences. Indeed, they are far ahead of traditional banks in using analytics and artificial intelligence to understand customer preferences and behaviors.

4.2.1 CHINA

China's national champions in e-commerce (Alibaba and Ant Financial), social media (**Tencent**), and search engines (**Baidu**) have all made concerted moves into finance with private banking platforms. They may later outdo anything we have seen in the West to become the world's largest center of digital banking. These new entrants were faster than the banks to offer convenient, reliable, fast and cost-efficient alternatives to traditional bank payments. Their client numbers match or exceed China's top banks. Further, they have more financial resources at their disposal, which means that they can sustain larger, more balance sheet intensive businesses than their Western counterparts. High national Internet and

mobile penetration, as well as accommodative regulations, have helped to fuel their growth.⁴¹

The **Alibaba** e-commerce giant's domestic and international virtual marketplaces and its financial services arm **Ant Financial** serve over 425 million active buyers, over 10 million active SME sellers, and over 450 million active Alipay payment users.⁴² Ant's MYBank, an internet-only bank, launched in June 2015 and in early 2016 merged with Ant Micro Loans, Ant's SME lending arm, which provides loans to Alibaba's merchant sellers up to \$155,000. Ant Financial has developed Zhima Credit (Sesame Credit), a credit rating service, which leverages "big data" technology and customer behavior analytics. It uses both online and offline data to generate credit scores for consumers and SMEs. In addition to owner characteristics, the company takes into consideration: the records on sellers, including the number and value of their sales; their cash flows through Alipay; comments posted by their buyers; tax payments and customs declarations for users who export; shipping and logistics data; and even utility bills from sellers' factories. Indeed, vendors that have been in business for only two or three months can secure a credit line using this wealth of real-time data.

Alibaba and Ant Financial can also spot vendors who have been too aggressive in certain fields and lagging in others. They achieve this by evaluating a mix of data, including their promotional campaigns and profit margins. Based on the results, Ant can provide suggestions for how the vendors need to adjust their operations, and provide financial support accordingly. Another algorithm allows Ant to pace lending more effectively by increasing credit lines to accelerate inventory purchases needed for big promotions later in the year. This can well exceed the typical lending maximum of US\$155,000 for qualified merchants.⁴³

In January 2016, Alibaba forged more than 25 partnerships with credit rating agencies and financial institutions in China and other parts of the world. These new partnerships are enabling Alibaba to better offer SMEs cross-border trade finance, as well as to enhance their credit rating scoring tool for SMEs. The service may also help overseas buyers identify trustworthy trading partners and provide Chinese suppliers access to even more financing options.⁴⁴

Tencent is China's leading social media and gaming platform in China. It maintains ubiquitous messaging platforms, including Weixin/WeChat messaging (752 million active users) and QQ mobile messaging (877 million active users), as well as its Qzone social network (648 million active users). It also owns the number two Tenpay payment platform in China, with over 300 million Weixin/QQ accounts linked to bank cards for payments.⁴⁵ In January 2015, Tencent launched

China's first online-only private bank, **WeBank**, in a joint venture with two investment firms and several other shareholders.

Tencent also announced it would launch the Tencent credit rating tool to analyze SMEs. It has partnered with China Rapid Finance to help crunch the Tencent's massive data troves to create credit ratings for some 800 million Tencent users.⁴⁶ Tencent also uses data from its many partner companies to assess SME credit. For example, WeBank's inaugural loan to a Shenzhen trucker was based on data provided by a Tencent-invested logistics platform called Huochebang, or Truck Club. Huochebang's app links logistics providers with truck driver companies that need to ship cargo. As of September 2014, its platforms were serving 167,000 logistics customers and nearly one million drivers with 650,000 trucks. Huochebang's large data bank contains information about each club-member trucker, such as total travel distances, what kinds of orders have been handled, as well as cargo volumes. WeBank was able to leverage this data to provide the loan to the Shenzhen trucker to pay in advance for the freight being hauled.⁴⁷

Baidu is the leading Chinese language Internet search provider. In November 2015, Baidu established **Baixin Bank**, a direct bank, in a joint venture with China CITIC Bank. Baixin Bank will have the advantages of both Internet-based operations and the convenience of traditional banking accounts. Baidu will bring its user traffic resources, behavioral data on users and data analytics to Baixin Bank, and CITIC will bring its knowledge of financial products. Although much of the initial focus was on consumer financing opportunities, China Rapid Finance's analysis of search engine data from Baidu reveals ample opportunities to connect to potential small business borrowers. The data reveals correlations between search engine phrases and borrowing needs and behavior. For example, small business owners that search keywords "photography" or "hiking" are likely to need an unsecured small loan. They are also likely to be looking for their first loan, as compared with individuals searching keywords such as "cars" or "scuba diving." However, small business owners searching online for "lottery tickets" are unlikely to be a safe bet for lending platforms.⁴⁸

DHgate.com is the biggest transactional cross-border B2B e-commerce marketplace in China. DHGate began offering SME financing in 2010 in partnership with leading Chinese banks.⁴⁹ DHfinet, its internet finance branch, supplies e-commerce micro-loans to SMEs so they can scale up their businesses. SMEs applying for the loans must conduct business on DHGate's cross-border e-commerce platform, which generates a tremendous amount of data. DHgate.com then partners with financial institutions to

supply the loans from their own balance sheets. The banks bear the risk, and own the loan assets.

The eBaotong loan (a near instant loan offered in conjunction with China Construction Bank) is a typical offering. The seller needs to arrange the product shipment first, and after entering the tracking number on DHgate.com, a dialogue box will pop up immediately on the screen, asking whether the seller wants to apply for a micro loan. After receiving customer authorization, DHgate.com supplies partner financial institutions with the big data generated on DHgate.com so that they can analyze it and determine risk. Sellers can often receive a micro loan within 30 minutes for an amount up to 80 percent of the goods' value.

The data generated is not just limited to a customer's transaction history; buyer feedback, logistics data, and inventory data all factor into risk assessment. Data analyzed includes factors such as: the average number of orders per month; the total transaction amounts per month; and the number of disputes received. It also includes the duration of being an active seller, number of consecutive transaction days, date of first order, buyers' loyalty to this seller, return, dispute, and loyalty rates, and more.

After a loan is released, the after-loan management data analysis is used to detect abnormal behaviors, monitor the process, predict trends, make related comparisons, and alert financial institutions if there are identified risks. DHGate's system also ranks specific performance measures, such as sellers' response time to questions, product quality, product information, and the information sellers provide on the shipping status of orders, thereby making them more reliable predictors of business risk and stability.

4.2.2 THE UNITED STATES

American tech companies — Amazon, Apple, Facebook, and Google — entered the financial services market a few years ago. While all offer payments services, two of them, Amazon and Paypal, also offer SME lending to sellers on their platforms.

Seattle-based **Amazon**, which has over 300 million active users and 176 million site visits a day, began offering short-term inventory financing loans (of three-to-six months) to its some two million SME third party sellers beginning in October 2012 in the US, the UK, and Japan. Since Amazon moves merchandise for e-commerce vendors, it has information about what products customers are buying, what products are shipped and returned, as well as statistics on payment trends. It also relies on close relationships with sellers and mitigates risk by taking loan payments from proceeds due to

sellers for their sales.⁵⁰ A business must sell a certain volume of goods on the Amazon storefront before it can receive an offer of a loan. In order to qualify for such financing, Amazon also focuses on data related to the merchant's reputation with its customers.

US-based **PayPal Working Capital** offers SME customers flexible working capital advances for a risk-based flat fee, no additional costs or penalties, and no time limit on repayment. PayPal "members" — those who have been with the payments firm through a business or Premier account for at least 90 days — are eligible to apply. The company automatically deducts repayments as a fixed percentage of daily sales (for example, the business pays more when sales are strong and less when sales are slow).

Business owners choose the percentage to deduct when they apply. The amount ranges from 10 to 30 percent; the higher the percentage, the lower the flat fee. PayPal draws on insights into how its merchant customers operate, and uses its sales history data to power rapid lending decisions. Poor eBay seller ratings, a history of chargebacks or too many chargebacks, active PayPal disputes, holds on the PayPal account, and seasonal sales fluctuations can be red flags. PayPal conducts no external credit checks on loan applicants, and approves and issues funding usually within minutes.

4.2.3 INDIA

India Stack is a term used to describe a powerful public digital identity, contracts, documentation and payments infrastructure. It was created by the government in reforms begun in 2010, and is ushering in a new age of secure, frictionless, low-cost digital financial and business transactions. The India Stack comprises Aadhaar (biometric identity), E-KYC (sharing identity information with consent), E-Sign (digital document signing), Digital Locker (secure government document issuance, storage, and sharing), and Unified Payment Interface (UPI), a payments architecture that enables universal electronic payments. In addition, in a move to curtail the shadow economy and reduce corruption, the government announced the demonetization of all RS 500 (about US\$7.70) and RS 1,000 (about US\$15 currency notes) on November 8, 2016. While controversial and disruptive, the move has already led to a rapid uptake in digital payment transactions and acceptance points across India.

India has a young, but fast-growing start-up digital SME lending industry. It is using these data sources and their newly accessible digital transaction flows to circumvent previous barriers to SME credit in India. These include underreported income, poor accounting practices and business acumen,

lack of formal banking relationships, no or poor proper documents and financial statements. At the same time, many SMEs in India have embraced the digital world by using mobile phones and payments, social media, and e-commerce (as both sellers and buyers).

Digital SME lending in the Indian context, not unlike the Chinese context, aims to use digital data as a surrogate for financial and missing credit history data. With the SMEs' permission, the new SME lenders farm digital data from banking and payment transactions (including deposits, cards, current accounts, mobile usage, people-to-business [P2B] business-to-government [B2G], and business-to-business [B2B] transactions), financial and business data in cloud accounting and customer relationship management (CRM) systems, government registration, identity, and tax records, and credit reporting service providers.

Fast-growing B2B and B2C e-commerce platforms can provide rich sources of buyer and seller trading transactional information, information on sales and returns, and customer reviews and ranking data. Large corporates' data on their SME suppliers (procurement, purchase, invoicing, order fulfillment, and the like) in the supply chain mitigates risk for the more opaque SMEs. Most digital SME lenders are actively gathering social media data and experimenting with it. For the most part, they presently rely on it only sparingly. In this context, they seek to supplement more predictive and electronically verifiable cash flow data until they can prove which social media data is consistently and reliably predictive for SME lending purposes.

Unlike China, it should be noted that e-commerce and payments platforms and the emerging Payments Banks in India are not allowed to lend directly to SMEs. As a result, they have actively embraced partnerships with digital SME lenders (to-date, all SME balance sheet lenders) to provide financing to their SME sellers (and buyers) to build loyalty and sales. Some platforms also are starting to earn new revenues from sharing SME data with lenders used in the lending decisions. These partnerships also tend to be good cultural fits because both industries have digital bases and embrace advanced technology, data-driven business decisions, advanced analytics, and fast-paced implementation and growth.

On India's B2C and B2B e-commerce fronts **Amazon India** competes primarily with home-grown e-commerce company **Flipkart** (which acquired rival eBay India in April 2017 and is rapidly closing in on a deal to acquire or merge with financially-troubled rival Snapdeal). This is occurring even as other global companies, such as China's **Alibaba** (through its investments in Paytm eCommerce), China's **Tencent**

(through its investment in Flipkart), and Japan's **Rakuten**, are readying themselves to stake a claim in the Indian market. With just a fraction of the 30 million SMEs captured, however, this market remains wide open to all competitors.

Alibaba entered India through the **SMILE** B2B platform on Alibaba.com for India's SMEs, and through a 62 percent ownership stake in the newly formed Paytm eCommerce. It appears likely that Alibaba will refocus its India eCommerce growth efforts on the Paytm assets, and apply alternative data lessons from the Chinese to the Indian market. In July 2016, Paytm launched small loans for its e-commerce and offline sellers, with Capital Float lending at launch and other lenders, including Aditya Birla Finance and Capital First, in the pipeline as potential partners. The loans are based on the Paytm merchant transaction histories on its platform, plus additional proprietary data contributed by the lenders.

B2B e-commerce marketplace players such as **AmazonBusiness.in**, **Alibaba.com's SMILE** platform, **Industrybuying.com**, **Power2SME**, **Tolexo**, **Bizongo**, **Moglix**, **Tradelndia.com**, and **ofBusiness.com** are expanding rapidly in India. Capital Float is one of the most active digital SME lenders. It now has partnerships with almost all the major B2B and B2C e-commerce platforms, followed by **Lendingkart**. **NeoGrowth** lends to sellers on Flipkart while **Capital First** provides AmazonBusiness.in SME loans.

4.3 SUPPLY CHAIN FINANCE PLATFORMS

Invoice financing and supply chain and trade credit have become important methods to facilitate access to credit for many SMEs that operate in the B2B sector. Invoice and trade credit occurs when SME suppliers selling to larger businesses defer collection for a period of time after delivery. Regarding supply chain finance (SCF), suppliers have the ability to finance their receivables at a discount. In the U.K., it is estimated that 80 percent of B2B transactions are undertaken using credit. Globally, the estimate is that almost US\$74 trillion of SME business is conducted on these types of credit terms.⁵¹

While these approaches to finance have been around for a long time, the difference today is that far more SMEs can be served. They now qualify for these products because the new digital data platforms can extend these services to smaller firms on a more cost-effective basis. This is happening more and more in countries and markets where SMEs are able to move their accounting and B2B relationships online and to digital platforms. These new models link the various transaction parties (buyer, seller, and financing provider) to improve business efficiency and lower financing costs. This includes utilizing electronic channels to improve collaboration along the supply chains and achieving comparative cost advantages.

New fintech platforms are providing novel ways of utilizing data to drive down the costs and improve the speed at which credit can be made available. Apart from analyzing traditional credit scores of SME owners, these platforms are able to analyze business cashflow — especially for those SMEs that are able to utilize online accounting systems and/or able to access bank account information. This also includes data on the strength (credit-worthiness) of the customers (buyers).

Some of the alternative data used by companies like **Kick-further** include: average margin; annual revenue versus financing amount requested; the Alexa global rank on traffic flowing to the business websites; third party reviews of the business and/or their products and services; the percentage of financing amount covered by existing purchase orders; and the social network outreach of the business on Facebook, LinkedIn, Twitter, and Instagram.

Electronic invoicing providers such as **Tungsten**, **Basware** and **Tradeshift** allow SME suppliers and their business customers to exchange electronic invoices — without the need for supporting paper trails. While suppliers can utilize any of their existing online invoicing systems, even SMEs without billing systems can utilize the third-party fintech's web portals to create and track their own e-invoices online. They can do so without needing to purchase additional software. These new "Intelligently linked supply chains" providers like Basware provide both lenders and suppliers themselves with the ability to more closely track transactions by utilizing online dashboards and tools that enable discount financing arrangements.

Online B2B supply chain payments from accounts receivable (sending invoices) to accounts payable (receiving invoices) and cloud-based technologies like **Traxpay** allow access to improved financing solutions. These new solutions avoid many of the challenges associated with more static-based payment models offered by banks. With traditional static-based payment models, it is difficult for the "who, what, when, where, why, or how" of the transaction to change without significant costs and delays. When any of these variables change in the course of a transaction, payment and financing options are delayed and often require manual intervention. With cloud-based solutions that offer a 360-degree view of the business payments along the supply chain, flexibility can be achieved by allowing variables in the transaction to change. This facilitates supply chain financing in real-time as it directly connects into and monitors the transaction through an adaptive rules-based engine, which also reduces the risk of lenders as they can trigger financing to coincide with a transaction.

Several fintech companies, such as **Remitia** and **ApexPeak**, are also currently working on using statistical modeling to approve invoice financing. Companies such as Remitia are quantifying the risk of paying an invoice on receipt before the usual approval process. This new statistical invoice modeling allows for a deeper analysis into accounts payable data. It helps to predict the type of approval risk an invoice submitted from an existing or new supplier may bring. Although the pricing of payment risk for unapproved invoices is not new, the notion of taking historical payment and invoice files to quantify and group different risks to arrive at the probability that a submitted invoice will ultimately be approved and paid without any modifications is new. It takes the concept into the account by using alternative data from a buy-side systems perspective.⁵²

What is important about these models is that by combining payment analytics to accounts payable and procurement data sets, there are now new opportunities for predictive modeling that can enhance invoice financing. As Jason Busch, one of the founders of Remitia points out:

Imagine, for example, being able to estimate the probability of a purchase order being fulfilled exactly as specified even before issuance, or how small, system-recommended changes to a purchase order could result in a better outcome. Or think about being able to dynamically sub-out [remove] different payment mechanisms without a user even being aware of it, such as masking a p-card-type payment model with a proprietary one that captures an even larger rebate, but goes through an invoice consolidator or prime partner to circumvent the card companies.⁵³

Some companies such as **ApexPeak** are also able to utilize alternative data to facilitate invoice financing by conducting background checks on suppliers and buyers. This allows for the creation of some new models to better manage the risks of financing fake transactions, as well as using a data-driven credit scoring engine to assess success or failure rates.

India-based **Kinara Capital** and Tanzania-based **GO Finance** analyze sales and delivery data for SMEs inside vertical supply chains, alternative decision data that is particularly valuable where SME credit data is otherwise scarce or non-existent. Such companies obtain this data from partnerships and technical integrations with fast-moving consumer goods companies, vertical supply chains (for example, Airtel, and Coca Cola); and network partners (for example, retail chain Mother Earth for artisan, cooperative, and fair trade suppliers). These partnerships have made it possible to digitally assess credit to lower acquisition costs and provide flexible terms at below market rates.

Other companies, such as **Wave** — which is partnering with Barclay's, are creating a peer-to-peer decentralized network that connects all carriers, banks, forwarders, traders and other parties involved in the international trading supply chain. Using decentralized technologies, all communication between these parties will be direct and will not pass through a specific central entity. This is making financing supply chains and trade financing easier than the more paper-based approaches used in the past.⁵⁴

In its first application, Wave tackled the shipping industry's arcane "bill of lading" document, necessitated by the lack of trust in international trade documentation systems and virtually changed since the 17th century. It is a receipt given to the sender of the goods that provides proof of shipment and ownership of the goods while they are shipped by sea. Once the goods arrive at their destination, the sender ships the original bill of lading, usually by overnight courier, to the recipient, who uses it to claim the merchandise. Each international shipment also involves a host of other players — from banks that loan the money to pay for the goods and insurance companies that are liable as the merchandise plies the seas (each with a lien on the shipment) to government customs inspectors, who need to check the goods and make sure they match up on the documentation. The more hands in the pie, the greater the possibility of confusion, loss and fraud, the result of which can be never-ending lawsuits as each party blames the other for negligence. The Wave innovation, based on blockchain technology, ensures there is no possibility of fraud or falsified documents.⁵⁵

New developments in the area of linking blockchain technologies⁵⁶ to supply chain finance are also showing some promise. Blockchain technology is now being applied to things like smart contracts that show the potential to drastically reduce the need for more traditional Letters of Credit.⁵⁷ For example, some companies are utilizing ledger-based blockchain technology for invoicing and payments, which also helps to facilitate access to finance. Using blockchain technology allows buyers to approve invoices once they are delivered. Similar to the other supply chain-financing models that rely on dynamic transactional data, new blockchain technologies can facilitate payment to financiers of an invoice — even if there are multiple parties benefiting, including all parties from the buyer to the supplier as well as the lender.⁵⁸ This is making financing supply chains and trade financing easier than the more paper-based approaches of the past.⁵⁹

4.4 MOBILE DATA-BASED LENDING MODELS

Mobile data-based lending models are characterized by the offering of instant small mobile loans using credit scores based on mobile transactions, mobile e-money usage, mobile e-money linked savings history, as well as prior credit history data. In addition, new third-party mobile-based lenders are using data from apps running on smartphones in alternative credit scoring models. These data sources can include SMS messages, emails, the number of people you call or text in a day, geo-based location, social network usage, and retail receipts.

Even obscure variables can bear on a decision to extend credit. These variables can include: how frequently a user recharges the phone's battery; how many incoming text messages a client receives; how many miles the client travels in a given day; whether a client gambles; and even how a client enters contacts into their phone (for instance, the decision to add a contact's last name correlates with creditworthiness.)⁶⁰

Most of the early lenders in this category have been the result of partnerships between mobile e-money operators owned by telecommunications companies and banks. At least one bank has now entered this market. In addition, there has been a rapid expansion across parts of East Africa and other countries, where mobile-enabled e-money accounts are expanding rapidly and being used by consumers and SMEs. Banks and e-money operators partner and make use of their collective data. Banks can not only utilize data from mobile e-money providers, but also utilize their own data from the client's savings and credit histories. Over time, as customers take up the use of smartphones, the data richness should enhance the ability to offer mobile data-based lending, including for SMEs.

The first mobile-based lending partnership model that reached scale was **Safaricom** and the **Commercial Bank of Africa (CBA)**. They launched their **M-Shwari** product in 2012. Since then, this joint product offered by CBA has been lending to small borrowers using an algorithm based on customer use of Safaricom services. For first-time borrowers, the credit-scoring algorithm consists of a set of Safaricom's data related to airtime, airtime credit, usage of Safaricom's e-money product (**M-PESA**), and the length of time as a customer of the carrier. Each variable has differing weights and scores based on its predictive power.

The telecommunications use history of potential new M-Shwari borrowers is assessed against these scorecard variables and a score is assigned. The cumulative score of all the variables enables CBA to make an informed choice about which new clients to provide an initial loan to and which to pass on. Repeat loans are then also based on past repayment history. Although most of these loans are for very short-term needs, as loan sizes expand, SMEs are also making use of these products — especially the larger loan sizes now offered by competitors like the **Kenya Commercial Bank (KCB)**.

Similar to the partnership between CBA and Safaricom, KCB also partnered with Safaricom to offer a rival product called the **KCB M-Pesa** account. Like M-Shwari, the KCB M-PESA account is a virtual mobile-based bank account that is offered to M-PESA registered customers. It allows them to save funds in the bank and earn interest, as well as to borrow micro loans.⁶¹ Although the features of the two linked bank services are similar, the KCB product offers much larger amounts, and lower loan interest rates and longer terms. These terms make it more viable for micro and SMEs with terms of up 180 days — as opposed to 30-60 days for M-Shwari — and for amounts of US\$10,000).

One of the interesting features of the KCB M-Pesa loan is that it offers an auto-debit feature. This feature first debits the KCB M-Pesa account on the payment date. If there are insufficient funds in that account, the other KCB accounts or M-Pesa account will be debited. This is quite different from the M-Shwari loan where payments need to be made manually by the borrower. Both rely on alternative data based on mobile enabled e-money transactions and airtime usage rates, as well as more traditional information on credit history of previous loans and on-time payments by customers.

In addition to banks, there are several third-party lenders relying on smartphone data to develop alternative data credit scoring models. These include companies such as **Branch**, which operates in Kenya and Tanzania US-based **Tala** (previously InVenture), which operates in Kenya and the Philippines. Tala also has plans to extend operations into other markets.

Branch uses credit-scoring models that analyze short message service (SMS) logs, social network data, call data, GPS data, and contact lists. Tala uses a similar range of data sets to determine credit worthiness. Some specific examples include the fact that those clients that make regular phone

calls with close contacts and with their own customer bases increase repayment predictability by four percent. This is especially relevant for micro-businesses to demonstrate repeated business relationships with their customers. The same is true for business owners who stay near their businesses and have consistent travel patterns. They have a six percent better repayment performance. In addition, those

with a good network diversity, including more than 58 contacts, make better borrowers.⁶² Tala also determined that applicants who organized at least 40 percent of their contacts using both their first and last names were 16 times more likely to repay on time because this tendency demonstrated the organizational skills of the borrower.

Digital Lenders and Bank Convergence: The Future of SME Finance

Initially banks may have been blind to the potential of digital SME lenders, and digital SME lenders may have highlighted their disruptive models. However, now both parties have come to a simple conclusion: that is, that there is more strength in convergence and collaborative models.

5.1 ADVANTAGES AND CHALLENGES FOR DIGITAL SME LENDERS

First, digital SME lenders have competitive advantages over existing banks because of convenience, cost, speed, technology, and new data credit screening. Convenience — clean, simple, friction-free applications, fast decisions and funding — wins business for these marketplaces, even where rates and fees are significantly higher than banks.

Second, unburdened with branch networks, existing legacy/silo-based systems, and often lighter regulatory and compliance costs, it is also true that many digital lenders have radically lower lending costs (for example some report their lending costs are 400 plus basis points lower as a percent of outstanding loans⁶³). Bankers simply cannot close this efficiency gap through cost-cutting measures alone.

However, three items on the lending cost bar — including the cost to acquire, the cost of credit losses, and the cost of capital — dwarf the cost of maintaining a client relationship. Non-bank digital lenders have a significantly higher cost of capital than their bank competitors, which can leverage their nearly free deposits for liquidity. In today's environment, a bank's cost of funds for a line of credit will typically be in the range of 50-60 basis points—a fraction of the 600-1,200 basis points marginal cost for non-bank lenders.⁶⁴ The capital markets can also seize up without notice, leaving these platforms without the capital to meet borrower demand. Indeed, this was an issue faced by U.S. platforms in particular in the first half of 2016.

Most online alternative lenders also have a relatively high cost of customer acquisition, as most are still building awareness. They must use channels such as marketing ads and incentive offers on online platforms, television or radio advertising, direct mail, brokers, and loan aggregation portals to source

new customers to grow.⁶⁵ Developing market players have the extra challenges of reaching out to and educating less literate or technology-adept SME segments. Response rates are typically modest, and low approval rates can mean the cost per successful applicant can be quite high. High acquisition costs can still make economic sense if the platform gets a lot of repeat borrowers; however, high customer churn translates into a big profitability problem.

Although alternative lenders may enjoy potentially lighter regulations and compliance burdens, there are clear signs across many country markets that more regulations are all but inevitable as the industry grows. Digital lenders are currently operating under a plethora of regulatory and licensing schemes. Some countries have not yet implemented any specific regulations (India); some waited until lending volumes reached sufficient scale or problems emerged before implementing regulations (China); and still others proactively implemented regulatory regimes early on that balance a supportive regulatory environment with safety and soundness while also promoting competition (U.K.).

At the same time, some fintech companies have obtained or are pursuing full banking licenses, most notably the technology giants in China — Alibaba, Baidu, and Tencent — but also Tyro Payments in Australia, **Solaris** in Germany, and **Klarna** in Sweden. Likewise, a number of all-digital or mobile-first, mostly consumer-focused banks have emerged in the last two to three years. Only a handful, though, are or are planning to focus heavily on the SME segment, including: Finland-based **Holvi** (acquired by BBVA in 2016); Mexico-based **Bankaool**; Russia-based **Tochka Bank**; UK-based **CivilisedBank** and **Tide** Germany-based **Penta**, and US-based **SEED**.

5.2 ADVANTAGES AND CHALLENGES FOR BANKS

Existing banks have strengths that they can use as they defend against digital SME lenders. First, banks have large, captive customer bases and a recognized brand. SMEs walk into their branches on a regular basis without prompting. Demand for or awareness of traditional bank products,

even without the speed and agility of the new digital lenders, still exists — at least in the more developed markets. Further, banks rely on their own SME customers to proactively come to them when they need funding. Alternatively, banks can pre-screen customers using their own data for offers. As would be expected, the risk profile of these existing SME customers of banks skews more in a positive direction. In contrast, direct lending that targets new SME clients tends to attract a larger number of marginal, less credit-worthy and even a certain number of fraudulent applicants, thereby driving up acquisition costs.

Second, banks have extraordinarily valuable internal SME data and all of it is virtually free, beginning with the powerful SME free cash flow data, as evidenced by business current and POS merchant accounts. However, unlike digital SME lenders which use this data as a staple, most traditional banks ignore it for SME lending decisions. Although digital lending partnerships are starting to make the banks' own data available for online SME lending decisions, banks which make the leap to build their own digital SME lending platforms could instead find, underwrite, and book loans at near-zero cost—a massive advantage over non-bank lenders.

Third, banks' low cost of funds from customer deposits place them at a unique advantage over non-bank SME lenders.

Fourth, although startups may be agile, banks can outperform them when it comes to managing massive amounts of money. Banks are stable and their technology systems move very large amounts of money around the globe via transfer systems like Automated Clearing House (ACH) and Swift. Banks also have decades of experience in lending, navigating the regulatory maze, and compliance — in good times and in bad.

5.3 COLLABORATIVE PARTNERSHIPS GAINING MOMENTUM

Many see collaboration between banks and SME digital lenders as a logical step in the industry's evolution. The combination of fintech and bank advantages has the potential to create truly sustainable and scalable competitive advantages for both partners along with a significantly lower cost structure for digital SME finance. But, it is not a foregone conclusion. Successfully navigating partnerships between fintechs and banks is challenging: the two cultures do not always mesh, it can be difficult to overcome inherent competitive conflicts, and regulatory due diligence can be onerous for fintechs that are not prepared.

Nevertheless, the options for how banks and SME digital lenders can work together have increased significantly and will likely continue to expand as the stakeholders become more creative. They range along a spectrum of "light touch" to "deep-touch" linkages between the partners. The lighter touch end of the spectrum includes one-way or two-way customer referrals and offering bank loans on SME loan broker marketplaces,⁶⁶ as well as bank direct investment in SME digital lender loans for yield. Deeper touch options include SME data-rich information exchanges, deep strategic and technology integrations, new distribution channels, equity stakes in digital lenders, joint ventures, acquisitions, and innovation centers, incubators, or accelerators (Figure 10).

5.3.1 Light Touch Partnership Models

Lighter touch agreements keep current operations of the partners at relative arms lengths. First, banks can refer SME customers they have turned down for a loan to SME digital

Box 1: Why Banks and SME Fintech Lenders are becoming more friends than foes

Advantages for Banks

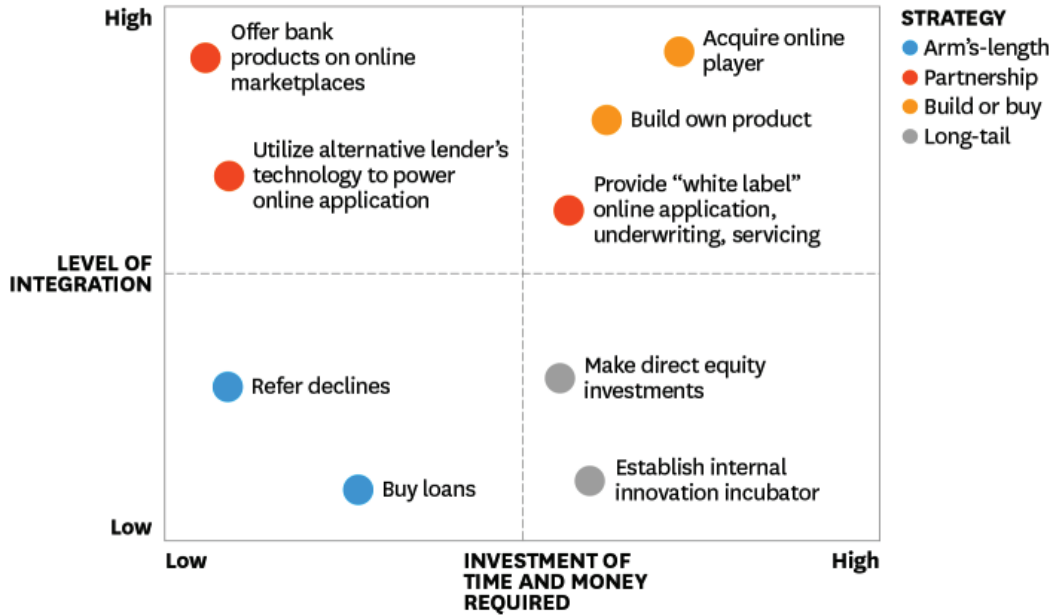
- Captive, large customer base/ positive selection in applicant mix
- Brand
- Distribution coverage
- Extraordinarily valuable, "free" internal data
- Low-cost, stable source of funds
- Regulatory certainty (mostly)

Advantages for Fintechs

- Superior customer experience
- Clean, simple, and friction-free applications
- More credit data sources
- Advanced risk models/risk-based pricing
- Underwriting costs
- Potentially lighter regulation (but high future uncertainty, more regulation)

Figure 10: How Banks Can Compete with Online Lenders

To win the business of small- and medium-sized firms, banks should consider strategies that align their level of digital integration with how much time and money is required.



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lenders in exchange for a referral fee. While these agreements can work well, they can be frustrating for both parties as well as SMEs if the bank does not generate enough quality referrals and the SME digital lender funds relatively few of the bank's turndowns.

In November 2016, the UK government made it mandatory for nine of the nation's top banks to refer their rejected SME loan applicants to SME digital lenders. The government initially designated three SME loan broker marketplaces to connect unsuccessful SMEs with alternative SME digital lenders: **Funding Options**, **Funding Xchange** and **Bizfitech**. These platforms each include a panel of alternative lenders that offer a variety of SME financing options. Tracking what impact this mandate has on SME credit access and satisfaction in the UK will provide important industry insights for bank referral relationships.

Second, creative cross-referral relationships can be an appealing approach. In Singapore-based DBS Bank's cross-referral agreements with Singapore-based P2P SME lending platforms **Funding Societies** and **MoolahSense**, for example, the bank refers first-time SME borrowers to the platforms and the platforms refer SME borrowers who have completed two successful loans back to DBS to access larger loans and/or for additional financial products. In another example, UK-based Santander proactively refers small business customers looking for a loan to Funding Circle on its website and in letters to customers, while Funding Circle signposts borrowers to Santander for banking relationship, cash management, and other banking services.

A third option is for the bank to offer its SME loan products on SME loan broker marketplaces or e-commerce sites. These partnerships let banks explore digital distribution of

SME loan products. Banks gain the opportunity to acquire pre-vetted SMEs desiring loans that match banks' desired SME borrower profiles established with the portal while the broker/site provider earns referral and other fees. Through these portals, banks may also acquire new SME customers from outside their existing footprint. If the bank chooses to offer a suite of their SME lending products, the more robust product offerings may give it an advantage over single-product non-bank lenders on the platform.

A fourth option involves banks that provide lines of credit to fund loans or buy loans originated on SME digital lenders' platforms. For example, in the US, **JPMorgan Chase**, **Bank of America**, and **SunTrust** have been active in buying loan assets from leading SME digital lenders. To free up capital for more loans and remove risk from their balance sheets, digital lenders securitize a pool of SME loans originated on their platforms to sell to banks and institutional investors.⁶⁷ Banks then purchase these securities as a way to diversify investments, gain a new source of balance sheet growth with attractive yields, and put their excess deposits to work. They also decide on the types of assets they are willing to buy (such as high, medium, or low risk). Banks that buy these securities must typically develop specialized expertise to understand the lender's overall and securitized loan pool risk profiles as well as how its loans might fare in an economic downturn. As a rule, banks therefore generally only want to work with established SME digital lenders that provide full transparency and sufficient loan performance data and history to conduct a comprehensive risk/reward analysis.

While providing a line of credit or buying loans offers financial benefits for banks, they offer no benefit to a bank's SME customers or brand. To address this deficit, some banks instead use an SME digital lender's proprietary analytics to uncover additional SME loan opportunities in the bank's current SME portfolio. The SME digital lender then directly offers and funds the loan for qualifying SMEs, and pays a referral fee to the bank. Usually banks can then also optionally buy back loans that meet their portfolio criteria.

Some governments also participate in buying SME digital lenders' loans, which also helps build credibility and awareness for an emerging SME digital lending sector as well as decent investment returns. This was the case for UK-government-owned **British Business Bank (BBB)**, which has made funding commitments totaling about US\$220 million to nine carefully vetted UK SME digital lenders since 2012. The program is set up to fund a gradually declining percentage of each loan made as the lender's loan volume and market penetration increases. As a result, the BBB commitments to date have (or will) support new lending volume to UK SMEs of almost US\$1 billion.

5.3.2 Deep Touch Partnership Models

Deeper touch partnerships have emerged in the last two years and can have a wide variety of structures. In general, the SME digital lender provides access to and integrates all or parts of its proprietary technology for applications, pricing, underwriting, servicing, and/or monitoring; the bank provides the credit policies and underwriting criteria; and which partner funds the loans varies. The SME digital lender brings the many external sources of alternative and traditional data it taps in the bank partner's market footprint (and adds new country-or-region specific data partners as needed). It also uses its technology to directly and more efficiently access the bank's own SME customer data than the bank can do on its own. A critical question to answer in this type of structure is whether (and the degree to which) the bank retains its own underwriting and SME scoring or relies upon the SME digital lender's scoring models and algorithms.⁶⁸

Several examples illustrate how these deals can work. Drawing on a recent strategic shift to focus more on providing its technology to banks and other lenders under its new "lending-as-a-service" (LaaS) platform, **OnDeck** launched a partnership with **JPMorgan Chase** in the United States in April 2016. Under the deal, Chase white-labels OnDeck technology to make faster decisions for online SME loan applications while funding and shouldering the risk of the loans going bad. In mid-2016, Singapore-based **DBS Bank** partnered with Hong Kong-based **AMP Credit Technologies (AMP)** to use its "software-as-a-service" (SaaS) technology to launch the white-labeled "DBS mLoan." They designed the loan product for SMEs that accept card payments (such as retailers, restaurants and e-commerce merchants) and have been in business for at least six months. AMP's technology combines credit modeling with daily cash flow data in order to enable lenders to offer unsecured SME loan products. The technology also direct-debits repayments from the borrower's core business operating account (minimizing friction and risk) as fixed, equal installments every banking business day.

Partnership agreement structures can also facilitate SME digital lenders' global expansions and/or include equity deals. **Kabbage**, which began licensing its Kabbage Platform to other lenders in March 2015, has implemented its technology at **ING** in Spain, **Santander** in the U.K., and **Scotiabank** in Canada and Mexico. The three banks plan to roll out the technology across the rest of their respective global footprints. Each bank also took an equity stake in Kabbage. Kabbage's technology allows the banks to provide fully automated SME applications, underwriting, servicing, and monitoring of loans, while the banks set the underwriting criteria. Funding for the SME loans differ by bank; for example, ING and Kabbage both fund the loans, while Scotiabank

issues all of the loans on its balance sheet but gives Kabbage an option to buy back a portion of the loans.

Some deals instead co-brand the SME digital platform with the bank, offering loans, “powered by” the SME digital lender’s technology and underwriting. US-based **Regions Bank** entered into a partnership with US-based SME balance sheet lender **Fundation** in October 2015. The platform is co-branded with Regions with the loans “Powered by Fundation,” and Regions’ suite of SME products sits alongside the Fundation loan option. Fundation’s technology provides digital tools like online applications, real-time third party data aggregation, and data-intensive proprietary decision techniques to predict credit risk and appropriately price loans. SMEs apply for a loan online through Fundation, but borrowers can also elect to have a call with a Region’s banker to complete the application. Depending on the loan type and amount, either Fundation or Regions funds the loan.

Canadian-based SME digital lender **Thinking Capital** struck a co-branded “Rapid Financing” SME lending platform and cross-referral partnership with **Canadian Imperial Bank of Commerce (CIBC)** in November 2015. CIBC offers their SME customers a new set of Rapid Financing loans alongside other CIBC SME financing products. SMEs can apply for a loan in under 10 minutes, enjoy instant decisions, and faster funding. CIBC also offers incentives to Thinking Capital loan customers to move their business banking to CIBC.

Other partnerships jointly develop lending products targeting specific SME customer segments. In late 2016, **Capital Float** partnered with India-based **IDFC Bank** to provide digital lending that will focus on SME borrowers who have no access to bank credit, with limited or no documentation and without existing credit history. IDFC Bank will gain access to Capital Float’s digital network of borrowers, thereby enabling it to diversify its portfolio of small ticket loans and grow its customer base. Capital Float, in turn, can leverage IDFC Bank’s balance sheet, product innovation, and customization of banking products for this segment of borrowers.

Distribution partnerships and joint ventures offer other promising paths for regional or global expansions. For example, OnDeck entered the Australian market with **Commonwealth Bank of Australia (CBA)** and Australian-based online accounting software provider **MYOB** as distribution partners (MYOB also took a 30 percent equity stake in OnDeck Australia). In February 2016, China-based **Dianrong** established a 50:50 joint venture with South Korea-based conglomerate **Hanwha Group** to offer loans and other financial services in South Korea. Dianrong will bring technologies while Hanwha takes on marketing. The joint venture will begin by launching an open P2P lending+ marketplace in South Korea in 2017,

and will later expand across Asia. Executives describe the joint venture as “building symbiotic relationships with Korean and international startup companies, financial firms, and other FinTech industry members to create a robust Fintech ecosystem.”⁶⁹

Establishing innovation centers, incubators, or accelerators and selecting SME fintech innovators to support is another strategy banks are pursuing that is starting to yield tangible results. For example, in June 2016, Netherlands-based **ABN Amro** and HighTechXL teamed up to build an “open innovation ecosystem” they dubbed “Econic” to accelerate innovative ideas coming from both outside and inside the bank. Netherlands-based invoice management firm **InvoiceSharing** was one of the first six fintech startups accepted into the program. Just eight months later, the bank and InvoiceSharing collaborated to launch a comprehensive solution that provides SMEs with 24/7 insight into their accounts to estimate their working capital needs well in advance. An accounting robot tool reads and checks the invoices, generates journal entries, and exports the invoices to the entrepreneurs’ accounts and accounting system. The robot also compares invoices with historic data from industry partners, using accountancy data based on the preceding three years. SME clients save time and money, while ABM Amro builds SME loan volume.

As banks and digital lenders become increasingly accustomed to working together, opportunities for strategic acquisitions will come into view. These will bring a new set of issues such as valuation differences between banks and leading SME digital lenders and the integration of very different cultures.

To date, only two bank acquisitions of SME fintechs of note have taken place. In March 2016, Spain-based **BBVA** acquired Finland-based **Holvi**, a startup that specializes in providing online current accounts and related services for SMEs, entrepreneurs, and freelancers. The Holvi platform allows BBVA to access SME customers at a low cost of acquisition with high cross-selling opportunities such as lending and foreign exchange. In July 2016, France-based **Group BPCE** (the parent company of two major Banque Populaire and Caisse d’Epargne cooperative banking networks) acquired Germany-based **Fidor**, one the earliest “fintech” banks. Fidor offers digital banking to SMEs and also offers its banking license and proprietary open API digital banking technology platform to other companies. Group BPCE sees the acquisition as a key step in accelerating the company’s digital transformation while Fidor sees it as enabling a strong international expansion, more technology innovation, and a bigger presence in Europe.

In summary, while deeper partnerships can provide banks with a faster time to market for SME digital lending than building a platform from scratch, they require top executive support, clearly aligned expectations and goals, and significantly more bank commitment and resources than lighter touch options. The due diligence process must cover a myriad of issues mandated by regulators and bank prudence, such as technology integration, risk models and management, compliance, data security and privacy, fair lending, and reputation risk, and can be lengthy.⁷⁰ The partners also need time to become comfortable with and trust each other. That said, if the partners take a long-term view of the relationship, these partnerships have the potential to provide transformational value and growth opportunities for both.

5.4 THE RISE OF THE DIGITAL SME BANK/LENDER

Building a data-driven, customer-centered relationship with SMEs constitutes a new frontier for many banks. Several new and a few existing banks are directly developing their own in-house SME digital lending systems along with opening up their application programming interfaces (APIs) to third-party data and service providers. Some large traditional banks are also opening stand-alone all-digital banks.

New, or neo, banks⁷¹ often have a unique advantage over larger and more established banks because they do not have the legacy systems or heavy operating costs that traditional banks have built up over decades and which are harder to change. These new players are also able to more quickly adapt and utilize alternative data in making their credit decisions.

Some of these new banks have built a “banking-as-a-platform” (BaaP) model. This allows for improved cooperation with alternative and third-party fintech models. It also allows for modular banking platforms that cater to mobile-first customers, real-time banking, as well as peer-to-peer and crowd functionalities within the framework of an open API-based infrastructure. In addition, by cooperating with third-party providers, the bank provides a platform for financial innovation in much the same way that Apple acts as a platform for developers through its App Store. With peer-to-peer lending and cooperation with marketplace lenders as well as open APIs to support trade and supply chain finance, these open bank platforms should continue to expand financing options for SMEs.

New online-only start up **CivilisedBank** in the U.K. focuses exclusively on SMEs. CivilisedBank is using a special backend system which allows for integrated banking, payments and improving risk compliance while also focusing on alternative lending for SMEs in collaboration with other local

banks. The new technology being used by the bank helps to enhance and fast track customer on-boarding, account opening, and loan approvals. The integrated system provides a comprehensive view of the customer’s banking relationship, across business and personal transactions, along with all records from all accounts with the bank. This eliminates the need to re-enter data or provide additional information for loan processing or new accounts. It also provides access to information that is often not available in traditional banks where customer information is held in different systems or siloed in different departments.

CivilisedBank and the new breed of digital bank are examples of not needing to separate customer relationship management (CRM) systems to bridge between their different market segments. Consumer and SME finance are set up in their new, core system as a unified database, with inbuilt CRM capability. By contrast, older banks often have separate systems that must be bridged by expensive, complex CRM add-ons.

Launched in October 2015, US-based startup **Clearbanc** targets freelance SMEs like Airbnb providers and Uber drivers. It provides credit using a “cash advance” approach that relies on analyzing alternative data.⁷² For example, drivers give the bank access to their Uber accounts to verify the hours they work and how much they earn on average. This allows Uber drivers who are paid weekly to receive their daily earnings in advance through a Visa debit card. Clearbanc is also offering similar products to Lyft drivers. In addition, plans are underway to use online accounting systems, such as Intuit’s Self-Employed Solutions accounting software and QuickBooks software for freelancers.

Several existing large and established bank players have launched their own digital data-based SME lending models, including some that are supported by alternative credit scoring analytics specialists that have emerged in the last several years. Kenya’s Equity Bank and Airtel launched **Equitel**, a Mobile Virtual Network Operator (MVNO), offering loans of up to US\$30,000. With loan terms as long as one year and interest rates as low as 1.5 percent (a flat monthly rate), Equitel’s mobile loan products are the longest term and lowest cost mobile-enabled loans in Kenya. Although Equitel does not have the rich mobile data history from a mobile network operator, it does have an extensive history with its own clients, which it uses to provide a credit score and determine the various risk-rated interest rates to be charged.⁷³

India-based **The State Bank of India (SBI)**, has also made use of alternative data as well as partnerships with innovative business networks, such as Uber and its drivers, as well as with e-commerce marketplace providers such as Snapdeal, Flipkart, Amazon, ShopClues, and Paytm to provide micro and SME financing. In February 2016, the bank

launched the SBI e-Smart SME, a collateral-free working capital loan offering for sellers on e-commerce platforms. Sellers apply for the loan online and receive an immediate answer with one click. The product relies on proprietary e-commerce platform data about the seller's sales and other data, as well as surrogate information from the public domain to assess the seller's credit worthiness for loans. For Uber, the partnership allows SBI to access data from the driver's Uber history. It simplifies the documentation requirements, thereby eliminating traditional financial statements like income tax returns.

Use of open APIs and support for integrating bank data with online accounting platforms are also strengthening the use of digital data to better enable banks to address SME lending. U.S.-based **Wells Fargo**, which launched its online FastFlex Small Business Loan in May 2016, created an API so that SMEs can have their bank account data uploaded directly into the accounting software provided by Xero. By digitally connecting with the bank, SME customers see their real-time, up-to-date cash flow each morning on Xero and can receive payments faster. This also facilitates credit decision-making and allows the bank to better analyze the business as a whole.

Similarly, New Zealand-based **Heartland Bank** is a small challenger bank. It is growing by targeting niches that the big banks overlook, including SMEs and rural lending. In April 2016, it launched a fully-automated Open for Business unsecured loan for SMEs. In two to three minutes, SMEs can apply for up to US\$ 35,000 by answering just six questions regarding their identity, amount to borrow, income, whether they have a mortgage, and whether they use Xero or MYOB accounting software to run their businesses (indicating to the bank that the business is well-run). Heartland's computers "talk" to credit rating agency Veda to establish whether the SME owner has a clean credit file and whether the business has the capacity to manage loan repayments. The application process takes just two to three minutes, and borrowers receive an immediate decision communicated online.

In May 2016, Washington D.C.-based the **FINCA** global microfinance network, which provides nearly 2 million people in 23 countries with financial services, including micro and small business loans and credit lines, launched a collaboration with US-based **First Access**, whose technology predicts the credit risk of borrowers in informal markets. The partnership creates a sophisticated alternative credit scoring approach to improve FINCA's outreach to excluded populations and apply risk-adjusted pricing across the whole spectrum of FINCA's borrowers in Africa. The First Access Enterprise Scoring platform captures data from loan applications, core-banking software, credit bureaus, smartphones and feature phones, unique commercial partnerships with mobile network operators, mobile money platforms, data

aggregators, solar companies and other digital product and service providers.

The company's scoring technology looks at four kinds of data: demographic, geographic, financial, and social. The first two help verify identity and provide context. Financial data provides a pattern of usage, not only mobile money, but also regular top-up transactions that offer a window into consumption patterns. First Access analyzes existing client data from FINCA's operations, as well as subscriber data from local mobile network operators (MNOs) to establish credit scores for clients to secure small loans to build businesses or support emerging personal needs. As First Access collects data, it will also continuously recalibrate its dynamic FINCA algorithms using machine learning techniques and hands-on collaboration with its data scientists, enabling FINCA to refine its own product offerings and improve credit quality. Through its partnership with FINCA, First Access is expanding its current Africa footprint from Tanzania and Kenya to Zambia, Democratic Republic of Congo, Uganda, Malawi and Nigeria, where FINCA maintains subsidiaries.

Other banks have opted to launch all-digital SME banks. DBS, which has been undergoing a 3-year digital transformation to become a digital banking platform with open APIs, launched its mobile-only **DBS Digibank** for consumers in India in April of 2016. Taking advantage of the existing infrastructure in India - mobile phone and internet penetration, Aadhaar card-related and PAN card-related information (gathered and verified by the government) - DBS's Digibank is completely branchless and paperless. DBS has now gone one step further and is in the process of launching its digital SME platform in India as well. DBS's digital banking platform is allowing it to expand internationally rapidly, with Indonesia targeted next for its Digibank platform rollout.

The recent emergence of full service cloud-based SME lending technology platforms offered by a growing number of emerging banking technology firms have made in-house SME digital lending and starting a new all-digital SME platform bank more viable and attractive. They can significantly reduce the time, costs, and complexity needed to bring these capabilities to market. Despite these benefits, however, these partnerships cannot replicate the multi-year time spent by the older, more established digital SME lenders proving and improving their SME credit scoring model sophistication and predictive reliability using alternative data that comes from lending experience. Banks still need to go through the same iterative scoring improvement process as they bring in new alternative data sets before they can scale their SME lending significantly. They also need to acquire and have the decision scientists and technology staff capable of managing both structured and unstructured alternative data sets.

Paradoxically, these banking technology firms also appear to be having an impact on banks' appetite for "deep-touch" but more complicated SME digital lender-bank partnerships in favor of in-house solutions which let a bank control the entire lending process.⁷⁴ In essence, the "bank-cloud lending technology platform" combination is fast becoming a new competitor category for both SME digital lenders and bank-SME digital lender partnerships.

Globally, entrepreneurs and some traditional banks are creating SME banks and SME lending that embrace a digital-first strategy. The broader trend is moving the industry toward creating a banking 'platform' and opening its API up to other fintechs, third party developers, third party lending and other financial services providers, and even other banks so they can combine the bank's data with their own to build new products on top of this platform. Through the API, the platform bank can consult all of its third-party providers and

offer, in this case, an SME loan that best suits the needs of the SME borrower. Importantly too, there is also a much wider range of non-financial companies willing to become users of these banking platforms in order to leverage the bank's SME customer data in a way that is profitable for every party.

As noted, there are a range of variants of more collaborative banking models that are rapidly emerging, and will continue to emerge. Advanced data mining and analytics on an ever-expanding set of new data sources as well as SMEs' growing digital footprints underpin these collaborations. It is a near certainty that fintech and banking innovators will continue to identify more new sources and types of alternative SME digital data that can reliably be used as SME credit data (beyond what we have covered in this report). In turn, these innovators and innovations will lead to continuing SME financing options and access expansion.

Alternative Data: Policy Issues and Challenges

As noted, the rise of alternative data-based lending has opened new and innovative approaches for financing SMEs. At the same time, these changes raise a number of policy issues that stakeholders are only starting to understand. The recently issued G20 High-Level Principles for Digital Financial Inclusion⁷⁵ provide guidance in a number of areas that can assist in developing approaches specific to alternative data-based lending.

This section identifies various policy theme areas that have surfaced for stakeholder consideration and further discussion, including:

- Data privacy and consumer protection issues
- Opt-in as opposed to opt-out models
- Credit information sharing
- Cyber security and data
- Pricing transparency
- Balancing integrity, innovation and a competitive marketplace

6.1 DATA PRIVACY AND CONSUMER PROTECTION ISSUES

With the range and types of data being collected from online digital and/or mobile footprints to social media and other forms of information which are being used by alternative data lenders, there has been an increasing concern about privacy and the need to be more transparent about how data is being collected and used. Information privacy laws, rules and principles also vary widely across different jurisdictions.⁷⁶ Data sources used for identity verification and fraud can be combined with far-reaching data profiling and targeting capabilities by alternative lenders. In addition, digital and mobile marketing and underwriting decision processes can operate in a non-transparent manner, using so-called “Black Box” structured and unstructured data sets and algorithmic techniques that currently operate using proprietary lending models.

Although these lending platforms have provided access to those borrowers formerly excluded from credit, they often fail to provide details as to how they gather and use data for identifying prospects, credit ratings, scoring and the

credit-approval process. Given the lack of privacy protections for SMEs that utilize these new lenders and/or data aggregators who act as data-brokers, there will be a need for additional regulation to ensure that SMEs are protected.

Although a lot of analysis and recommendations about alternative lenders and consumers have been made, some—but not all—rules may apply to SMEs. These rules would most likely focus on:

- Ensuring “ownership” and appropriate rules for the use, security and control of individual and SME data.⁷⁷
- Ensuring that data information will be protected and only shared with other parties, and with the express approval of the SME borrower.
- Developing a framework⁷⁸ for all financial service providers to implement transparent, user-friendly and effective recourse mechanisms and dispute resolution mechanisms to address SME claims and complaints including:
 - Instituting a process for correcting or deleting inaccurate or unsolicited information.
 - Establishing a mechanism for a clear data retention period.
 - Setting up appropriate SME hotlines to address questions and complaints.
 - Providing for external consumer complaint departments within the financial regulator or appropriate government agency to also address concerns of SME borrowers, especially for those new issues related to alternative data lending models.

6.2 OPT-IN MODELS AS OPPOSED TO OPT-OUT MODELS

Several of the mobile data lenders utilize mobile and other data often by default or with limited and/or offer obscure opt-out features. Automated collecting of mobile and digital data has opened up a completely untapped credit market, especially in Kenya and other countries in Africa. However, having clear but simple opt-in models will most likely be required in the near future. Clearly informing customers how their data will be collected and used, as well as allowing these informed customers to opt-in as opposed to opt-out, should be something that providers should proactively consider.

6.3 CREDIT REPORTING SERVICE PROVIDERS

In many jurisdictions, alternative data lenders, especially non-bank players, are not currently required to report their SME borrowers' application and loan performance to credit reporting service providers. While some SME digital lenders voluntarily report this information (enhancing the value of this information for the entire lending industry while also helping lenders attract SME borrowers with good payment history and create leverage with borrowers to pay on time), many more do not. These lenders most often argue they have concerns about competitors targeting their SME customers acquired through expensive proprietary lending models and acquisition costs and/or the time, costs, and complexity of regulatory compliance (such as providing SME borrowers with the right and a process to dispute or correct credit report information). There is, however, growing consensus even among alternative lenders as well as policy makers that the benefits of reporting credit application, credit and payment performance, and account closure data to credit reporting service providers consistent with the data reported by banks and other lenders outweigh these arguments. Key issues for policymakers to consider here are whether or not to mandate (and if so when) or simply encourage more voluntary reporting and the standardization of the information reported.

A separate, important, but much more complicated policy issue to consider is whether or not to encourage or mandate certain alternative data reporting (such as mobile/other digital payment transactions, bank account transactions, or trading data) to credit reporting service providers. While there is general consensus that expanding the use of alternative data by credit reference agencies could have a significant positive impact on access to finance,⁷⁹ there are many policy and process change issues to consider. These include questions such as which data, how much data, the inconsistent availability or quality of alternative data across lenders or other data providers, the ideal frequency of the reporting (much of this data's value lies in the fact it is real-time), what data governance rules apply to SMEs, data furnishers, and credit reporting service providers, and many more. In addition, existing legal frameworks can impede the sharing of such data, requiring changes in laws or regulations to permit data sharing.

Indeed, the complicated policy issues of sharing and collecting alternative data pose questions for the sustainability of the traditional role and business model of the credit reporting industry itself. As SMEs and consumers grant permission for lenders and other SME cloud-based service providers to access their growing digital footprints in exchange for a variety of value added services, including lending, new

approaches for aggregating and using this data for quality lending decisions may be needed. In essence, in an environment where everyone can contribute data, much of it not traditional credit data (such as e-commerce, mobile, social, trade, and the like), and many types of entities can use this data (not just banks or traditional non-bank lenders), market alternatives to traditional credit reporting services may be needed.⁸⁰

As the G20 High Level Principles of Digital Financial Inclusion highlight, policy makers and regulators should promote the establishment and responsible use of flexible, dynamic credit reporting systems modeled on best practices as outlined by the International Committee on Credit Reporting (ICCR). These can include relevant, accurate, timely and sufficient data collected on a systematic basis from all reliable, appropriate and available sources, and retained for a sufficient time period. The overall legal and regulatory framework for credit reporting should be clear, predictable, nondiscriminatory, proportionate, and supportive of consumer data protection and privacy rules.

In addition, policy makers should encourage the use of innovative data sources in credit reporting systems such as data on utility payments, mobile airtime purchases, as well as use of data on digital wallet or e-money accounts and e-commerce transactions.⁸¹ The ICCR provides a useful venue for evolving global guidance on how to handle the growing sources and users of data described in this report, and the G20/GPFI should support ICCR's continuing work in this area.

6.4 CYBER SECURITY

With new players and technologies being deployed, regulators and policymakers are under increasing pressure to ensure that consumer and the public's data are protected. In addition, many new financial service providers and/or fintech players have often not made sufficient investment in data protection and cyber security. As such, they find themselves at increasing risk. For alternative lenders, especially new financial players and third-party providers who support alternative lending approaches, basic checklists like those developed by the US agency, the Financial Industry Regulatory Authority (FINRA), should be adopted.

These include:

- Identifying and assessing cybersecurity threats
- Protecting infrastructure and platforms from cyber intrusions
- Detecting a compromise or vulnerability
- Responding through a risk-based plan
- Recovering and/or replacing lost data

- Since most alternative lenders, third party aggregators and data analytic providers also store, use or electronically transmit personal identification information (names, national IDs, social security numbers, dates of birth, addresses and other key personal data) or sensitive information (financial records, account information, tax filings), additional steps should also be taken to protect privacy.⁸²

6.5 PRICING TRANSPARENCY

Many alternative lenders do not offer, or offer unclear comparable standardized pricing policies. This is a concern not only for SME borrowers, but also for returns being provided to P2P individual lenders and/or institutional investors. In addition, there are challenges concerning transparent pricing for new products when repayment occurs as a percentage of payments flow, and not as specific sums on specific dates. These are challenges that traditional annual percentage rate (APR) rules do not address.

Some promising practices being proposed by alternative lenders include the launch of the Small Business Borrowers' Bill of Rights.⁸³ It is supported by both industry players and SME associations, including:

- The Right to Transparent Pricing and Terms
- The Right to Non-Abusive Products
- The Right to Responsible Underwriting
- The Right to Fair Treatment from Brokers and Loan Aggregators
- The Right to Inclusive Credit Access
- The Right to Fair Collection Practices

6.6 BALANCING INTEGRITY, INNOVATION, AND A COMPETITIVE MARKETPLACE

As noted in the report by the World Bank and the Committee on Payments and Market Infrastructure on Payment Aspects of Financial Inclusion (PAFI), specifically guiding principle 2 on the legal and regulatory framework, it is important to preserve the integrity of the financial system, while not unnecessarily inhibiting the access of individuals and businesses to well-regulated financial services. These apply in many ways to not only payment service providers, but to other financial service providers — including non-bank financial service providers. In addition, the G20 High Level Principles for Digital Financial Inclusion also covers the importance of balancing innovation and risk.⁸⁴

The principle of competition in the financial services marketplace provides clarity on the criteria that must be met to offer specific types of services. It should also set consistently-applied functional requirements. Regulators and policymakers are therefore challenged with enabling innovation, as well as competition in the marketplace. They should not hinder the entry of new types of financial service providers, new instruments and products, as well as new business models or channels — as long as these are sufficiently safe and robust.⁸⁵

Conclusions and Recommendations

As noted from the examples illustrated in this paper and the tables below, the most significant and commonly used data sets are still the more traditional structured data sets. However, these along with unstructured data sets are now being analyzed and accessed in new and innovative ways not previously available. This includes a more comprehensive analysis of data forged by a variety new partnerships — data encompassing banking, finance, and industry, as well as accounting, digital supply chain and sales information, and e-commerce sales. New and alternative data includes mobile, online and social media data, as well as new developments in psychometric testing.

Marketplace lending companies have stepped in to capitalize on the opportunity available to help meet more SME lending needs. Marketplace SME lenders use machine learning and digital tools to extend credit to a wide array of SMEs quickly and efficiently. While many of these same SMEs had previously been rejected by banks others are shopping for better terms and conditions or more rapid access to finance. These new lenders also utilize traditional credit data, especially when it can be accessed in digital form. However, they are discovering that electronically verifiable cash flow/sales transactions and business cloud accounting software are powerfully accurate SME risk predictors of credit risk

on their own. In addition, many are also experimenting with unstructured data such as social media data or website traffic to supplement structured traditional data. Lastly, there are many forms of collaboration with banks, supply chains and a variety of fintechs that continue to emerge.

Apart from the rise of new marketplace lenders, the technology and e-commerce giants now providing SME finance — either through partnerships or directly on their own — are at the forefront of some of the biggest opportunities to expand SME finance. These big technology companies have all the data they need, along with the analytic prowess to crunch the numbers to assess the credit-worthiness of their SME sellers and buyers.

In the US and China, these lenders have enough liquidity to lend on their own, as well as millions of potential SME clients. That means that these organizations may become the banks' most ardent competitors in SME lending to this target market in the near future.

In India, where the emerging “big technology” companies are forced to partner with lenders, the risk for banks that do not participate is that the other digital SME lenders may be able to keep their foothold and scale before these banks

Table 1: Online B2B and Commerce Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
E-Commerce Sales and Purchasing Data	x	x			x
B2B Commerce Data		x	x		x
Supply Chain Trade Flow Data			x		x
Supply Chain Digitized Document Data			x		x
Logistics and Shipping Data			x		x
Performance Data of SME Business customers	x	x	x		x

Table 2: Banking, Finance, and Industry Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
Loan and Credit Card Data	x	x	x		x
Current Account/Transactional Account Data	x	x	x		x
Investment Account Data	x		x		x
Insurance Data					x
Online Accounting Data	x	x	x		x
Online SME Billing and Payment Data	x	x	x		x
Merchant POS and Sales Data		x	x	x	x
SME Business Intelligence & Marketing Data	x	x	x		x
Inventory Tracking Data	x		x		x
Economic and Industry Data	x	x	x	x	x

Table 3: Credit Bureau Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
FICO, Credit Bureau data	x	x	x		x

Note: FICO= Fair, Isaac and Company.

Table 4: Online Ranking and Social Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
Social Media Data	x	x	x	x	x
Search History		x			x
Website History		x			x
Online Rankings and Reviews	x	x	x		x

build comparable platforms. These big technology organizations will have several advantages. They will continue to refine the analytics they use to determine loan terms. They also have brand names that small businesses recognize, and many small businesses already depend on their services.

Digital platforms and the ability to analyze data also allow new fintech players to facilitate invoice financing, and supply chain and trade finance for SMEs that operate in the B2B sector. These new models are providing data that link the

various transaction parties along the supply chain. As such, they provide greater insight into real-time data that can be shared with financial service providers.

Mobile data-based lending models are also increasing, especially in Africa. Mobile transactions, mobile e-money usage, mobile e-money linked savings history, geo-based location data, tracking call usage, social media networks and mobile retail payment receipts are being used to provide alternative data for digitally-native entrepreneurs.

Table 5: Mobile Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
Mobile Call Pattern Data				x	x
Mobile Business and Expense Data				x	x
Mobile Recharge History				x	x
Mobile E-Money Transactions				x	x
Smartphone Mobile App Analysis				x	x
Mobile Geo-Locational Data				x	x

Table 6: Individual Data

	Marketplace Lenders	Tech/E-commerce Giants	Supply Chain Financing	Mobile-Data Based Lenders	Digital Banks
Psychometric testing					x

As noted, however, banks are beginning to take notice of these new players and are increasingly developing partnerships with new SME lenders. Due to the increasingly digital nature of the economy and the ability to analyze new and traditional data much faster and more efficiently than in the past, digital data-based SME lending will only continue to grow and expand.

While both banks and new digital SME lenders often tried to carve out individual market niches, many players are increasingly coming up to a similar conclusion, that is, that they are all stronger and can grow more quickly through forging collaborative partnerships. Under the G20 High Level Principles of Digital Financial Inclusion, policy makers looking at expanding SME access to finance can help to raise awareness among small businesses about the advantages of processing payments and transfers digitally and the features of available digital financial services. In addition, SMEs can be encouraged to make informed choices by supporting the development of tools allowing potential borrowers to compare similar credit facilities (such as price comparison websites).⁸⁶

With access to more digital data and the increasing usage of new alternative data, there is also a whole new range of issues for policymakers and regulators that requires attention and analysis.

Enabling policy and regulatory developments to support the use of alternative data for credit decision-making will be necessary. It will also be important to implement the necessary checks and balances. Addressing these issues will require:

- A review of existing rules and regulations in place in order to improve the availability of reliable data for the purpose of enhancing SME financing, including access to bank data transactional information.
- Facilitating enhancements to improve credit information infrastructure, including SME credit reporting and access to data by alternative lenders.
- Increasing cooperation of various regulators, not only on a national level but also on a regional and international basis — especially to support innovative financing for SMEs involved in global value chains as well as oversight of alternative lenders operating in several markets.
- Involving policymakers in market competition rules.
- Understanding the challenges and balancing act required to address consumer protection, data privacy and the implications for increased cyber security measures in light of the use of new alternative data, new players and increasingly interconnected partnerships.

The ICCR can serve as a useful forum for developing global guidance on how to deal with this exploding supply of both data and data users. The G20/GPFI should support the ICCR's work in this area.

Another rapidly expanding option for regulators to facilitate the experimentation of alternative lending models and

partnerships is the use of test-and-learn approaches such as regulatory sandboxes or others.⁸⁷ These would be similar to approaches now being developed to facilitate alternative lending models in Australia, Hong Kong SAR, China, Indonesia, Singapore, and the U.K. Regulatory sandboxes might carry risks and may be detrimental to a level playing field.

Endnotes

1. For the purposes of this report, the term SME includes formal and informal micro, small, and medium firms. The margin of error is plus or minus 9.4 percent for the global developing market total, resulting in a range of between 360 and 435 million SMEs across global developing markets (similar global data is unfortunately not available for developed economies). Formal SME counts are structured consistent with that used by the IFC Enterprise Finance Gap database according to the size of employment: micro enterprises 1-4 employees; small 5-49 employees, and medium 50-249 employees. Informal firm counts include enterprises that are not registered with the municipality or tax authority and all the non-employer firms (independent of registration). Counts exclude public administration and not-for-profit organizations as well as enterprises active in the agricultural sector. For detailed information, data sources, and estimation methodologies for SME counts, credit demand, credit gap, and deposit gap market information included in this section, see the "Methodology" tab at: <https://smefinance-forum.org/data-sites/ifc-enterprise-finance-gap>
Sources: International Finance Corporation (IFC) Enterprise Finance Gap Database (2011); Global Payments Experts llc. (GPE) analysis.

2. Unmet credit needs include SMEs that need credit and are not served at all, or that have some credit, but need more. Sources: IFC Enterprise Finance Gap Database (2011); McKinsey & Co. (August 2010), "Assessing and Mapping the Gap in Micro, Very Small, Small, and Medium Enterprise (MSME) Finance" and "Two trillion and counting;" GPE analysis.

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7. Screen scraping refers to the process in which customers give third parties their online banking user names and passwords so that those third parties can log in on the customers' behalf and copy and paste their account information into other programs. The practice is controversial because it poses customer data security concerns and the technology process can cause spikes in online banking traffic that can lead to outages. For more information, read Peter, Brian "If Banks Fear Screen Scraping, Why Are They Fighting the Alternative?" January 4, 2016. <https://www.americanbanker.com/opinion/if-banks-fear-screen-scraping-why-are-they-fighting-the-alternative>

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9. McKinsey & Company (March 2012). "Micro-, small, and medium enterprises in emerging markets: how banks can grasp a \$350 billion opportunity."

10. Global Payments Experts llc., McKinsey & Company, and IFC proprietary analyses.

11. IFC (2007). "Benchmarking SME Practices in OECD and Emerging Markets."

12. McKinsey & Company (March 2012). "Micro-, small, and medium enterprises in emerging markets: how banks can grasp a \$350 billion opportunity."

13. IFC (2009). "SME Banking Web Survey Report."

14. "Small Business Banking and the Crisis: Managing Development and Risk" (2010). Capgemini, FFMA, and Uni-Credit Group. Based on Capgemini's analysis from 58 bank

interviews globally in 2010. Eighty-one percent of the banks were in 15 countries in Europe (both Eurozone and non-Eurozone).

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16. Kumar, Rajath, "Digital financing: The way forward for financial inclusion in Asia" <https://blog.capitalfloat.com/digital-financing-the-way-forward-for-financial-inclusion-in-asia-e27/>. In addition, the European Central Bank's quarterly access to finance surveys since 2009 have consistently shown that a range of two percent to as high as 16% of SMEs (depending on country) do not apply for a bank loan, credit line, or overdraft because they fear a decline.

17. Wehinger, Gert, "SMEs and the credit crunch: Current financing difficulties, policy measures and a review of literature" OECD Journal: Financial Market Trends Volume 2013/2 <https://www.oecd.org/finance/SMEs-Credit-Crunch-Financing-Difficulties.pdf>

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19. BI Intelligence (April 2016).

20. The Economics of Peer-to-Peer Lending (September 2016) Oxera Consulting LLP. http://www.oxera.com/get-media/9c0f3f09-80d9-4a82-9e3f-3f3fefe450b2/The-economics-of-P2P-lending_30Sep_.pdf.aspx?ext=.pdf

21. Thomas, Paul, Managing Director. Provenir "Connecting the dots: the digital transformation of risk analytics and decision-making." Financial IT, March Issue 2016.

22. Deloitte (May 2016). "A temporary phenomenon? Marketplace lending." <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-fs-marketplace-lending.pdf>. See also "Deloitte Report Flares Tensions Amid Banks, Alt-Lenders" (May 2016 PAYMENTS) <http://www.pymnts.com/news/b2b-payments/2016/deloitte-marketplace-lending-report-bank-alternative-mpl/>

23. See the World Economic Forum (October 2015) Report "The Future of FinTech: A Paradigm Shift in Small Business Finance".

24. Known by many as the technology underpinning the bitcoin digital currency, blockchain is way to let companies

make and verify transactions on a network instantaneously without a central authority. Blockchain is a data structure that makes it possible to create a digital ledger of transactions and share it among a distributed network of computers. It uses cryptography to allow each participant on the network to manipulate the ledger in a secure way without the need for a central authority. Once a block of data is recorded on the blockchain ledger, it's extremely difficult to change or remove. When someone wants to add to it, participants in the network — all of which have copies of the existing blockchain — run algorithms to evaluate and verify the proposed transaction. If a majority of nodes agree that the transaction looks valid — that is, identifying information matches the blockchain's history — then the new transaction will be approved and a new block added to the chain. Many financial and other firms across industries see and are experimenting with this distributed ledger technology as a secure and transparent way to digitally track the ownership of assets, a move that could speed up transactions and cut costs while lowering the risk of fraud. Some promising applications include using blockchain to track the movement of assets throughout supply chains, electronically initiating and enforcing contracts, verifying loan documentation and ownership, and much much more. See Norton, Steve (February 2, 2016). "CIO Explainer: What Is Blockchain?" <https://blogs.wsj.com/cio/2016/02/02/cio-explainer-what-is-blockchain/>

25. The marketplace lending category also includes investor ecosystem functions and firms that provide an array of auxiliary tools and technology. Together they serve to streamline the way that investors interact with the P2P lending marketplace asset class. It includes firms (or marketplace lending platform capabilities) that target the creation of secondary markets. This allows investors to sell their loans to other investors and the functions that support it, as well as platform technology and firms that allow lenders to launch compliant marketplace lending platforms quickly. Some of these tools, technology, reports, and services support institutional investors; others support retail investors. Investors require an array of transparent data and loan performance evaluation and monitoring, as well as compliance tools to make sound investment decisions. The data and tools required to be transparent and compliant with investors are outside the scope of this report, but are vital to the success of investor-funded marketplace lenders.

26. Cloud-based lending platforms typically provide lenders with an end-to-end, modular credit life cycle software platform that can be easily configured to meet individual lenders' lending processes; data streams; credit policies; acquisition, scoring, and portfolio management strategies and performance objectives; and collections and recoveries strategies.

27. SME loan broker marketplaces are destination websites that attract prospective SME borrowers, and match them to bank and non-bank loan originators that offer their loan products on the platform. They add value to lenders and borrowers throughout the entire process, often through data-driven digital means to provide borrower education and advice about lending options. They also drive volume to originators, facilitate the lender application process, and (often) utilize sophisticated algorithms that preliminarily credit-qualify and match borrowers to best-fit lenders. The service is typically free for SME borrowers; instead, the participating lenders pay fees to the marketplace for borrower referrals.

28. See Endnote 7.

29. "Interview with Vytautas Zabulis, CEO and Co-Founder of Savy" (December 9, 2011). <http://www.p2p-banking.com/countries/baltic-interview-with-vytautas-zabulis-ceo-and-co-founder-of-savy/>

30. See Black Economic Empowerment (BEE) in South Africa https://en.wikipedia.org/wiki/Black_Economic_Empowerment

31. Renton, Peter (January 13, 2017). "Podcast 86: Denise Thomas of ApplePie Capital." <http://www.lendacademy.com/podcast-86-denise-thomas-applepie-capital/>

32. Psychometrics refers to the measurement of knowledge, abilities, attitudes and personality traits. EFL applies psychometric principles to credit scoring by using advanced statistical techniques to forecast an applicant's probability of default. <https://www.eflglobal.com/about/faq/>

33. Yoshimura, Midori (May 28, 2015). "It's A Lot Of Money...Enough For Us To Build What We Wanted To Build": Dianrong.com CEO On New Valuation of 'About' \$1 Billion." <http://www.crowdfundinsider.com/2015/05/68460-its-a-lot-of-money-enough-for-us-to-build-what-we-wanted-to-build-dianrong-com-ceo-on-new-valuation-of-about-1-billion/>

34. FnConn is a subsidiary of the world's largest contract manufacturer FoxConn Technology Group. It provides supply chain financing to the upstream and downstream suppliers of Foxconn. FnConn's specific offerings include financial leasing, small loans, business factoring, private equity fund management and other licenses.

35. Jackson, Brian (August 29, 2016). "How Kabbage knows if it can lend you \$100,000 in just seven minutes." <http://www.itbusiness.ca/news/how-kabbage-knows-if-it-can-lend-you-100000-in-just-seven-minutes/78573>

36. Renton, Peter (July 21m 2015). "Petralia of Kabbage Podcast." <http://www.lendacademy.com/podcast-42-kathryn-petralia-of-kabbage/>

37. Interview with Marc Gorlin, co-founder of Kabbage (July 19, 2013). <https://www.facebook.com/KabbageInc/posts/10151723880621084>

38. See the World Economic Forum, (June 2016). "Innovation in Electronic Payment Adoption: The case of small retailers".

39. Lyon, Ben and Peter Zetterli. (August 3, 2015). "How to Drive Merchant Payments? Build Solutions Merchants Want." <http://www.cgap.org/blog/how-drive-merchant-payments-build-solutions-merchants-want>

40. The Occupational Safety and Health Administration (OSHA) is the main federal agency in the U.S. charged with assuring safe and healthful working conditions, setting and enforcing standards, and providing training, outreach, education and assistance.

41. "Digital Disruption: How Fintech is Forcing Banking to a Tipping Point". (March 2016). Citi.

42. Alibaba Investor Day June 14, 2016 company figures; media and company reports; Global Payments Experts llc. analysis. Figures as of March 31, 2016.

43. Xiaoxiao, Li (July 17, 2014). "Alibaba Has Big Hopes for New Big Data Processing Service." <http://english.caixin.com/2014-07-17/100705224.html>

44. "Alibaba Ups the B2B Ante on SME Access to Working Capital." (January 24, 2016). <http://www.bjia.com/alibaba-ups-the-b2b-ante-on-sme-access-to-working-capital>

45. Source: Company financials as of March 31, 2016. Global Payments Experts llc. analysis

46. As a broader issue, there are various challenges with big technology giants setting up credit rating services that policymakers and regulators need to be aware of. These technology giants have unique data that, from a theoretical point of view, should be able to yield useful insights into an SME's performance and ability to manage both money and business relationships. At the same time, though, if they do not provide the sort of transparency that now exists for credit scoring providers in developed markets (as in the U.S.), they could cause consumer/SME problems. For example, in the US turndowns could not be explained because the factors inside the scoring "black box" were not known. When the scores were opened up, many mistakes in records were found that, only then, could be redressed.

47. "China Boots Up an Internet Banking Industry". (January 27, 2015). <https://www.chinafile.com/reporting-opinion/caixin-media/china-boots-internet-banking-industry>
48. Paymnts.com (December 2, 2015). "Big Data Uncovers Minute Details of Small Biz Borrowers". <http://www.pymnts.com/in-depth/2015/big-data-uncovers-minute-details-of-small-biz-borrowers/>
49. The information on DHGate's micro-lending programs and data were obtained through a series of emailed interviews with DHGate's CEO Diane Wang and her assistant Ivy Zhang in 2015.
50. Bose, Nandita (June 29, 2015). "Amazon to offer loans to sellers in China, 7 other countries." <http://www.reuters.com/article/2015/06/29/us-amazon-com-loans-exclusive-idUSKCN0P90DW20150629>
51. http://www3.weforum.org/docs/IP/2015/FS/GAC15_The_Future_of_FinTech_Paradigm_Shift_Small_Business_Finance_report_2015.pdf
52. <http://spendmatters.com/tfmatters/a-first-step-to-predictive-analytics-quantifying-the-risk-of-paying-an-in-voice-on-receipt/>
53. <http://spendmatters.com/tfmatters/a-first-step-to-predictive-analytics-quantifying-the-risk-of-paying-an-in-voice-on-receipt/>
54. <http://wavebl.com>
55. Shamah, David (November 3, 2015). "Israeli start-up's bitcoin-based tech raises a mast for shippers." <http://www.timesofisrael.com/israeli-start-ups-bitcoin-based-tech-raises-a-mast-for-shippers/> For an explanation of blockchain technology, see Endnote 57.
56. A blockchain is a data structure that makes it possible to create and share a digital ledger of transactions. It uses cryptography to allow anyone granted access to add to the ledger in a secure way without the need for a central authority. Blockchain technologies are therefore well-suited for logging and monitoring large amounts of data, such as short-term loans or an industry's supply chain. Companies like IBM are now actively exploring how Blockchain can be used to track transactional data and track this for purposes that include financing. See <http://www.wsj.com/articles/ibm-pushes-blockchain-into-the-supply-chain-1468528824>
57. <https://www.gtnews.com/articles/how-blockchain-can-transform-supply-chain-finance/>
58. <https://bitcoinmagazine.com/articles/how-fluent-wants-to-streamline-financial-supply-chains-with-a-blockchain-1465318410>
59. <http://wavebl.com>
60. Lending Startups Look at Borrowers' Phone Usage to Assess Creditworthiness. <http://www.wsj.com/articles/lending-startups-look-at-borrowers-phone-usage-to-assess-creditworthiness-1448933308>
61. Note that the KCB M-Pesa account utilizing the Safaricom M-Pesa platform is different because it is linked to a bank and hence offers autodebit features.
62. A smart loan for people with, as of yet, no credit history. http://www.ted.com/talks/shivani_siroya_a_smart_loan_for_people_with_no_credit_history_yet#t-31346
63. Sources: Foundation Capital, Lending Club, McKinsey, Liberum.
64. "The Brave 100: The Battle for Supremacy in Small Business Lending". (October 2015). QED Investors and Oliver Wyman.
65. That said, the early players like Kabbage, OnDeck, CreditEase, and Funding Circle, have been consistently lowering their costs of acquisition every year through partnerships with other fintech players with large SME customer bases like online accounting firms and merchant acquirers as well as banks, and through increasingly sophisticated, data-driven targeted marketing programs.
66. See Endnote 27.
67. Securitization pools contractual debt (in this case SME loans) and sells the related cash flows to third party institutional investors and banks as securities, which may be described as bonds. Investors are repaid from the principal and interest cash flows collected from the underlying debt and redistributed through the capital structure of the new financing. Securities backed by SME loan receivables are known as asset-backed securities (ABS).
68. A number of banks are more comfortable in working with fintechs to solve their immediate pain points, particularly related to originating a small business loan digitally. These banks seem less interested in a deeper relationship with a Fintech that might include multiple facets such as a software platform, marketing support, risk scoring and analytics that incorporate alternative data, portfolio management and servicing, and collections and recoveries. Banks are "go

slow” and targeted in their focus while many Fintechs market broader solutions. Unfortunately, banks pursuing an incremental approach may be losing out by failing to leverage the full scope of what the Fintechs offer, but they perceive the risk of teaming as outweighing what is to them the still to be proven benefits of partnership. See <http://ficinc.com/fintechs-and-banks-an-unequal-partnership-part-one/> and <http://ficinc.com/fintechs-and-banks-an-unequal-partnership-part-two/>

69. http://www.hanwha.com/en/news_and_media/press_release/hanwha-group-expands-presence-in-global-fintech-market.corporate_news.html

70. Increasing regulatory scrutiny of bank-fintech partnerships is only likely to increase these due diligence demands.

71. “Neobanks include financial institutions, working, as a rule, only through the Internet without physical offices, as well as those, specializing in e-commerce. These kinds of services are dependent on economic and technological development of the country, adopted legal base and available mature banking. It is in such conditions that arises the desire to promote and experiment with different banking services”, said the deputy director for the department of banking software RS-Bank for R-Style Softlab Maxim Bolyshev. <http://eng.banks.eu/news/info/2289/>

72. See <https://clearbanc.com>

73. <http://www.techweez.com/2016/05/16/equity-banks-equitel-sme-lending/>

74. Most industry observers expected much more traction in bank-digital SME lender partnerships in 2016 and 2017, but few partnerships have been announced so far. At the same time, cloud-based lending and banking technology firms like Cloud Lending Solutions, Mirador Financial, Solaris, Mambu, Kontomatik, and others have been ramping up their relationships with banks at a fairly brisk pace.

75. See The G20 High Level Principles for Digital Financial Inclusion (2016) <https://www.gpfi.org/sites/default/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion%20-%20Full%20version-.pdf/>

76. For additional information on information privacy laws, principles and practices in different regions around the world see Wikipedia Information Privacy Laws https://en.wikipedia.org/wiki/Information_privacy_law/

77. There has been a lot of concern over who owns personal or business data that is now being used to make credit decisions. Questions around whether SMEs can access their own digital data and grant access to other financial providers, how and what control can a client have over how these records are shared as well as the security around how a client’s data is stored.

78. See the Committee on Payments and Market Infrastructures (CPMI) and the World Bank Group (April 2016) Payment Aspects of Financial Inclusion report <http://documents.worldbank.org/curated/en/806481470154477031/pdf/107382-WP-REPLACEMENT-PUBLIC-PAFI-Report-financial-in-A4.pdf>

79. World Bank (March 2017), Credit Information and Firms’ Access to Finance: Evidence from a New Credit-Constrained Status Measure <https://www.worldbank.org/en/events/2017/03/30/credit-information-and-firms-access-to-finance>

80. The massive volume, vast diversity, and real-time nature of emerging alternative digital data types, and the need for specialized big data expertise in how each data set is created and structured, poses such questions as whether a central database is even advisable or feasible over the long run. Accessing such data via API as needed from carefully-vetted member companies or industry consortiums could be a viable alternate path forward for policy makers to consider. For example, in September 2016, China’s National Internet Finance Association (NIFA) launched its Internet Financial Industry Information Sharing Platform (IFIISP), which will provide credit data on a loan applicant by sending requests to all other IFIISP members and collating the results (data around existing loans, amounts borrowed, number of recent inquiries), but without divulging the source data to protect competitive insights. The platform is intended to prevent duplicate loan applications, ensure legal compliance, improve information verification processes, and reduce default rates and business risks for its members. IFIISP members go through a rigorous vetting process before being allowed to join the platform; at launch, the platform included 17 inaugural members, including Ant Financial, JD Finance, Lufax, and CreditEase’s Yirendai. What’s different about the IFIISP platform is that customer credit data is not centralized, but rather inquired upon at the point of loan application via API technology.

81. See Principle #4 Expand The Digital Financial Services Ecosystem <https://www.gpfi.org/sites/default/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion%20-%20Full%20version-.pdf>

82. See the Checklist for a Small Firm's Cybersecurity Program created by the Financial Industry Regulatory Authority (FINRA) to assist small firms in establishing a cybersecurity <http://www.finra.org/industry/small-firm-cybersecurity-checklist>

83. See the Small Business Borrower's Bill of Rights See more at: <http://www.responsiblebusinesslending.org/#sthash.sbpSzW35.dpuf/>

84. In addition, Principle 4 also encourages service providers to use multiple sources of digital data for evaluating consumer and small and medium enterprise (SME) creditworthiness. This approach should include appropriate safeguards while facilitating development of such data and ensuring a fair, non-discriminatory approach to its use. Examples of such alternative data sources include mobile phone use, utility payments, data enterprise registration information, and other information that can complement traditional loan repayment or insurance-related data. See <https://www.gpfi.org/sites/default/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion%20-%20Full%20version-.pdf>

85. See the WEF report on Innovation in Electronic Payment Adoption: The case of small retailers and the Committee on Payments and Market Infrastructures (CPMI) and the World Bank Group (April 2016) Payment Aspects of Financial Inclusion (PAFI) report which also examine the role of policy-makers with regard to the legal and regulatory framework to develop a more conducive enabling policy and regulatory environment for innovation that supports financial inclusion.

86. See Principle #6 Strengthen Digital and Financial Literacy Awareness <https://www.gpfi.org/sites/default/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion%20-%20Full%20version-.pdf>

87. For a review of regulatory sandbox approaches being taken see <https://www.law.ox.ac.uk/business-law-blog/blog/2016/12/overview-regulatory-sandbox-regimes-australia-hong-kong-malaysia>. It should be noted, however that regulatory sandboxes need to be developed carefully in order to avoid unintended consequences, see <http://www.euromoney.com/Article/3645631/Fintech-sandbox-risks-creating-unofficial-endorsements.html>

Annex 1: Digital Lender Business and Alternative Data Profiles

P2P SME LENDING PLATFORMS 47

ApplePie Capital.....	47
Bitbond.....	47
China Rapid Finance (CRF).....	48
CreditEase.....	48
Dianrong.....	49
Faircent.....	50
Funding Circle.....	50
Funding Societies.....	51
Lending Club.....	51
LoanZen.....	52
Modalku (Parent company is Funding Societies).....	52
MoolahSense.....	53
RainFin.....	53
SAVY.....	53

ONLINE SME BALANCE SHEET LENDERS 54

AMP Credit Technologies.....	54
Aprenita.....	54
CAN Capital.....	54
Capital First.....	55
Capital Float.....	55

Fundation.....	56
GAXFinance and GAX (Growth Accelerator Exchange).....	56
iwoca.....	57
Kabbage.....	57
Kopo Kopo.....	58
Lendingkart.....	59
NeoGrowth Credit.....	59
OnDeck.....	60
Square Capital, Square.....	61
Thinking Capital.....	61
Tyro Payments.....	62
Waddle.....	62
Zoona.....	62

TECH, E-COMMERCE, PAYMENT GIANTS 63

Ant Financial/Alibaba.....	63
Amazon Lending.....	64
Amazon India.....	64
Baidu/Baixin Bank.....	64
DHgate.com.....	65
Paypal Working Capital.....	65

Paytm E-Commerce/Paytm Mall.....	65	MOBILE DATA-BASED LENDERS	69
Tencent/WeBank	65	Branch.....	69
SUPPLY CHAIN FINANCE PLATFORMS.....	66	Commercial Bank of Africa (CBA) M-Shwari	69
ApexPeak.....	66	Kenya Commercial Bank (KCB) KCB M-Pesa	70
Basware	66	Tala	70
GO Finance.....	66	DIGITAL SME BANKS/LENDERS/ PARTNERSHIPS.....	70
Kickfurther.....	66	ABN AMRO.....	70
Kinara Capital	66	CIBC (Canadian Imperial Bank of Commerce)	70
Remitia.....	67	CivilisedBank.....	70
Tradeshift.....	67	Clearbanc.....	71
Traxpay.....	67	DBS.....	71
Tungsten Corporation/Network.....	67	Fidor/Groupe BPCE	71
ANALYTIC/TECHNOLOGY SOLUTION PROVIDERS.....	68	Equitel.....	71
Entrepreneurial Finance Lab (EFL)	68	FINCA.....	71
First Access	68	Heartland Bank	72
Wave.....	68	Holvi/BBVA.....	72
SME LOAN BROKER MARKETPLACES.....	69	IDFC Bank	72
Business Finance Compared/Bizfitech.....	69	ING	72
Funding Options.....	69	JPMorgan Chase	73
Funding Xchange.....	69	Regions Bank.....	73
		Santander	73
		Scotiabank	74
		State Bank of India (SBI)	74
		Wells Fargo	74

Annex 1

SME Digital Lender Business and Alternative Data Profiles

P2P SME LENDING PLATFORMS

ApplePie Capital

Website: <https://www.applepiecapital.com/>

Type of organization: P2P SME LENDER

Year launched: 2015

Headquarters: San Francisco, California, United States

Active countries/region of operations: United States

Alternative data utilized: Franchisor data that includes such things as how many stores they have opened or closed over what period of time, what a store should make in volume or revenue, what it costs to build, how long it takes to break even, and other unit economics broken down by geography and store footprint size. The franchisor also provides the criteria it uses to select franchisees (ApplePie's loan customers) and the market demand size for the product or service in the franchisee's store location.

Target lending market: Franchisees looking to start, grow, or retrofit their businesses under more than 40 regional and national franchisor brands in eight sectors including business and personal services (such as My Salon Suite, V's Barbershops, and Orange Theory Fitness), quick service restaurants (such as Jimmy John's and Marco's Pizza), and convenience stores (such as 7-Eleven). Franchisees are backed by the proven business models and central resources of the franchisor brand.

Bitbond

Website: <https://www.bitbond.com>

Type of organization: P2P SME LENDER

Year operations launched: 2013

Headquarters: Berlin, Germany

Active countries/region of operations: Global (because Bitbond leverages bitcoin as a technology and payment network, it is able to operate globally for borrowers and investors)

Alternative data utilized: Every borrower must connect at least two online accounts in order to complete the application. These might be a PayPal, eBay, Amazon, MercadoLibre, Google Analytics, Debitoor (accounting software), or a bank account. On Amazon, for example, Bitbond can see the number of shipped orders and listed items, while a connected eBay account shows the number and quality of feedback received, giving Bitbond a good idea of the borrower's business acumen, which correlates with repayment probability. Bank and PayPal accounts shed light on the financial health of the borrower and show outstanding loans from other service providers. A Google Analytics account shows the traffic and revenue generated by the site. By connecting such accounts, as well as with social media accounts Facebook, Twitter and LinkedIn, Bitbond uses machine learning algorithms on thousands of data points to assess the creditworthiness of applicants within seconds. In addition, the company uses video verification for both borrowers and lenders. Once connected, the user shows the front and back of the passport to the webcam for the security officer to see, then receives and inputs a personal security code via email to confirm.

Target lending market: Global SMEs; the majority are running some sort of online business, such as a store on eBay, Amazon, MercadoLibre, Etsy or their own eCommerce website). To-date, the company has users from 120 countries. The bulk is currently located in the US, Germany, India, or the Philippines, but the company has also seen meaningful traction in Brazil, Spain, the United Kingdom, and Canada. Most investors (both retail and institutional) are currently from Germany, Northern America, and the United Kingdom.

China Rapid Finance (CRF)

Website: <https://www.crfchina.com>

Type of organization: P2P CONSUMER LENDER (SME LENDING IS IN FUTURE PLANS)

Year operations launched: 2001 (P2P lending platform launched in 2010)

Headquarters: Shanghai, China

Active countries/region of operations: China

Alternative data utilized: Analyzes alternatively sourced, online social, search, transaction, and browser data. Partners with China's various internet platforms, including online travel agencies, online group-buy and shopping platforms, online gaming companies, online e-commerce platforms, payment service providers, social networking giant Tencent, and online search giant Baidu. As the company analyzes new data from its data partners and internally produced credit data from cumulative borrowing behavior on its marketplace, it continually refines its credit assessment algorithms and revises data inputs to create a more accurate measure of creditworthiness. When borrowers on the marketplace have developed a sufficient lending history with the CRF marketplace, CRF invites them to one of its 107 local data verification centers across China where they can apply for larger loans facilitated on the platform. This simple process involves verifying additional data, including physical data, such as housing, business, and employment. The data gathered in connection with the screening and due diligence carried out in the data verification centers is input into the credit assessment system, enhancing its credit analytical capabilities, including fraud prevention and detection.

The company employs multiple independent credit scoring algorithms depending on the loan size and terms. The scoring algorithms are highly automated and instantaneously produce scoring decisions based on up to thousands of data variables. Some of these variables include a potential borrower's delinquent repayment histories, online behavior, advanced education degree, employment duration with current employer, social security status, housing benefits status, credit bureau records (if any), real property ownership, stability of residence, duration of social media usage, and online

shopping frequency. A key part of the company's strategy is "low and grow" which identifies quality customers and offers them larger, longer-term loans as they demonstrate positive credit behavior and allows it to attain significant lifetime customer value.

China Rapid Finance's partnership with Tencent, relying on its popular social chat WeChat app, was able to provide credit ratings and establish creditworthiness for 50 million Chinese consumers using social networking and computer gaming data. CRF's algorithms examine how long and how frequently people use Tencent services, from WeChat to Candy Crush Saga, the popular smartphone game. The more someone uses social networking services, the more it shows that people are concerned for their reputation, concerned for their integrity. Another key variable turned out to be internet purchasing history. Even buying points in an online computer game was another key variable. Another unusual CRF finding is that people with drapes on their windows, it appears, are more likely to pay their debts. CRF has also introduced pre-approved loans to pre-screened users on Tencent's social platforms. With the pre-selection model, the lending platform contacts potential borrowers rather than the borrower seeking out the lending platform. Thus, the platforms can actively seek out prospects with desired characteristics rather than relying on the accuracy of online applications submitted by potential borrowers, which have a higher likelihood of fraud.

Target lending market: Emerging middle-class, mobile active consumers (EMMAs), typically consumers that are often well-educated and well-employed, but lack credit histories. It provides two types of loans: "consumption loans" of between US\$72 and US\$865 used for consumer purchases and "lifestyle loans" which are typically used for larger purchases, like education or healthcare funding of between US\$865 to US\$14,400. The company plans to target SME lending in the future.

CreditEase

Website: <http://english.creditease.cn/index.html>

Type of organization: P2P SME AND CONSUMER LENDER; WEALTH MANAGEMENT SERVICES FOR HIGH NET WORTH AND MASS AFFLUENT INVESTORS

Year operations launched: 2006

Headquarters: Beijing, China

Active countries/region of operations: CHINA

Alternative data utilized: Partner e-commerce platform seller data, such as transaction volume, shop size, customer comments and ratings, and business performance data on Amazon.cn, Alibaba's Lazada, Taobao, Tmall, and

AliExpress platforms, eBay, and Wish; telecommunications, bank account and credit card transaction, insurance, and social security data; data from SME customers' third party software and services providers, such as purchase orders and invoices in enterprise resource planning systems, logistics data, and inventory management data; public data about SME sellers on the internet and social networking sites; supply chain data from upstream and downstream SME suppliers; interbank and third party payment data; SME budget planning and accounting data; and SME wealth management data.

CreditEase relies on these data sets along with ten plus years of accumulated credit, fraud, and other CreditEase data assets to grade borrowers for risk, and then apply risk-based pricing based on the borrower's risk grade. In a new joint venture launched in May 2017 with global business commerce platform Tradeshift, CreditEase delivered a trade financing app that will bring low-cost financing to Chinese businesses incorporating electronic invoice data that will later expand to upstream and downstream supply chain processes and data.

CreditEase also established and runs Beijing Zhicheng Credit Service Co., Ltd. (Zhicheng Credit) which specializes in credit information and ratings for small businesses (much like Dun & Bradstreet in the U.S.), and also launched a risk management cloud platform for the Internet Finance sector in 2016. As of May 2017, over 600 companies in the alternate lending sector covering P2P lenders, marketplace lenders, insurance companies, consumer finance companies, and manufacturing member companies share their clients' credit data with each other for free. The shared infrastructure enables faster credit decision making and helps detect simultaneous multiple applications or fraudulent applications. CreditEase has contributed data for 12 million loans on the platform (the largest contributor to the database). As of February 2017, the platform had already identified 900,000 borrowers with loans or application attempts on multiple online lending sites, including over 80,000 who applied for a loan on five or more different platforms at the same time.

Target lending market: Small businesses and consumers for lending; high net worth and mass affluent investors for wealth management. CreditEase is also the parent company of online P2P consumer lending platform Yirendai, which targets salaried workers, launched in 2012, and went public on the U.S. stock market in December 2015. CreditEase sub-segments its lending business to target urban salary workers, small and micro entrepreneurs, and college students for advisory services and loans; it also provides car loans and mortgages. In addition, the agricultural and farming unit of CreditEase Inclusive Finance provides farmers and

agricultural businesses with one-stop financial services, delivering to their financial needs in rural areas. This includes services such as credit loan advisory assistance, leasing, agricultural insurance, rural wealth management, and agricultural machinery financing.

Dianrong

Website: <http://www.dianrong.com>

Type of organization: P2P SME AND CONSUMER LENDER

Year operations launched: 2012

Headquarters: Shanghai, China

Active countries/region of operations: China; Asia

Alternative data utilized: Dianrong uses multiple third-party data, big data analytics modeling, and a highly flexible, configurable risk-control approval system. It utilizes third party data on transactions, consumption, career, behavior, travel history, education, and e-commerce data in its credit scoring models, and applies self-updating machine learning algorithms to the data, obtaining customer permission as needed. For example, it asks borrowers to allow it to purchase data from payment company China UnionPay to assess cashflow and can then lend using future income as collateral. It also uses giant Ant Financial's credit scoring service, Sesame Credit, and links and analyzes information from potential clients' social media accounts like Weibo, China's equivalent to Twitter. In addition, it builds a "knowledge graph" of a person's network and mines the data to ascertain potentially risky relationships. Apart from analyzing social media usage, clients who miss a payment may be potentially embarrassed online because Dianrong.com can post public requests on the social media site to demand recovery. In addition to Alibaba, Dianrong is also partnering with eBay to lend money to Chinese businesses that sell goods to U.S. customers on eBay.

More recently, Dianrong partnered with FnConn (a supply chain financing subsidiary of the world's largest contract manufacturer FoxConn Technology Group) to launch **Chained Finance**, a new blockchain platform for supply chain finance. The platform records and authenticates every payment and every supply chain transaction, creating greater visibility into suppliers and their trading data for SME lending decisions.

Dianrong is also integrating blockchain technology across its entire platform, where appropriate, to further enhance transparency and security for borrowers and lenders. In what the company calls 'D-Chain', Dianrong's blockchain technology is based on Ethereum with smart contract capabilities, allowing a number of applications under private or consortium chain settings. Applications of Dianrong's

blockchain technology so far include electronic contacts (contracts stored on blockchain to prevent tampering) and credit management (ensuring the validity and timeliness of borrower credit data via recording and storage on blockchain). Dianrong invites partners from different industries to join Dianrong's blockchain ecosystem, which it is exploring providing free in exchange for getting data in return from them to help build its own online lending business and customer verification.

Target lending market: Specializes in consumer and SME loans, ranging in size from about US\$365 to US\$72,500 for personal loans and about US\$7,300 to US\$290,000 for SME loans. For banks and companies, Dianrong provides "infrastructure-as-a-service" banking solutions in China and around the world. Based on the same technology that drives its P2P lending marketplace platform, the solutions are fully modularized and customizable for clients, and span lender and borrower acquisition, payments, big data risk control, data warehousing, credit portfolio management, delinquency and collections management, and blockchain.

Faircent

Website: <https://www.faircent.com>

Type of organization: P2P SME AND CONSUMER LENDER

Year launched: 2014

Headquarters: Gurgaon, India

Active countries/region of operations: INDIA

Alternative data utilized: Faircent is technically integrated with Transunion, Yodlee, Lenddo and Jocata. Yodlee provides the bank scraping technology which lets Faircent, with SME permission, to digitally link and update multiple borrower deposit and credit bank account transactions in lieu of providing bank statements; Transunion helps with the Aadhaar-based eKYC and bureau scores; Lenddo helps with social media scoring; and Jocata provides income tax pulls. The company has a rules engine that breaks the borrowers and buckets them into different profiles. The bucketing is done based on a scoring model (out of 400). Faircent evaluates each borrower that registers on the basis of his or her ability, stability, and intention to repay across more than 55 parameters from the data it collects. With borrower permission, it also collects alternative data from social platforms such as LinkedIn and Facebook to supplement its analysis, although it is still evaluating this data to prove how much incremental fraud or credit risk screening prediction it offers. The platform's algorithms also detect good and bad credit behavior. For example, a borrower struggling to pay back his

or her debt after spending recklessly and hitting his maximum credit limit will rank poorly on the site. Faircent also evaluates borrowers' lifestyle and spending patterns (for example buying the latest phone or frequenting a pub, among others) by analyzing the bank account and payment transaction data it collects, evaluates current repayments and monthly obligations of the borrower, and assesses soft data like family details, residence and office stability.

Faircent's credit policies are quite conservative: the company's tech-enabled algorithms reject over 90 percent of the borrowers who apply for loans, as Faircent focuses on responsible growth. Faircent generally gives alternative data about 50 percent of the risk weighting in its credit scoring models; the rest of the weighting relies on the borrower's CIBIL¹ credit data and scores. That said, Faircent does lend to companies and consumers that have no CIBIL credit record if there is sufficient predictive alternative data to do so.

Target lending market: SMEs (34% of Faircent's borrowers) and consumers.

Funding Circle

Website: <https://www.fundingcircle.com/>

Type of organization: P2P SME LENDER

Year launched: 2010

Headquarters: London, United Kingdom

Active countries/region of operations: Germany, The Netherlands, United Kingdom, United States.

Alternative data utilized: Funding Circle auto-populates underwriting information through automated programming interfaces (APIs) from many data sources into its credit decision engine, allowing it to make very fast decisions with more flexibility than traditional lenders. While it uses traditional business metrics - including business cash flow, personal cash flow, collateral, and personal assets that could be liquidated if necessary - Funding Circle expands its population of eligible borrowers by examining alternative data, including real-time cash flow, Yelp reviews, and an owner's passion about the market opportunity. It obtains alternative SME data, insights, and customers through its SME target and data-rich referral partners, including Santander and RBS in the UK (banking and payment transaction data), software firms Intuit and Sage (cloud accounting and business financial data) and H&R Block (bookkeeping, payroll, taxes and other accounting data). It also takes personal credit history and financial stability of the business owner into very serious consideration, and requires a personal guarantee from each applicant.

1. Formerly Credit Information Bureau India Limited (CIBIL), Transunion acquired an 82 percent stake in CIBIL to become Transunion CIBIL Limited.

Funding Circle's examination of social media includes a Google search that analyzes product or service offerings, management experience, trading history, partnerships, transparency, corporate citizenship, diversity of clientele, seasonality, customer experience, and more. Such information can lead to a faster decision on loan applications and/or a lower interest rate. Key business indicators revealed through social media also include:

- Customer reviews and engagement: Strong and active relationships with existing and prospective customers on social media can be reliable, revenue-drivers for businesses – and a signal to lenders that the company has a loyal customer base.
- Customer service: A review of Facebook and Twitter activity to see what customers are saying about the SME, and how quickly and effectively the SME responds to comments and complaints. Quick and friendly customer service is a good indicator of an SME's future success with customer retention. Satisfied customers are valuable for word-of-mouth marketing purposes.
- Thought leadership: Social profiles that are up-to-date; blog about relevant topics in the SME's industry; and the level of those posts shared on Facebook, Twitter and LinkedIn that come across as useful information, rather than a sales pitch can show the SME owner is perceived as an expert or pillar in the SME local community.

Target lending market: Established SMEs in business at least two years (and profitable in at least one of those two years).

As of yearend 2016, Funding Circle topped US\$3 billion in SME lending since launch with US\$1.4 billion going to small business in 2016. Funding Circle also reported it had reached profitability in the UK as year over year growth surpassed 90 percent.

Funding Societies

Website: <http://www.fundingsocieties.com/>

Type of organization: P2P SME LENDER

Year launched: 2015

Headquarters: Singapore

Active countries/region of operations: Singapore, Indonesia (Moldaku brand), Malaysia (Moldaku), Southeast Asia

Alternative data utilized: The company appears to use traditional financial statement lending processes at this time.

Target lending market: SMEs

Lending Club

Website: <https://lendingclub.com>

Type of organization: P2P CONSUMER AND SME LENDER

Year launched: 2006

Headquarters: San Francisco, California, United States

Active countries/region of operations: United States

Alternative data utilized: The company uses proprietary algorithms that leverage behavioral data, transactional data, and employment information to supplement traditional risk assessment tools, such as Fair Isaac Corporation (FICO) scores. It also uses a combination of third-party data, sophisticated analytical tools, and current and historical data obtained during the loan application process to help determine fraud risk. The company does not reveal its data sources or alternative data used in its proprietary scoring models. Most analysts believe they include data sourced from public utilities, social media, and possibly other financial service firms such as Mint.com, which has access to thousands of banking profiles and maintains a partnership with Lending Club.

More is known, however, about the alternative data Lending Club uses in two of the three major business lending partnerships it has struck with Google, Alibaba, and Sam's Clubs. Google uses Lending Club to provide low cost two-year loans up to \$600,000 to its Google for Work network of more than 10,000 partners, including resellers, consultants, and system integrators which help Google distribute its applications and services and invests in their growth by funding the loans from its own cash. Google already knows the borrowers and provides that data (such as sales, contracts, income, identification information) to Lending Club; Lending Club crunches the data with a customized underwriting model to evaluate the Google SMEs' creditworthiness and services the loans.

In the Alibaba “Alibaba.com e-Credit Line, Powered by Lending Club” collaboration, Lending Club gained exclusive rights to finance U.S. SME purchases from Chinese suppliers on the Alibaba.com. Lending Club gets direct access to Alibaba’s large base of U.S. buyers and sellers and their online transaction and trade data with Chinese suppliers to more accurately assess risk, make decisions faster (in five minutes), at a lower risk, and at lower interest rates than SMEs typically can secure. With direct access to Alibaba’s SME trade and sales data, Lending Club can match repayment terms to the cash-flow cycles of borrowers, vet suppliers and shipments, and transfer the funds directly to the suppliers. In the Sam’s Club deal, Lending Club became the launch partner of Sam’s Club Business Lending Center, a fast, simple online platform connecting members with responsible lenders and offering savings of 20 percent on loan fees (funded by Lending Club in lieu of a referral fee). Lending Club provides members with access to term loans of up to \$300,000 with low rates and affordable fixed monthly payments. It is not clear what, if any, data Sam’s Club shares about its 600,000 SME members.

Target lending market: Consumers and SMEs (in business for at least 24 months with at least US\$75,000 in annual sales). The company also provides auto, student, and patient financing loans. SME loan products include loans and lines of credit that are fixed or variable rates in amounts ranging from US\$5,000 to US\$300,000 for terms of three months to five years.

As of December 2016, since launching business loans in March of 2014, the company has made more than US \$5 billion in SME loans.

LoanZen

Website: <https://loanzen.in>

Type of organization: P2P SME LENDER

Year operations launched: 2015

Headquarters: Bengaluru, India

Active countries/region of operations: India

Alternative data utilized: “All the data that we use in decision making is collected online or electronically, from borrowers and relevant public and private sources,” said Amit Gupta, who leads data science at Bengaluru-based LoanZen. “Typical sources are banking data, government data on company identifiers, financials, marketplace data, [and] social foot-

print data.”² LoanZen uses the invoices SMEs supply to the platform to determine the volume and tenor of the expected cash flows against which to extend unsecured credit. Borrowers also connect their accounting, tax, and online banking data to LoanZen’s artificial intelligence-based system, which completes the credit assessment within 15 minutes. LoanZen also uses data supplied by partner companies, such as Treebo, a technology-and-analytics-enabled hotel chain. LoanZen uses Treebo’s data on their partner hotels, such as past booking history, future bookings for the property, guest feedback collected digitally, and quality performance data

Target lending market: Caters only to private limited company borrowers in services and manufacturing that have large, reputed clients (multinational corporations [MNCs] or listed Indian corporates). SMEs across these sectors furnish their invoices on the platform and receive unsecured loans from accredited investors who are comfortable with the borrower credit profile.

Modalku (Parent company is Funding Societies)

Website: <https://modalku.com>

Type of organization: P2P SME LENDER

Year operations launched: 2016

Headquarters: Jakarta, Indonesia

Active countries/region of operations: Indonesia

Alternative data utilized: Analyzes potential borrowers by going through five steps in the screening process, which include a profile screening, an anti-fraud verification with a site visit, and a psychometric credit information tool test facilitated by the financial technology company Entrepreneurial Finance Lab (EFL).

Target lending market: To be eligible for a loan, businesses must have a turnover of at least US\$1,500 per month with an operational history of at least 2 years. Modalku offers loans to SMEs ranging from about US\$3,750 to US\$37,500 with a tenor of three, six and twelve months claimed to be ready for disbursement within 10 days.

2. <http://economictimes.indiatimes.com/small-biz/startups/only-clean-social-history-can-get-small-companies-a-loan/articleshow/53533416.cms>

MoolahSense**Website:** <https://moolahsense.com/>**Type of organization:** P2P SME LENDER**Year launched:** 2014**Headquarters:** Singapore**Active countries/region of operations:** Singapore; plans expansion in Southeast Asia

Alternative data utilized: The company uses traditional SME screening methods, based on financial statements, bank account statements, company records, and other documentation. The company does not appear to be using any alternative data at this time.

Target lending market: SMEs. To qualify for a business loan of three to 24 months, the business must have at least US\$217,000 in revenue and trading for two years or at least one year of filing with ACRA.³ To qualify for invoice financing of up to 80 percent of the invoice value (minimum invoice amount is US\$14,500) for a term of 15 to 90 days, the business must have at least US\$72,000 in revenue and at least 12 months' operating history.

RainFin**Website:** <https://www.rainfin.com>**Type of organization:** P2P CONSUMER AND SME LENDER**Year launched:** 2012**Headquarters:** Capetown, South Africa**Active countries/region of operations:** SUB-SAHARAN AFRICA

Alternative data utilized: RainFin provides SME loans in an innovative partnership with M2North, a company that enables SMEs and large industrial companies to exchange procurement documents. It acts as an electronic intermediary between large companies and their supplier base. SMEs registered with M2North opt in with RainFin to share their existing data, thereby enabling RainFin to assess the credit-worthiness of a business, much like performing credit checks. This provides a risk rating on the individual borrowers using its site. RainFin uses the data to calculate things such as a business's estimated cash-flow. Also, since many SMEs using M2North have supplied large corporates, it can also access a firm's black economic empowerment status and VAT registration. Rain Fin's online application process includes an intelligent SME-specific credit scorecard that reviews not only an applicant's transactional history and financial health,

but also additional non-traditional data points. These can include procurement history and social media that will be used to assign the SME to one of seven risk-rating levels.

Target lending market: Consumers and SMEs with micro and non-registered businesses borrowing under the "personal" category, and registered SMEs borrowing under the "business" loan category.

SAVY**Website:** <https://savy.lt/>**Type of organization:** P2P CONSUMER AND SME LENDER**Year launched:** 2014**Headquarters:** Vilnius, Lithuania**Active countries/region of operations:** Lithuania for borrowers; Europe for investors

Alternative data utilized: SAVY checks borrowers' credit history, reliability, and debt-to-income ratio. But credit scoring also includes an evaluation of Internet behavior, history, previous loan requests, and other statistical data (for example, borrower behavior on the SAVY platform which can reveal intentions of the person). If the person does not read information thoroughly and does everything quickly by using copy and paste functions, it means he or she does not think of repaying the credit and instead the goal is to get money as soon as possible. If a person spends more time on gathering information and modeling different scenarios, he or she actually plans repayment of the credit.

Target lending market: SMEs and consumers in Lithuania. Unsecured and secured consumer loans, real estate mortgage loans, and business loans.

3. Accounting and Corporate Regulatory Authority (ACRA) is Singapore's national regulator of business entities and public accountants, commonly known as the Registrar of Companies in other countries.

ONLINE SME BALANCE SHEET LENDERS

AMP Credit Technologies

Website: <http://amp-creditech.com>

Type of organization: ONLINE SME BALANCE SHEET LENDER/CREDIT TECHNOLOGY SOLUTIONS PLATFORM

Year operations launched: 2010

Headquarters: Hong Kong, China

Active countries/region of operations: Hong Kong, the Philippines, Singapore, and the United Kingdom, with expansions plans across Asia and Europe

Alternative data utilized: Combines credit modeling with daily cash flow data enabling established financial institutions to offer an unsecured SME loan product. AMP's technology, which AMP licenses to banks and non-bank lenders as a software-as-a-service model, allows them to offer and manage a new unsecured short-term working capital lending product to these SMEs. Additional information includes analysis of transactional data including electronically verifiable cash flows, such as card payments. The technology studies and measures the cash flows against sector models of payments and collections to assess credit.

Target lending market: SMEs for lending and banks for the platform.

Aprenita

Website: <https://www.aprenita.com/>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year launched: 2015

Headquarters: New York City, New York, United States

Active countries/region of operations: United States

Alternative data utilized: Aprenita sources alternative data on their borrowers through direct integration with App Stores (GooglePlay and Apple) and analytics accounts (for example, Flurry, Localytics, MixPanel, and AppsFigures). Data Aprenita accesses in the mobile apps market includes customer engagement, sales, marketing conversion, outstanding invoices from the app store, and customer feedback, among other data. The app stores also provide information about the number of times the app has been downloaded, as well as reviews by customers. Advertising networks provide data on the amount of revenue the app is generating. Other data analytics platforms reveal how many active users the app has, how much time users typically spend on the app, and data on the effectiveness of the app's marketing efforts. The company does not require personal guarantees or rely on FICO scores to determine a company's creditworthiness.

Target lending market: Mobile app developers with at least six months of operating revenue for at least one active app. Aprenita typically lends US\$50,000 to US\$300,000 at interest rates of between six and 20 percent over six to 18 months. Younger companies with at least \$5,000 in monthly revenue can receive weekly advances on earned revenue from the App Store and advertising networks at fees ranging from two to five percent. The advances are repaid when the developer receives revenue from those sources, usually within 45 to 60 days.

CAN Capital

Website: www.cancapital.com

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 1998

Headquarters: New York City, New York, United States

Active countries/region of operations: United States

Alternative data utilized: As a technology-powered financial services provider, CAN Capital's CAN Capital's Daily Remittance Platform™ and its proprietary risk models provide the company with valuable information about the strengths, risks and day-to-day operations of U.S. small businesses. While it initially started as a merchant cash advance company (which is a purchase and sale of a future receivable) with daily repayments deducted from sales, in 2010 it began offering term loans as well. It obtains daily merchant sales data from its payment acquirer partners such as World Pay and iPayment.

Since it has history dating back to 1998, it can also look at its own experiences across certain industry codes and juxtapose the SME's cash flows against performance in the industry for reasonability. CAN Capital also goes through various verification steps to make sure that it can service the loan properly: is it a real business real? does it have positive cash flow or not? These are determining factors in making the credit and credit line/loan amount size decision. Merchants can link their accounting systems for CAN Capital to obtain this information or provide financial statements or other documentation. In addition, CAN Capital's 20-year historical experience (covering several recessions) and high lending experience volume gives them a unique perspective to see and act on leading indicators of an economic down cycle to reduce risk ahead of most other newer digital SME lenders.

Target lending market: SMEs, with a concentration in retail, restaurant, grocery, health care, and professional services (in other words, businesses that accept electronic payments). CAN Capital offers merchant cash advances, direct loans

with fixed terms and payment amounts, a bank-like installment loan with longer terms, and a flexible payment feature loan called Trakloan. The company also partners with merchant acquiring and other payments companies, such as WorldPay and iPayment, to offer financing options to the partner's merchants.

As of May 2017, average funding amount across the portfolio on its flagship products is about \$50,000, and average term is 14 months; the company has made over US\$6.0 billion in loans to SMEs since launching.

Capital First

Website: <http://www.capitalfirst.com>

Type of organization: FINANCING COMPANY/
E-COMMERCE PARTNERSHIP

Year operations launched: 2012

Headquarters: Mumbai, India

Active countries/region of operations: India

Alternative data utilized: For smaller loans, Capital First uses a tech-driven loan appraisals approach with detailed algorithms to assess a loan applicant's repayment capabilities and attitudes which take into account many non-financial attributes of prospects to determine credit-worthiness and safety profile. Through a process of trial and error, the company has evaluated a range of alternative data variables to determine which are credit-predictive and which are not. One example: how does a customer, who is in the age group of 25 to 30, who is self-employed but married, behave differently from a person who is 25-30, self-employed but unmarried? The company has found marriage status provides incremental value in the credit decision. For online retailers, it considers e-commerce marketplace data; it also lends against card receivables for offline merchants. For larger loans, it still conducts a customized cash flow analysis using financial statements and obtains references from the SME's customers, vendors, and suppliers.

Target lending market: The company provides SME loans, loans against property, mortgages, two-wheeler loans, and durables loans to Indian SMEs and consumers. The company targets retailers, manufacturers, traders, and doctors and other professionals which have been in business for at least three years. Various SME loan products are available from US\$4,650 to US\$116,300 with loan tenures of six months to 36 months. About 70 percent of Capital First's customer portfolio is SMEs and entrepreneurs (most formal and informal micro firms); 23 percent consumers; and the rest large businesses. But on the loan value side, the SME and entrepreneur portfolio is 85 to 90 percent of the loan balances.

In February 2016, Amazon India Seller Services launched an invite-only seller lending program with Capital First offering SMEs on its platform working capital loans ranging from US\$7,750 to US\$310,000.

Capital Float

Website: <http://www.capitalfloat.com>

Type of organization: ONLINE SME BALANCE SHEET
LENDER

Year operations launched: 2013

Headquarters: Bengaluru, India

Active countries/region of operations: India

Alternative data utilized: Capital Float targets the population of SMEs in India that are unable to get loans from banks but actually have a significant data footprint because of their engagement with the formal economy. This could be data garnered by selling online or Government data like Aadhaar or credit data and scores from CIBIL (Credit Information Bureau (India) Limited) or ICRA Limited (formerly Investment Information and Credit Rating Agency of India Limited). The digital footprint of the SME it may use includes ecommerce platform sales, seller reviews, and rejections; card and mobile transactions at point of sale for retailers; and trading data on B2B commerce platforms. It also includes online accounting data and purchase ledgers and more unique data such as social media credit scoring and psychometrics (for example, applicants are asked questions to judge things such as their ability to scale a business, their attitude toward credit, and how they compare to competitors). Capital Float overlaps alternative digital data with the SME's profitability parameters, such as current product usage levels, industry margins, potential future earnings, risk parameters (such as probability of default). It also uses conventional credit bureau metrics and bank statements, and tailors its credit-scoring model for each category of potential borrower it serves.

Target lending market: Capital Float lends between US\$390 and US\$155,000 to SMEs in India, but most loans range from US\$10,800 to US\$15,400. The interest rate on these loans varies from 15 to 20 percent. It offers a range of products including term loans, merchant cash advances (for retailers that accept cards or mobile transactions), invoice financing, online seller finance, Pay Later loans (a rolling line of credit), and taxi finance. It tailors products for specific SME segments, such as Uber drivers, ecommerce sellers, or B2B commerce buyers, and struck a partnership with Payworld, a payment innovator targeting customers in remote locations, to build a custom credit model to reach India's 12 million kirana, or local neighborhood, stores.

Capital Float has over 50 partnerships, including with B2C e-commerce platforms Snapdeal, Shopclues, Paytm, Flipkart, and Amazon; B2B e-commerce sites Alibaba.com, Tolexo, IndustryBuying, and OfBusiness; SME mobile POS payments providers MSwipe and Pine Labs; car sharing service Uber (vehicle loans for drivers), and cloud accounting software provider Intuit, each of which provide it with valuable alternative credit scoring data.

In December 2016, it partnered with IDFC Bank to provide digital lending that will focus on SME borrowers who have no access to bank credit, with limited or no documentation and without existing credit history. IDFC Bank will gain access to Capital Float's digital network of borrowers, thereby enabling it to diversify its portfolio of small ticket loans and grow its customer base. Capital Float, in turn, can leverage IDFC Bank's balance sheet, product innovation, and customization of banking products for this segment of borrowers.

As of March 2017, since launching in 2013, Capital Float had originated over US\$120 million in loans to over 5,000 SMEs. The company's credit policies remain stringent, approving only 20 percent of applications. The company maintains and targets a non-performing asset (NPA) proportion of less than one percent of its total loan amount.

Fundation

Website: <http://fundation.com/>

Type of organization: ONLINE SME LENDER

Year launched: 2011

Headquarters: New York City, New York, United States

Active countries/region of operations: United States

Alternative data utilized: Fundation's technology uses extensive data aggregation, proprietary datasets and intelligent decisioning techniques to predict credit risk and appropriately price loans. The power of its offering is in the tools it offers around online applications and data-intensive credit algorithms to partners. Aggregating third-party data in real time, doing a lot of automation, using disparate data sources, and combining them to determine what kind of risks Fundation and its partners are taking is a major strength of the platform. However, Fundation does not disclose which data sources or data it uses.

Target lending market: Fundation currently offers business loans between US\$20,000 and US\$500,000. The firm's loans have terms of one to four years, and they carry annual percentage rates of between 7.99% and 29.99%. Unlike other digital SME lenders, however, Fundation has staked its growth in bank partnerships, and is content to stay entirely in the background as an integrated, credit solutions partner of

the banking system working through its partners. Its current bank partners include Regions Bank and the BancAlliance consortium, a network of 200 community banks which refer customers who may not be the right fit for traditional bank financing to a website built by Fundation. In the BancAlliance partnership, the loan may be funded by either Fundation or the partner bank based on various factors, including the business owner's needs and creditworthiness. Goldman Sachs also signed a US\$100 million credit facility for Fundation in August 2016.

In addition to banks and a portion of loans it continues to hold on its own balance sheet, Fundation partners with business-service providers such as Wolters Kluwer N.V. to make loans. It also works with the U.S. Department of Commerce's Minority Business Development Agency to facilitate lending.

GAXFinance and GAX (Growth Accelerator Exchange)

Website: <http://gaxfinance.com/> and <http://gaxworldwide.com/>

Type of organization: ONLINE SME FINANCING AND SUPPLY CHAIN PLATFORM

Year launched: Soft launch 2015; full launch delayed until 2017

Headquarters: Kuala Lumpur, Malaysia

Active countries/region of operations: Malaysia first; then ASEAN region

Alternative data utilized: Through GAX partner ecosystems, such as a cloud-based e-claims system for automobile workshops and e-commerce marketplaces for online retailers, GAX will provide the platform to thousands of SMEs for their day-to-day operations. The data from these ecosystems provide unique insights into the businesses to understand their performance and growth prospects. So, if a business approaches GAX for financing solutions, all GAXFinance will ask for is the SME's ecosystem account. Using the data available, GAXFinance will assess the businesses without paperwork and provide innovative financing solutions based on their respective needs. The platform will process applications in minutes and disburse them within days, offering fast, accessible financing. GAX will also extend its solutions to growth and mature stage, medium to large B2C retailers with payment gateways as well as SMEs offering software-as-a-service.

Target lending market: The newly launched Growth Accelerator Exchange (GAX) aims to provide SMEs within the ASEAN region with financing, payments, and logistics solutions through an all-in-one platform, beginning with operations in Malaysia. Through its GAXFinance arm, it set an initial goal of disbursing between 10,000 and 20,000 loans

to SMEs in Malaysia with a loan size of around US\$4,700 to US\$11,700. For high potential SMEs, GAXFinance will consider a maximum loan amount of around US\$23,500. The interest rate charged on the loans will be between 10 to 16 per cent, a fraction lower than the 10 to 18 percent charged by local financial institutions for the same loan amount in Malaysia. GAX Finance is currently working with government agencies and business partners across Southeast Asia to pioneer secure partners and launch the GAX ecosystem.

iwoca

Website: www.iwoca.co.uk

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year launched: 2012

Headquarters: London, United Kingdom

Active countries/region of operations: United Kingdom, Germany, Poland, and Spain; expansion to more countries in Europe in the pipeline

Alternative data utilized: Uses online payment or POS merchant acceptance accounts (for example, Magento, Skril, Shopify, Sage Pay, Paypal, Linnworks), as well as online accounting services (for example, FreeAgent, Sage), business bank statements or APIs to business banking account transactions, VAT returns (which can be downloaded directly from the U.K. government's Her Majesty's Revenue and Customs (HMRC) web site, and company accounts during the application process. VAT returns provide sales history; company accounts show business profitability; payment and POS accounts capture sales and identity information; and accounting records provide a comprehensive view of the business financials. iwoca recently also fully integrated with Xero SME accounting software on top of Xero's industry leading open API. The integration enables SMEs already on the Xero platform multiple times a week managing their financials who decide that an iwoca credit line (up to US\$130,000) is right for them to get an approval instantaneously or within a few hours, and to see the funding immediately reflected in their accounts.

Target lending market: SMEs (including startups). Provides credit lines up to US\$130,000 in the U.K., US\$55,000 in Germany and Spain, and US\$40,000 in Poland.

Through May 2017, iwoca has provided over US\$220 million to over 10,000 SMEs.

Kabbage

Website: <http://www.kabbage.com>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 2010

Headquarters: Atlanta, Georgia, United States

Active countries/region of operations: Global. Currently active in the United States, Australia, Mexico, Canada, Spain, and the United Kingdom

Alternative data utilized: Analyzes large numbers of transactions for each loan. It is able to do this by pulling alternative data from bank accounts, merchant acquiring processors, social networks, e-commerce sites, accounting software, shipping records (for example, from UPS), and dozens of other private and public sources to gauge the risk and creditworthiness of the business seeking the loan. The company's underwriting engine pulls information such as business revenue, vendor payments, and tax and accounting data to assign the proper line of credit in real time.

Merchants can optionally link their Facebook, Twitter, and UPS shipping accounts, which may qualify them for fee discounts. Executives describe this data as the 'space between that data' to decide whether Kabbage is going to offer the merchant capital. Facebook business, Yelp, Foursquare, Amazon, and eBay offer business reviews, rankings, and other rich data on how businesses actually interact with their customers. Kabbage has determined that customers who link to their social media information are 20 percent less likely to be delinquent than those who do not.

Similarly, linkages with logistic and e-commerce providers is producing relevant data. UPS shipping data can reveal how many packages an SME is shipping, how many packages are returned, the longevity of the business, and if the quantity of packages shipped is increasing or decreasing. If the company knows that someone has been shipping antique mugs for at least two years for eBay and Amazon, always ships out via two-day UPS air, has more than 500 friends on Facebook, and is always sending out deals on Twitter, then they are often a better risk — regardless of their credit score.

Target lending market: In the U.S., Kabbage's core product is a revolving business line of credit of US\$2,000-US\$100,000 with six to 12 month terms. The credit line is dynamic; it automatically adjusts to furnish businesses with the right amount of capital they need to grow. The average line of credit is US\$25,000, and the average client borrower takes 7-8 loans/year and grows revenue by 72 percent.

The company began licensing its platform to banks, lenders, and other companies beginning in March 2015, and has since implemented the turnkey, fully configurable platform at ING in Spain, Scotiabank in Canada and Mexico, Santander in the U.K, Kikka Capital online SME lending platform in Australia, and Sage and FleetCards U.S.A. in the United States. The three banks will continue their global rollouts in 2017, and other banks are in the pipeline. It also has major partnerships with United Parcel Service (UPS), Big Rentz (truck rentals), and MasterCard for distribution and data sharing.

As of April 2017, since launching, Kabbage has extended nearly US\$3 billion to 100,000 SMEs across the U.S. and its customers have connected more than 1.4 million data sources to the Kabbage Platform.

Kopo Kopo

Website: <http://www.kopokopo.com>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 2012

Headquarters: Nairobi, Kenya

Active countries/region of operations: Sub-Saharan Africa

Alternative data utilized: Kopo Kopo Grow is Kopo Kopo's merchant cash advance product for mobile money merchants. The service enables merchants to take cash advances of up to \$29,300, with the borrowers paying a 1 percent fee in lieu of interest. Merchants who repay faster gradually get access to larger advances at lower rates. The product rewards merchants for increasing their acceptance of electronic payments, while also giving them access to the capital they need to grow.

Merchant mobile payment data enables Kopo Kopo to build a credit profile that analyzes over 200 variables to price risk and to extend the unsecured loan. The product crunches hundreds of data-driven "signals" to predict a merchant's future cash flow and propensity to default, and then pre-qualifies that merchant for loan range tailored to the business. The merchant then selects the loan amount they want, dedicates a percentage of their daily mobile money sales to repaying the loan, and digitally signs the terms and conditions. The whole process from application to loan disbursement takes just minutes.

Several risk mitigation features make the service distinct. First, Kopo Kopo (or the acquirer or payment processor) acts as a "master merchant", which means it reconciles and settles

merchant funds from a centralized pool of funds. Kopo Kopo therefore essentially guarantees loans because merchants cannot simultaneously default and continue accepting mobile money payments from their customers (they would have to turn away customers that want to pay with mobile money to avoid repaying their loan). Second, the technology automatically deducts a percentage of every single mobile money payment in order to amortize an outstanding loan. As a result, merchants do not have to remember to pay installments over the term of their loan; advances are repaid automatically, little by little, every single day.

Target lending market: Kopo Kopo is a technology-focused mobile money aggregator and micro-lender which grew out of an effort to support SME mobile money payments after partnering with Safaricom to acquire merchants to accept M-PESA at the point of sale (this service was later branded Lipa na M-PESA, Swahili for "Pay with M-PESA"). The company launched Kopo Kopo Grow merchant cash advance in Kenya in May 2014 for its mobile money merchants. The company has launched the product in Kenya, Ghana, Tanzania, and Uganda with bank and mobile network partners, and will soon launch in Zimbabwe.

In 2015, Kopo Kopo repositioned as a merchant acquiring technology company, offering its advanced payment and lending technology capabilities to merchant acquirers and other payments companies in emerging markets. The offering, its Business Operating System (OS), combines merchant-facing services with merchant acquirer tools and scoring algorithms to offer a comprehensive merchant services platform to banks, mobile network operators, and third parties. The technology underlying Kopo Kopo Grow merchant cash advance is a core anchor value-added product for merchants included in the platform.

In March 2017, Kopo Kopo announced a partnership with MasterCard which will see the two organizations roll out Masterpass QR across 11 markets in Sub-Saharan Africa, impacting over 250,000 micro and small businesses over the next five years. Masterpass QR lets businesses accept mobile and digital payments, while reducing their exposure to the risks and costs of managing cash. Payment is instantaneous and guaranteed, meaning that merchants no longer need to wait days for transactions to reflect in their accounts. Kenyan merchants will be among the first to benefit - Kopo Kopo will offer the service in partnership with Diamond Trust Bank (DTB) as part of its acquiring strategy in the country.

Lendingkart

Website: <http://lendingkart.com/>

Type of organization: P2P SME LENDER

Year launched: 2014

Headquarters: Ahmedabad, India

Active countries/region of operations: India

Alternative data utilized: The company's credit risk analytics technology analyzes the SME on the basis of over 2,000 variables and data points, which includes industry type, business cash-flows and transactions, income tax return filings of the business, and previous loan and repayment records, among others. However, rather than ask the customer to fill out large forms (it only asks for VAT returns and bank statements), it scrapes the data needed from public and private sources and via APIs information from SMEs' stores and other sites. A few examples include accessing seller sales and ratings on e-commerce sites like Flipkart, Paytm, Voonik, and Craftsvilla; data from SmartShift, a mobile app for cargo owners and transporters, enabling users to find cargo transporters based on the shipment size, weight and other requirements; and data from Unicommerce, a multichannel order fulfillment platform. In addition to e-commerce SMEs, Lendingkart services companies that supply goods to large corporations, online app and game developers, and offline retailers and service providers that have at least some level of online transactions or profiles.

In essence, Lendingkart's strategy is to target all SME niches in the country where some secondary verified digital data is available from third party resources and extract that data from the SME's ecosystem to evaluate the company, rather than bothering with document submission and evaluation. By doing so, the company says, it is able to obtain enough data to determine a customer's intent to pay back a loan, the quality of his product or service, the financial health of his business, and ability to survive with competition.

The company also partners with Lenddo to explore and expand the use of social media to help boost lending and credit evaluation. By requesting access to borrower's social media account such as Facebook, LinkedIn, Google, or Twitter, Lenddo can analyze a variety of factors such as who the borrower associated with and the reputation and the nature of his or her contacts. As part of the assessment, Lenddo also scans the content available on applicant's social media page along with the quality of content uploaded by the borrower. Based on the number of factors available, Lenddo can come up with a social media score and Lendingkart can decide whether and how to weight that information in the lending decision.

Target lending market: Any small business entrepreneur with annual turnover of about US\$18,500 to US\$155,000 to US\$232,000 who needs a working capital loan and has Internet access on his smartphone/computer. It takes 15 minutes to apply, the loan is approved in a few hours, and the loan is disbursed within three days. The company provides short-term working capital loans ranging from US\$740 to US\$14,800 at annualized interest rates of between 16 and 24 percent for six to 12 month durations. The average loan amount is in the US\$8,500-US\$9,300 range.

Since the company plans to reach the remotest parts of the country to narrow the gap between SMEs and loan providers, it aims to overcome the language barriers by issuing its application forms in various local and regional languages. The company also just recently announced it plans to make the credit risk analytics technology it uses to analyze its borrowers available to other lenders and banks in 2017, providing it as a "risk analytics as a service" platform.

As of December 2016, Lendingkart reported a loan application approval rate of 22 to 23 percent and the company had made over 5,600 loans since launching.

NeoGrowth Credit

Website: <https://www.neogrowth.in>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 2013

Headquarters: Mumbai, India

Active countries/region of operations: INDIA

Alternative data utilized: Analyzes turnover data from a merchant's point-of-sales terminal or online selling history. NeoGrowth uses a proprietary credit scoring system to help determine creditworthiness. It focuses on current and projected cash flows, not financial statements. It has its own filters to assess credit worthiness. Some methods it uses are its unique customer acquisition channels (direct agents, referral Agents and telesales), new payment datasets for credit assessment, non-traditional scoring, and dynamic repayment and automated collections to identify and serve these potential credit-worthy merchants. NeoGrowth constantly uses new data to refine its scorecards, and back tests its credit models. NeoGrowth's entire product proposition is based on documented historical flows for the last 12 months at a minimum, as well as a repayment method where Neo Growth has a direct and independent access to customer's cash flows. It also has tailored scoring models for certain

industry segments. Credit bureau data continues to be an important part of the decision making process, and helps NeoGrowth understand the customer intent/behavior towards repayment. To do so, the company pays far more attention to the underlying data, rather than to the score itself.

Target lending market: The company focuses on meeting financing needs up to US\$155,000 of SMEs that are selling goods and services to consumers online or at retail stores that accept credit and debit cards via POS or electronic data capture (EDS) terminals. This includes retailers that sell apparel, consumer durables and electronic items, footwear and accessories, handicrafts, gifts, food and grocery items, and optical goods, as well as to restaurants, beauty salons, hotels, gymnasiums, and health diagnostic centers. Loans can extend from 6 months to 24 months depending on the type of loan.

OnDeck

Website: <https://www.ondeck.com>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 2007

Headquarters: New York City, New York, United States

Active countries/region of operations: United States, Canada, Australia

Alternative data utilized: After filling out a short online form, applicants upload cash flow data from cloud-based accounting software (e.g., Intuit, Xero), bank account data, and/or POS merchant payment transactions, which reveals indicators such as transaction frequency and volume, seasonal sales, expenses, and customer revenue. The company then analyzes personal and business credit history from credit reporting service providers, scans public and legal records for past lawsuits or liens, reviews OSHA⁴ records for violations, considers the health of an applicant's industry and region, and checks online business reviews from sites like Yelp, Angie's List, and Google Places.

In order to take into account different types of SMEs, OnDeck applies one of a dozen different statistical models to the data depending on business age, industry and geography. OnDeck receives automated electronic repayments from its borrowers either on a weekly or daily basis, thereby providing it with insights into its borrowers' cash flows. This feature enables it to quickly offer loan adjustments to those

having trouble as well as make changes to the credit score over time.

Purpose-built for SMEs, the company's technology and OnDeck Score®, now in its fifth generation with each version more predictive than the last, looks at more than 2,000 data points from over 100 external data sources and 10 million SMEs in its extensive internal historical performance proprietary database to create an accurate business credit profile.

Target lending market: OnDeck makes three-to-36-month loans of up to US\$500,000 to businesses that are often unable to qualify for traditional credit from a bank. OnDeck approves or declines the loan within minutes and often funds the loan the next business day. OnDeck can also underwrite the widest credit spectrum compared to its competitors, which also reduces acquisition costs. OnDeck has advanced its credit model to a point where it can now underwrite a short duration loan to a relatively new business, a line of credit product to a business with sporadic cash flow needs, or a bank-like multi-year loan to a mature business.

In September 2015, OnDeck launched a new QuickBooks Financing Line of Credit product powered by Intuit's customer data and leveraging OnDeck's technology. Intuit SME clients apply for loan offers with a click of a button. In April of 2016, it licensed its technology to JPMorganChase, which uses it to offer online SME loans to its own customers. In February 2017, OnDeck partnered with Canada-based small business financial services and software firm Wave to launch "Lending by Wave" powered by OnDeck available to Wave customers in the United States and Canada. Under the partnership, Wave will leverage OnDeck's lending platform to streamline and automate the business borrowing experience, allowing its customers to access OnDeck loans within the Wave ecosystem.

OnDeck also has small business loan referral partnerships with U.S.-based BBVA Compass, OpusBank, and BMO Harris Bank, and Australia-based Commonwealth Bank. In addition, the company partners with SME solutions providers Angies List and Australia-based online accounting software firm MYOB (MYOB is also an investor in OnDeck Australia) and U.S. payment processors with CardConnect, TSYS, and Heartland as distribution and data partners.

As of May 2017, since launching, OnDeck has deployed more than US\$6 billion to more than 70,000 customers in 700 different industries across the United States, Canada and Australia.

4. The Occupational Safety and Health Administration (OSHA) is the main federal agency in the U.S. charged with assuring safe and healthful working conditions, setting and enforcing standards, and providing training, outreach, education and assistance.

Square Capital, Square

Website: <https://squareup.com/capital>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year operations launched: 2014 Square Capital, 2010 Square

Headquarters: San Francisco, California, United States

Active countries/region of operations: United States (Square and Square Capital). Square only: Japan, Canada, Australia, United Kingdom, and Ireland

Alternative data utilized: Uses machine learning models, and identifies and makes offers to growing businesses it deems credit-eligible. This is based on the SME's sales and payments growth data, the mix of the SME's new and returning customers (an indicator of how the company grows), the daily number and size of sales tickets, and cash flow, among other information. Square data includes US\$53 billion in annual payments volume and more than 2 billion data points collected and updated daily on Square merchants (annualized as of March 2017).

Target lending market: Square Capital provides invite-only loans to Square merchants pitched as a solution to businesses' cashflow problems, offering finance to help small firms expand their inventory or otherwise grow their businesses. Square offers the loans to SMEs running their merchant business on Square. Square's core product allows anyone to accept card payments through a reader that attaches to a mobile phone or tablet. Square Capital is a merchant loan issued by its partner bank that advances cash based on future sales upfront as a lump sum deposited as soon as the next business day in exchange for an agreed-upon fixed percentage of their future sales as well as a loan fee. Terms are flexible and straightforward, and the loan must be paid off within 18 months of acceptance. The total cost of the loan is a fixed fee rather than an interest rate and the total amount owed never changes. Square restructured the product from a merchant cash advance into a loan in March 2016 to enable Square Capital to grow faster by selling more loans to institutional and bank investors, who are more familiar with traditional loans than merchant cash advances as an asset class.

As of March 2017, since launching in May of 2014, Square Capital has loaned US\$1.5 billion to Square merchants in the United States while maintaining a loss rate of 4 percent.

Thinking Capital

Website: <http://www.thinkingcapital.ca/>

Type of organization: ONLINE SME BALANCE SHEET LENDER

Year launched: 2006

Headquarters: Montreal, Canada

Active countries/region of operations: Canada

Alternative data utilized: Thinking Capital asks SMEs to link their merchant processing and bank accounts, and obtains data from other sources to make its non-traditional proprietary credit decisions. In October 2016, the firm introduced "Lucy", a new AI chatbot from Thinking Capital who addresses customer queries via Facebook Messenger 24/7 and helps small businesses qualify for financing. Over time, Lucy will be able to respond more effectively to complex issues as her abilities grow through machine learning. Thinking Capital is also working to integrate Lucy into SMS on their web platform so that customers can easily switch from Facebook Messenger to SMS. The focus on mobile is important as 52 percent of Thinking Capital's customers currently apply for loans through mobile devices.

Target lending market: Canadian SMES that accept debit and credit cards across a variety of industries, including restaurants, retail, auto repair, and health and beauty. The company provides merchant cash advance and term loan financing of between CA\$5,000 to CA\$300,000. Businesses must have at least average monthly card sales of CA\$7,500 and be in business for at least 6 months (term loan customers must have CA\$50,000 in monthly sales).

Thinking Capital's strategy hinges on partnering with leading technology, retail and financial institutions such as CIBC, Staples, Moneris, Shopify, The UPS Store and many more for both distribution and data partners. Key partnerships include 1) payments processor and acquirers Moneris, Chase Payments, Global Payments, and TD; 2) Staples to launch Business Loans Powered by Thinking Capital in 2016 in Canada; 3) and Canadian Imperial Bank of Commerce (CIBC) to launch a co-branded "Rapid Financing" SME lending platform and cross-referral partnership in November 2015.

Tyro Payments**Website:** <https://tyro.com>**Type of organization:** ONLINE SME BALANCE SHEET LENDER**Year operations launched:** 2003; Tyro Smart Growth Funding launched in 2016**Headquarters:** Sydney, Australia**Active countries/region of operations:** Australia**Alternative data utilized:** The financing is based on the company's cash flow, its financial health (through the data streaming in from Tyro's POS), and cloud accounting tools used by businesses and linked to Tyro.**Target lending market:** Offers Tyro Smart Growth Funding as an SME financing service for its merchants. Tyro Payments is Australia's only independent and fastest growing EFTPOS provider. It serves 14,000+ customers, processes over \$8 billion annually in card transactions, and has tailored best-fit solutions for the retail, health and hospitality sectors.

The company secured a banking license in 2015, and is targeting SME financial services. Its new transaction and deposit account solution uses the cloud to automate everything between the bank, business system, and accounting software. By integrating Tyro's POS data into its banking solutions, small business owners can obtain a more efficient way to manage their money and access a loan.

Waddle**Website:** <http://www.waddle.com.au>**Type of organization:** ONLINE SME BALANCE SHEET/ INVOICE FINANCING LENDER**Year operations launched:** 2015**Headquarters:** Surry Hills, Australia**Active countries/region of operations:** Australia, New Zealand**Alternative data utilized:** Uses the SME's cloud accounting as well as bank account information. Revolving credit lines are based on outstanding invoices held in online accounting packages. Waddle links directly into accounting and banking data, enabling it to provide revolving credit lines to close cash flow gaps and better support business growth. Once the accounting application is linked, Waddle calculates a "borrowing base" (the total amount of eligible collateral) based on the business data. Waddle then establishes a fluid line of credit to the business. The more the borrower uses Waddle, maintains an excellent repayment history and demonstrates higher sales transactions, the higher the credit limit. Waddle also integrates with Xero, MYOB and Quick-

Books Online. Business owners that use cloud accounting are able to link their online accounts to Waddle, and opt-in for a two-way data exchange automating every aspect of the financing.

Target lending market: Provides automated, receivables-based invoice financing, and a financing add-on. It is a fully online, cloud-based platform enabling SME owners to obtain automatic approvals (automated real-time lending) and ongoing revolving credit lines. The credit line is only for SMEs that transact B2B.**Zoona****Website:** <http://www.zoona.co.za>**Type of organization:** MOBILE MONEY-BASED ONLINE SME BALANCE SHEET LENDER**Year operations launched:** 2012**Headquarters:** Lusaka, Zambia**Active countries/region of operations:** Sub-Saharan Africa. Active in Zambia, Malawi, South Africa, and Mozambique.**Alternative data utilized:** Analyzes enterprise usage of mobile money transactions. Due to its relationships with its agents and mobile transaction data, Zoona has the ability to carefully produce credit scores for individuals and manage default risks.**Target lending market:** Zoona provides financial services through its mobile money platform, and offers emerging entrepreneurs an opportunity to provide money transfers and financial services to low-income consumers through its network of over 1,500 mobile money agents. Initially launched in Zambia, Zoona has become the country's leading payments service provider and has expanded to Malawi, South Africa, and Mozambique. The company's core product is a mobile-based Zoona Account that enables entrepreneurs to process money transfers, access working capital financing, and manage their businesses. It targets micro and small enterprise (MSE) distributors, agents, and retailers in Zambia with two core products to help them transact with corporate suppliers.

Zoona Growth provides an affordable and accessible working capital financing package for Zoona agents linked to customer usage and growth of Zoona Payments. Zoona Agents may pre-qualify for the product and can access larger facilities as their payment volume grows; it is particularly popular among rural agents. Zoona also works with its agents to provide other real-time payments products that increase their turnover and help them grow.

TECH, E-COMMERCE, PAYMENT GIANTS

Ant Financial/Alibaba

Website: <http://www.antgroup.com> and <http://www.alibaba.com/>

Type of organization: DIGITAL GIANT E-COMMERCE AND FINANCIAL SERVICES

Year operations launched: 2014 (Ant Financial); 1999 (Alibaba)

Headquarters: Hangzhou, China

Active countries/region of operations: ASIA (but expanding globally)

Alternative data utilized: Developed Zhima Credit (Sesame Credit) rating service, which leverages technology and customer behavior analytics. It uses both online and offline data to generate credit scores for consumers and SMEs. In addition to owner characteristics, the company takes into consideration the records on sellers, including the number and value of their sales, their cash flow through Alipay, comments posted by their buyers, tax payments and customs declarations for users who export, shipping and logistics data, and even utility bills from sellers' factories. Even vendors that are in business for only two or three months can secure a credit line using this wealth of real-time data.

It covers a wide range of fields, including online shopping habits (e.g. product categories they shop), how people pay their bills, and users' ability to fulfill his/her contract obligations, and rates how they use Ant Financial's financial products and services along with their Alipay and investment balances. It also examines the extent and accuracy of personal information (e.g. home address, length of time of residence, mobile phone numbers) and the online characteristics of interactions between the user and his or her friends and business partners.

Other data that may be considered includes data collected from social media, e-mails, texts, audio, videos, photos, and Internet logs. In addition, it reviews court reports on people who deliberately do not repay debts and or return rental cars late and data from its partners such as the taxi service Didi Kuaidi, rating whether users bothered to settle taxi payments. The company also works actively with financial institutions, various types of merchants, and public agencies such as Shanghai Credit Information Services, social insurance, public security and school records to obtain more data that can effectively reflect creditworthiness.

Alibaba and Ant Financial can also spot vendors who have been too aggressive in certain fields and lagging in others by evaluating a mix of data including their promotional campaigns and profit margins. Based on the results, Ant can provide suggestions as to how such vendors will need to adjust their operations and provide financial support accordingly. Another algorithm allows Ant to pace lending more effectively by increasing credit lines to accelerate inventory purchases needed for big promotions later in the year. This can well exceed the typical lending maximum of US \$155,000 for qualified merchants.

Ant can support small loan services 24/7 and "310": users only need 3 minutes to register, one minute to pass the verification process, and then the money is transferred to the user's account (zero minutes).⁵ A typical day of operations would see Ant's lending program use more than 100 computing models to process over 80 billion data entries, such as the borrower's credit rating and customer reviews, to form conclusions about its willingness and ability to repay loans.

In January 2016, Alibaba forged more than 25 partnerships with credit rating agencies and financial institutions in China and other parts of the world. These new partnerships are enabling Alibaba to better offer SMEs cross-border trade finance. In addition, it enhances their credit rating scoring tool for SMEs. The service may also help overseas buyers identify trustworthy trading partners and provide Chinese suppliers access to even more financing options.

Target lending market: SME and consumers using the Alibaba platform. Alibaba's domestic and international online business-to-consumer (B2C) and business-to-business (B2B) virtual marketplaces have 423 million active buyers, over 10 million active SME sellers, over 40 million SME sellers and buyers combined, and, in 2015, generated \$485 billion in sales.⁶ Through its Cainiao logistics affiliate, Alibaba handles and tracks logistics for millions of parcel deliveries for products ordered on its commerce platforms.

The financial arm of Alibaba, Ant Financial, is focused on serving SMEs and consumers. Ant Financial has 451 million active Alipay users. Ant's MYBank, a fully fledged internet-only bank, launched in June 2015 and in the first quarter 2016 merged with Ant Micro Loans, Ant's SME lending arm, which provides loans to Alibaba's merchant sellers up to \$155,000.

5. Juan, Guo (December 24, 2015). "Has Ant Financial Entered Its Golden Age?" <http://www.tmtpost.com/1499061.html>

6. Alibaba Investor Day June 14, 2016 company figures; media and company reports; Global Payments Experts llc. analysis. Figures as of March 31, 2016. RMB-USD exchange rate used:6.4834

Ant Check Later provides consumer purchase financing up to \$4,600 on Alibaba's Taobao and Tmall marketplaces.

Ant Financial/Alibaba has cumulatively lent \$96 billion to three million SMEs since 2010 (in January 2016 alone it issued \$4.6 billion in new SME loans.⁷) Every loan costs 0.3 yuan (\$.05), roughly one-thousandth of what a traditional loan by a bank would cost.⁸ Non-performing loans recently accounted for about 1.67 percent of total loans, below the banking industry's average of 2.34 percent.⁹ Through this highly efficient system, Ant has been consistently able to control its bad debt ratio below two percent since launching in 2010.¹⁰

Amazon Lending

Website: no website; the program is invitation only

Type of organization: DIGITAL GIANT E-COMMERCE

Year operations launched: 2012

Headquarters: Seattle, Washington, United States

Active countries/region of operations: Amazon is Global; Amazon Lending is available in the United States, United Kingdom, and Japan only.

Alternative data utilized: Amazon extends credit to top performing SMEs on its site by not only analyzing online sales data but also monitoring online end-user feedback from the seller's customer base. This allows Amazon to go beyond the transactional data to predict how well a business will do in terms of serving its customers demand as well as meeting their needs in a positive and proactive manner.

Target lending market: Merchant sellers on Amazon's e-commerce platform. The program is invitation only, and offer amounts have been as little as \$1,000 and as high as \$600,000. Rates are attractive, ranging from 6 to 14 percent. Sellers approved for a loan may only use the funding for a single purpose: to purchase more inventory to sell on the Amazon marketplace.

Amazon India

Website: <http://www.amazon.in>

Type of organization: DIGITAL GIANT E-COMMERCE/CAPITAL FLOAT AND CAPITAL FIRST LENDING PARTNERSHIPS

Year operations launched: Marketplace launched in 2013/ Credit Facility Launched in 2016

Headquarters: Bangalore, India

Active countries/region of operations: India

Alternative data utilized: Utilizes SME account tenure, seller's history (which takes into account a minimum tenure, and minimum sales volume), customer feedback and compliance with Amazon policies and guidelines.

Target lending market: SME sellers on Amazon India's E-Commerce Platform.

Baidu/Baixin Bank

Website: <http://www.baidu.com/>; Baixin Bank is pre-launch

Type of organization: DIGITAL SEARCH GIANT/BANK CO-OWNED BY BAIDU

Year operations launched: 2015

Headquarters: China

Active countries/region of operations: China

Alternative data utilized: Using data from Internet search topics, the bank analyzes a potential client's online history to target specific loan products to meet an SME client's needs.

Target lending market: Initial focus on consumer financing, but also looking at SME finance possibilities.

7. "Alibaba Group Holding Ltd Affiliate Ant Financial Has Great Plans" (April 27, 2016). <http://www.businessfinancenews.com/28729-alibaba-group-holding-ltd-affiliate-ant-financial-has-great-plans/>

8. Xiaoxiao, Li (July 17, 2014). "Alibaba Has Big Hopes for New Big Data Processing Service." <http://english.caixin.com/2014-07-17/100705224.html>

9. Wu, Cecilia (March 11, 2015). "Alibaba's MyBank, how does it go in the past 8 months?" <http://www.sapidaily.com/alibabas-mybank-how-does-it-go-in-the-past-8-months/>

10. Juan, Guo (December 24, 2015). "Has Ant Financial Entered Its Golden Age?" <http://www.tmtpost.com/1499061.html>

DHgate.com**Website:** <http://www.dhgate.com>**Type of organization:** MAJOR E-COMMERCE/BANK PARTNERSHIP MODEL**Year operations launched:** E-commerce site 2004/Bank Partnerships 2012**Headquarters:** Beijing, China**Active countries/region of operations:** Global

Alternative data utilized: Utilizes e-commerce transaction history, personal data, buyer feedback, logistics data, and inventory data. Data analyzed includes factors such as the average number of orders per month, the total transaction amounts per month, and the number of disputes received. It also includes the duration of being an active seller, number of consecutive transaction days, date of first order, buyers' loyalty to this seller, return rate, dispute rate, loyalty rate, and so on.

After a loan is released, after-loan management data analysis is used to detect abnormal behaviors, monitor the process, predict trends, make related comparisons, and alert financial institutions if there are identified risks. DHGate's system ranks specific performance measures, such as sellers' response times to questions, product quality, and product information. It also includes information sellers provide about the shipping status of orders, potentially making them more reliable predictors of business risk and stability.

Target lending market: Partners with banks to provide data and financing options for SMEs engaged in cross-border, B2B e-commerce

Paypal Working Capital**Website:** <https://www.paypal.com/webapps/mpp/merchant-working-capital>**Type of organization:** DIGITAL GIANT GLOBAL PAYMENTS COMPANY**Year operations launched:** 2013**Headquarters:** San Jose, California, United States**Active countries/region of operations:** Live in Australia, United Kingdom, and United States.

Alternative data utilized: Paypal draws on insights into how its merchant customers operate. It uses Paypal sales history data to power rapid lending decisions. It also analyzes eBay seller ratings, whether there is a history of chargebacks or too many chargebacks, how the client handles any PayPal disputes, whether there are any holds on the PayPal account, and seasonal sales fluctuations to determine credit scores for merchants.

Target lending market: PayPal merchants who have been using PayPal for at least 3 months and processed at least \$20,000 in sales are eligible to apply for PayPal Working Capital.

As of May 1, 2017, PayPal Working Capital has helped more than 115,000 businesses worldwide access more than \$3 billion in loans and cash advances since the service launched in 2013.

Paytm E-Commerce/Paytm Mall**Website:** <https://paytm.com/>**Type of organization:** MAJOR E-COMMERCE/CAPITAL FLOAT DIGITAL SME LENDING PARTNERSHIP**Year operations launched:** E-commerce platform launched in 2010; Capital Float seller loans launched in July 2016; e-commerce business spun off and site rebranded as Paytm Mall in February 2017**Headquarters:** Noida, Uttar Pradesh, India**Active countries/region of operations:** India

Alternative data utilized: Paytm Mall provides seller e-commerce transaction, seller ratings, and shipping/logistics and payments data to Capital Float; Capital Float combines that information with its own seller data and algorithms to build a credit profile for the seller and determine the loan offer and terms.

Target lending market: Paytm Mall's 140,000 sellers offering 68 million products to consumers across categories like fashion, electronics, consumer durables, and home furnishings, among others (as of February 2017).

Tencent/WeBank**Website:** <https://www.tencent.com/en-us/index.html> and <http://www.webank.com>**Type of organization:** DIGITAL GIANT SOCIAL MEDIA/BANK CO-OWNED BY TENCENT**Year operations launched:** 2015**Headquarters:** Shenzhen, China**Active countries/region of operations:** China

Alternative data utilized: WeBank's big data system has 40 trillion records about retail customers. The data include online activities, virtual assets, personal wealth assets, payment behavior, bank account information, purchase activities, social network information, public credit information, chat content, a potential client's social network, gaming habits, and so on. The bank also uses data from its many partner companies to assess SME creditworthiness.

Target lending market: Consumers and SMEs.

SUPPLY CHAIN FINANCE PLATFORMS

ApexPeak

Website: <https://www.apexpeak.com/index.html>

Type of organization: SME INVOICE FINANCING

Year operations launched: 2015

Headquarters: Singapore

Active countries/region of operations: East Asia/Pacific, Africa, Middle East

Alternative data utilized: Conducting background checks on suppliers and buyers. This allows some new models to better manage the risks of financing fake transactions, as well as using a data-driven credit scoring engine to assess success or failure rates.

Target lending market: Supply chain SMEs.

Basware

Website: <http://www.basware.com>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 1985

Headquarters: Espoo, Finland

Active countries/region of operations: Global

Alternative data utilized: Rapid access to timely data about supply chain transactions. Intelligently linked supply chains enable both lenders and suppliers to have the ability to more closely track transactions themselves. They do so by utilizing online dashboards and tools that enable discount financing arrangements.

Target lending market: Working capital and supply chain financing for SMEs.

GO Finance

Website: <http://www.gofinanceco.com/>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year launched: 2011

Headquarters: Dar es Salaam, Tanzania

Active countries/region of operations: Tanzania

Alternative data utilized: GO provides access to information technology, or business intelligence, and targeted training that assists entrepreneurs to strengthen the capacity of their businesses. It tracks historical sales data from the top-level player in a fast-moving consumer goods (FMCG) value chain (like Airtel or Coca-Cola). GO Finance provides flexible working capital facilities to these clients, allowing them to

draw down on a fixed loan amount at the beginning of every week to purchase stock (airtime, mobile-money float, etc.) and pay back the principal, plus interest, at the end of the week, after they have sold their products.

Target lending market: GO Finance is a microfinance company that provides working capital to SME distributors involved in the value chains of multinational corporations that manufacture fast moving consumer goods (FMCGs).

Kickfurther

Website: <http://www.kickfurther.com>

Type of organization: P2P SME LENDER/ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 2015

Headquarters: Boulder, Colorado, United States

Active countries/region of operations: United States

Alternative data utilized: Utilizes transactional data to analyze average margin, and annual revenue versus financing amount requested. Also uses Alexa global rank on traffic flowing to the business websites, 3rd party reviews of the business and/or their products and services, percentage of financing amount covered by existing purchase orders, and the social network outreach of the business on Facebook, LinkedIn, Twitter, and Instagram.

Target lending market: Inventory financing for SMEs.

Kinara Capital

Website:

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year launched: 2011

Headquarters: Bengaluru, India

Active countries/region of operations: India

Alternative data utilized: Kinara Capital works with network partners (buyers, trade organizations, franchisors, etc.) across supply chains to source and fund working capital needs of small manufacturing businesses, artisan clusters and agri-retailers. Kinara's custom risk assessment includes psychometric testing and cashflow analysis as well as flexible product terms, customer-centric processes and supply chain integration that enables the company to complete the loan process in 7-10 days.

Kinara comes into an existing supply chain and gains an understanding of the money movement and the history of the buyer-supplier relationship: who has been providing to whom, how much is ordered, how long they have been in

business, what is the quality of their product, what is the projected future demand from this buyer. It uses this information to make a good credit decision on an unsecured term or working capital loan.

By focusing on supply chain network partners (such as retail chain Mother Earth for artisan, cooperative, and fair trade suppliers, or Villgro for borrowers who are working to rejuvenate organic farming by buying organic fertilizers, seeds and other products in their respective localities), Kinara substantially lowers the cost of acquisition and credit screening. It can then offer loans in 24-26 percent interest range versus 80-100 percent market rates. Borrower growth allows them to cover the cost of financing and increase sales and profits.

Target lending market: Loans in the range of US\$2,000-US\$20,000 to SMEs in India with turnover of less than about US\$310,000, filling the gap between microfinance and commercial capital.

Remitia

Website: <http://www.remitia.com>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 2015

Headquarters: London, United Kingdom

Active countries/region of operations: United Kingdom

Alternative data utilized: Transaction data quantifying the risk of paying an invoice on receipt before the usual approval process. Statistical invoice modeling allows for a deeper analysis into accounts payable data. This helps to predict the type of approval risk an invoice submitted from an existing or new supplier may bring.

Target lending market: Supply chain SMEs.

Tradeshift

Website: <http://tradeshift.com>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 2010

Headquarters: San Francisco, California, United States

Active countries/region of operations: Global

Alternative data utilized: Utilizes supply chain transactional data as well as tracking current cash flow statistics. Tradeshift takes into account billing and receivables to assess how long a supplier will take to be paid. This data helps to determine which suppliers to fund, and what rate to offer based on what others similar to them have accepted in the past, as

well as their creditworthiness. Also, Tradeshift uses data on the history of payments, how much is due, what it means to cash flow, and other factors.

Target lending market: Supply chain buyers and sellers.

Traxpay

Website: <http://traxpay.com>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 2009

Headquarters: Frankfurt, Germany

Active countries/region of operations: Global

Alternative data utilized: Online business-to-business supply chain payments from accounts receivable (sending invoices) to accounts payable (receiving invoices) and cloud-based technologies allow access to improved financing solutions. These avoid many of the challenges associated with more static-based payment models offered by banks.

With cloud-based solutions that offer a 360-degree view of the business payments along the supply chain, the company has the ability to achieve a flexibility that allows variables in the transaction to change. This facilitates supply chain financing in real-time and directly connects into and monitors the transaction via an adaptive rules-based engine, which also reduces the risk of lenders that can make use of this data instantly.

Target lending market: Online business-to-business supply chain SMEs.

Tungsten Corporation/Network

Website: <http://www.Tungsten-Network.com>

Type of organization: ONLINE SUPPLY CHAIN AND TRADE FINANCE

Year operations launched: 2013

Headquarters: London, United Kingdom

Active countries/region of operations: Global

Alternative data utilized: Allows SME suppliers and their business customers to exchange electronic invoices for financing — without the need for supporting paper trails.

Target lending market: Financing for SMEs using an e-invoice platform.

ANALYTIC/TECHNOLOGY SOLUTION PROVIDERS

Entrepreneurial Finance Lab (EFL)

Website: <https://www.eflglobal.com>

Type of organization: ANALYTIC AND LENDING PLATFORM PROVIDER

Year operations launched: 2010

Headquarters: Lima, Peru

Active countries/region of operations: Global. Currently active in Africa, Asia, and Latin America.

Alternative data utilized: The score is based on the applicant's answers to questions capturing information that can predict loan repayment behavior, including the applicants' attitudes, beliefs, integrity, and performance. EFL analyzes the data to produce a credit score that assesses the applicant's ability and willingness to repay a loan in real time. EFL uses alternative data such as psychometrics, digital footprints, and cell phone usage information to assess the repayment risk profile associated with any individual. EFL continues to improve its psychometric credit scoring capabilities while simultaneously innovating with new alternative data sources, including mobile phone usage data (via CDR), social network data (via Facebook and Twitter, for instance), and location data (via GPS and GIS). In addition to its existing online and tablet platforms, EFL has significantly increased its reach by expanding to mobile and SMS. EFL's credit scoring algorithms are built on top of its growing outcome-based psychometric database. The program is self-learning and constantly incorporates new data to maximize predictive power.

Target lending market: Lenders serving SME entrepreneurs and the self-employed, and banks and retailers providing financing to consumers at point-of-sale.

As of May 2017, the EFL database has processed almost one million applications in 20 languages.

First Access

Website: <https://www.firstaccessmarket.com/>

Type of organization: ANALYTIC AND LENDING PLATFORM PROVIDER

Year operations launched: 2011

Headquarters: New York City, New York, United States

Active countries/region of operations: Global developing markets. Currently active in Africa, Asia, and Latin America.

Alternative data utilized: The First Access Enterprise Scoring platform captures data from loan applications, core-banking software, credit bureaus, smartphones and feature phones, unique commercial partnerships with mobile network operators, mobile money platforms, data aggregators, solar companies and other digital product and service providers. The platform turns big data into smart data, separating the signal from the noise to delivering simple, reliable information that financial institutions can use in real-time. The company's scoring technology looks at four kinds of data: demographic (age, gender), geographic (urban vs. rural, mobility), financial (airtime, mobile money), and social (call patterns, SMS patterns, number of people). The first two help verify identity and provide context. Financial data provides a pattern of usage, not only mobile money, but also regular top-up transactions that offer a window into consumption patterns.

First Access has also respects telecommunications companies' desire to safeguard their data by operating on a server within their data center, such that no identifiable information leaves their facility. Users must opt into the system before their history can be reviewed in order to facilitate a decision.

Target lending market: Customizable credit scoring platform for lending institutions in emerging markets to credit score anyone

Wave

Website: <http://wavebl.com/>

Type of organization: SUPPLY CHAIN BLOCKCHAIN TECHNOLOGY

Year launched: 2014

Headquarters: Kfar Saba, Israel

Active countries/region of operations: Global

Alternative data utilized: WAVE connects all members of the supply chain to a decentralized network and allows them a direct exchange of documents. WAVE's application manages ownership of documents on the blockchain eliminating disputes, forgeries and unnecessary risks. Wave has created a peer-to-peer and completely decentralized network that connects all carriers, banks, forwarders, traders and other parties of the international trading supply chain. Using decentralized technologies, all communication between these parties will be direct and will not pass through a specific central entity. Due to its decentralized nature, the Wave network will not have any single point of failure and will not rely on any single entity.

Target lending market: Technology supplier to banks and supply chain companies

SME LOAN BROKER MARKETPLACES

Business Finance Compared/Bizfitech

Website: <https://www.businessfinancecompared.com/>

Type of organization: SME LOAN BROKER MARKETPLACE

Year launched: 2015

Headquarters: Nottingham, United Kingdom

Active countries/region of operations: United Kingdom

Target lending market: Business Finance Compared, owned by Bizfitech, helps UK SMEs find and compare alternative sources of funding to grow and support their business using innovative technology and analytics. It connects small businesses with the finance they need to grow in a clear, transparent and independent way. It tells SMEs what their options are and what the costs are and importantly, ensures that the options presented will result in an approval. The company asks simple questions to match small businesses to the most relevant product for them. It provides an easy way to compare finance options, ranks on the facts without bias, and searches for the best deals for customers. The platform is not only focused on alternative sources of funding but also offers UK businesses a wealth of independent, impartial information and news related content for business insurance, business banking and other business services.

Businessfinancecompared.com supported over 50,000 SMEs in their search for finance and had 40 leading SME finance providers on its platform as of November 2016.

Funding Options

Website: <https://www.fundingoptions.com/>

Type of organization: SME LOAN BROKER MARKETPLACE

Year launched: 2011

Headquarters: Liverpool, United Kingdom

Active countries/region of operations: United Kingdom

Target lending market: Funding Options uses sophisticated matchmaking technology alongside expert support to help SMEs to find the right finance.

Funding Xchange

Website: <http://fundingxchange.co.uk>

Type of organization: SME LOAN BROKER MARKETPLACE

Year launched: 2015

Headquarters: London, United Kingdom

Active countries/region of operations: United Kingdom

Target lending market: Funding Xchange is a marketplace platform that enables business owners to receive quotes from a series of funders from one enquiry, allowing users

to compare rates and options quickly. SME business owners answer a few questions and with just one request can reach many funders to get a transparent view of the available options. Funders respond with individual quotes, bidding for the opportunity to lend and making it easy for businesses to compare loan quotes from over 200 SME lenders.

MOBILE DATA-BASED LENDERS

Branch

Website: <https://branch.co>

Type of organization: Mobile Lender

Year operations launched: 2015

Headquarters: San Francisco, California, United States

Active countries/region of operations: Kenya

Alternative data utilized: Credit-scoring models that analyze SMS logs, social network data, call data, GPS data and contact lists.

Target lending market: Mostly consumers, but also micro businesses which actively use their mobile phones to support their businesses.

Commercial Bank of Africa (CBA) M-Shwari

Website: <http://cbagroup.com/m-shwari/>

Type of organization: DIGITAL BANK/PARTNERSHIP
MOBILE LENDER

Year operations launched: 1962, M-Shwari launched in 2014 in partnership with Safaricom

Headquarters: Nairobi, Kenya

Active countries/region of operations: East Africa

Alternative data utilized: Customer use of Safaricom mobile and mobile e-money services transaction history. For first-time borrowers, the credit-scoring algorithm consists of a set of Safaricom's data related to airtime, airtime credit, usage of Safaricom's e-money product (M-PESA), and the length of time the customer has been with the carrier. Each variable has differing weights and scores based on its predictive power.

The telecom use history of potential new M-Shwari borrowers is assessed against these scorecard variables and a score is assigned. The cumulative score of all the variables enables CBA to make an informed choice about which new clients to provide an initial loan to and which to pass on. Repeat loans are then also based on past repayment history.

Target lending market: M-PESA mobile e-money subscribers.

Kenya Commercial Bank (KCB) KCB M-Pesa

Website: <https://ke.kcbbankgroup.com/home/loans/mobile/kcb-m-pesa>

Type of organization: DIGITAL BANK/PARTNERSHIP
MOBILE LENDER

Year operations launched: Bank founded in 1896/
KCB-MPESA loan launched in 2015

Headquarters: Nairobi, Kenya

Active countries/region of operations: Kenya

Alternative data utilized: Utilizes mobile airtime, data top-ups, mobile money transactions, mobile wallet balance, age of the applicant, and previous loan status. The use of alternative digital data is particularly important in evaluating first-time borrowers, while repayment-based credit history becomes more important for subsequent loan applications. See: "The Proliferation of Digital Credit Deployments" https://www.cgap.org/sites/default/files/Brief-Proliferation-of-Digital-Credit-Deployments-Mar-2016_1.pdf

Target lending market: M-PESA mobile e-money subscribers.

Tala

Website: <http://tala.co>

Type of organization: MOBILE LENDER

Year operations launched: 2011

Headquarters: Santa Monica, California, United States

Active countries/region of operations: Kenya and Philippines. Plans for West Africa, Latin America, and South East Asia.

Alternative data utilized: Analyzes SMS logs, social network data, call data, GPS data and contact lists.

Target lending market: Consumers and micro businesses who are active mobile phone users.

DIGITAL SME BANKS/LENDERS/PARTNERSHIPS**ABN AMRO**

Website: <https://www.abnamro.com/>

Type of organization: ESTABLISHED BANK/WORKING
CAPITAL CASH MANGEMENT PARTNERSHIP

Year launched: 1991; in current form, 2009

Headquarters: Amsterdam, The Netherlands

Active countries/region of operations: The Netherlands; Global.

Alternative data utilized: The bank and InvoiceSharing collaborated to launch a comprehensive solution that provides SMEs with 24/7 insight into their accounts to estimate their working capital needs well in advance. An accounting robot tool reads and checks the invoices, generates journal entries, and exports the invoices to the entrepreneurs' accounts and accounting system. The robot also compares invoices with historic data from industry partners, using accountancy data based on the preceding three years. SME clients save time and money, while ABM Amro builds SME loan volume.

Target lending market: Small and medium enterprises

CIBC (Canadian Imperial Bank of Commerce)

Website: <https://www.cibc.com/>

Type of organization: ESTABLISHED BANK/DIGITAL SME
LENDING PARTNERSHIP

Year launched: 1867 (predecessors); 1961 as CIBC

Headquarters: Toronto

Active countries/region of operations: Canada

Alternative data utilized: Merchant processing debit and credit card data, bank account transaction data, and other proprietary data sources used by partner Thinking Capital to make its non-traditional proprietary credit decisions

Target lending market: SMEs that accept debit and credit cards and have 6 months of operating history

CivilisedBank

Website: <http://www.beingcivilised.co.uk>

Type of organization: CHALLENGER DIGITAL BANK

Year operations launched: 2017

Headquarters: Reading, United Kingdom

Active countries/region of operations: United Kingdom

Alternative data utilized: Unified back-end database providing a complete profile of all banking; transactional information.

Target lending market: SMEs.

Clearbanc**Website:** <https://clearbanc.com>**Type of organization:** CHALLENGER DIGITAL BANK**Year operations launched:** 2015**Headquarters:** San Francisco, California, United States**Active countries/region of operations:** United States

Alternative data utilized: Bank access to online Uber/Lyft accounts to verify the hours that drivers work, as well as their average earnings. This allows Uber drivers who are paid weekly to receive their daily earnings in advance through a Visa debit card. Use of online accounting systems such as Intuit's Self-Employed Solutions accounting software and QuickBooks software for freelancers.

Target lending market: Financial services for self-employed, freelancers, independent contractors, and entrepreneurs.

DBS**Website:** <http://www.dbs.com>**Type of organization:** ESTABLISHED BANK/DIGITAL BANK/SME LENDING PARTNERSHIPS**Year operations launched:** 1968, partnerships with AMP and P2P lenders, DBS Digibank launched in 2016**Headquarters:** Singapore**Active countries/region of operations:** Asia**Partnerships**

- With AMP Credit Technologies (AMP): 2016 launch of digital "DBS mLoan" for SMEs
- With Funding Societies: 2016 cross referrals with DBS
- With MoolahSense: 2016 cross-referrals with DBS

Internal

- DBS Digibank: 2016 launch of mobile-only bank with open APIs for consumers and SMEs in India; 2017 launch in Indonesia

Alternative data utilized: Transaction data, and electronically verifiable cash flows to assess the health of the businesses and its ability to repay (for AMP DBS mLoan only).

Target lending market: New approaches focused on expanding working capital loans to SMEs.

Fidor/Groupe BPCE**Website:** <https://www.fidor.de/>**Type of organization:** CHALLENGER DIGITAL BANK/ESTABLISHED BANK**Year operations launched:** 2009, acquired by Groupe BPCE in 2016 (parent company of Banque Populaire and Caisse d'Epargne cooperative banking networks in France)**Headquarters:** Munich, Germany**Active countries/region of operations:** Global. Active in Germany, United Kingdom, United States, and Dubai.

Alternative data utilized: Open API digital banking technology platform and SME digital banking platform is a key step toward accelerating Group BPCE digital transformation, and the acquisition will enable Fidor to have a stronger international expansion, more technology innovation, and a bigger presence in Europe.

Target lending market: Global SMEs and consumers.

Equitel**Website:** <http://equitel.com>**Type of organization:** DIGITAL BANK/MOBILE LENDER**Year operations launched:** 2015**Headquarters:** Nairobi, Kenya**Active countries/region of operations:** Kenya

Alternative data utilized: Mobile data, calls and mobile e-money transaction data.

Target lending market: Active mobile phone subscribers.

FINCA**Website:** <http://fmh.finca.org/>**Type of organization:** GLOBAL MICROFINANCE NETWORK/FIRST ACCESS ALTERNATIVE CREDIT SCORING PARTNERSHIP**Year operations launched:** 1984; First Access/FINCA partnership launched in 2016**Headquarters:** Washington D.C., United States**Active countries/region of operations:** Global emerging markets. Partnership is active in Africa.

Alternative data utilized: Partnership creates a sophisticated alternative credit scoring approach to improve FINCA's outreach to excluded populations and apply risk-adjusted pricing across the whole spectrum of FINCA's borrowers in

Africa. The First Access Enterprise Scoring platform captures data from loan applications, core-banking software, credit bureaus, smartphones and feature phones, unique commercial partnerships with mobile network operators, mobile money platforms, data aggregators, solar companies and other digital product and service providers. The company's scoring technology looks at four kinds of data: demographic, geographic, financial, and social. The first two help verify identity and provide context. Financial data provides a pattern of usage, not only mobile money, but also regular top-up transactions that offer a window into consumption patterns. First Access analyzes existing client data from FINCA's operations, as well as subscriber data from local mobile network operators (MNOs) to establish credit scores for clients to secure small loans to build businesses or support emerging personal needs. As First Access collects data, it also continuously recalibrates its dynamic FINCA algorithms using machine learning techniques and hands-on collaboration with its data scientists, enabling FINCA to refine its own product offerings and improve credit quality.

Target lending market: FINCA's SME and consumer borrowers in Africa.

Heartland Bank

Website: <https://www.heartland.co.nz>

Type of organization: CHALLENGER DIGITAL BANK/DIGITAL SME LENDING LAUNCH

Year operations launched: Bank license issued in 2013

Headquarters: Auckland, New Zealand

Active countries/region of operations: New Zealand

Alternative data utilized: Analyzes bank transactional data, and data from the online accounting software of SMEs.

Target lending market: SMEs and rural lending.

Holvi/BBVA

Website: <https://about.holvi.com>

Type of organization: DIGITAL BANK/ESTABLISHED BANK ACQUISITION

Year operations launched: 2011, Acquired by BBVA in 2016

Headquarters: Helsinki, Finland

Active countries/region of operations: Western Europe

Alternative data utilized: Transactions, online accounting, and invoice data.

Target lending market: SMEs active online.

IDFC Bank

Website: <http://www.idfcbank.com/>

Type of organization: ESTABLISHED BANK/CAPITAL FLOAT SME DIGITAL LENDING PARTNERSHIP

Year operations launched: 2015; Capital Float partnership launched in 2016

Headquarters: Mumbai, India

Active countries/region of operations: India

Alternative data utilized: The digital footprint of the SME Capital Float may use includes data like Aadhaar, e-commerce platform sales, seller reviews, and rejections; card and mobile transactions at point of sale for retailers; and trading data on B2B commerce platforms. It also includes online accounting data and purchase ledgers and more unique data such as social media credit scoring and psychometrics (for example, applicants are asked questions to judge things such as their ability to scale a business, their attitude toward credit, and how they compare to competitors).

Target lending market: Focus will be on SME borrowers who have no access to bank credit, with limited or no documentation and without existing credit history.

ING

Website: <https://www.ing.com/en.htm>

Type of organization: ESTABLISHED BANK/KABBAGE SME DIGITAL LENDING PARTNERSHIP

Year operations launched: 1991 through merger; Kabbage partnership launched in 2016

Headquarters: Amsterdam, The Netherlands.

Active countries/region of operations: Global.

Partnership is active in Spain only.

Alternative data utilized: Kabbage pulls alternative data from bank accounts, merchant acquiring processors, social networks, e-commerce sites, accounting software, shipping records (for example, from UPS), and dozens of other private and public sources to gauge the risk and creditworthiness of the business seeking the loan. The company's underwriting engine pulls information such as business revenue, vendor payments, and tax and accounting data to assign the proper line of credit in real time.

Merchants can optionally link their Facebook, Twitter, and UPS shipping accounts, which may qualify them for fee discounts. Facebook business, Yelp, Foursquare, Amazon, and eBay offer business reviews, rankings, and other rich data on how businesses actually interact with their customers. Similarly, linkages with logistic and e-commerce providers is producing relevant data. Shipping data can reveal how many

packages an SME is shipping, how many packages are returned, the longevity of the business, and if the quantity of packages shipped is increasing or decreasing.

Target lending market: SMEs.

JPMorgan Chase

Website: <https://www.jpmorganchase.com/>

Type of organization: ESTABLISHED BANK/ONDECK SME DIGITAL LENDING PARTNERSHIP

Year operations launched: 2000, OnDeck partnership launched 2016.

Headquarters: New York City, New York, United States

Active countries/region of operations: Global. Partnership is United States only.

Alternative data utilized: Cloud-based accounting software (e.g., Intuit, Xero), bank account data, and/or POS merchant payment transactions, which reveals indicators such as transaction frequency and volume, seasonal sales, expenses, and customer revenue. The company then analyzes personal and business credit history from credit reporting service providers, scans public and legal records for past lawsuits or liens, reviews OSHA¹¹ records for violations, considers the health of an applicant's industry and region, and checks online business reviews from sites like Yelp, Angie's List, and Google Places.

Target lending market: JPMorgan Chase SME customers.

Regions Bank

Website: <https://www.regions.com/>

Type of organization: ESTABLISHED BANK/FUNDATION SME DIGITAL LENDING PARTNERSHIP

Year operations launched: 1971, Foundation partnership launched 2015.

Headquarters: Birmingham, Alabama, United States

Active countries/region of operations: Southern United States.

Alternative data utilized: Foundation's technology uses extensive data aggregation, proprietary datasets and intelligent decisioning techniques to predict credit risk and appropriately price loans. The power of its offering is in the tools it offers around online applications and data-intensive credit algorithms to partners. Aggregating third-party data in real time, doing a lot of automation, using disparate data sources,

and combining them to determine what kind of risks Fundation and its partners are taking is a major strength of the platform. However, Fundation does not disclose which data sources or data it uses.

Target lending market: Regions SME customers and prospects.

Santander

Website: <http://www.santander.com/>

Type of organization: ESTABLISHED BANK/KABBAGE SME DIGITAL LENDING PARTNERSHIP

Year operations launched: 1857; Kabbage partnership launched in 2016

Headquarters: Santander, Spain

Active countries/region of operations: Global. Partnership is active in United Kingdom only.

Alternative data utilized: Kabbage pulls alternative data from bank accounts, merchant acquiring processors, social networks, e-commerce sites, accounting software, shipping records (for example, from UPS), and dozens of other private and public sources to gauge the risk and creditworthiness of the business seeking the loan. The company's underwriting engine pulls information such as business revenue, vendor payments, and tax and accounting data to assign the proper line of credit in real time.

Merchants can optionally link their Facebook, Twitter, and UPS shipping accounts, which may qualify them for fee discounts. Facebook business, Yelp, Foursquare, Amazon, and eBay offer business reviews, rankings, and other rich data on how businesses actually interact with their customers. Similarly, linkages with logistic and e-commerce providers is producing relevant data. Shipping data can reveal how many packages an SME is shipping, how many packages are returned, the longevity of the business, and if the quantity of packages shipped is increasing or decreasing.

Target lending market: SMEs.

11. The Occupational Safety and Health Administration (OSHA) is the main federal agency in the U.S. charged with assuring safe and healthful working conditions, setting and enforcing standards, and providing training, outreach, education and assistance.

Scotiabank**Website:** <http://www.scotiabank.com/>**Type of organization:** ESTABLISHED BANK/KABBAGE SME DIGITAL LENDING PARTNERSHIP**Year operations launched:** 1832; Kabbage partnership launched in 2016**Headquarters:** Toronto, Canada**Active countries/region of operations:** Global. Partnership is active in Canada and Mexico only.

Alternative data utilized: Kabbage pulls alternative data from bank accounts, merchant acquiring processors, social networks, e-commerce sites, accounting software, shipping records (for example, from UPS), and dozens of other private and public sources to gauge the risk and creditworthiness of the business seeking the loan. The company's underwriting engine pulls information such as business revenue, vendor payments, and tax and accounting data to assign the proper line of credit in real time.

Merchants can optionally link their Facebook, Twitter, and UPS shipping accounts, which may qualify them for fee discounts. Facebook business, Yelp, Foursquare, Amazon, and eBay offer business reviews, rankings, and other rich data on how businesses actually interact with their customers. Similarly, linkages with logistic and e-commerce providers is producing relevant data. Shipping data can reveal how many packages an SME is shipping, how many packages are returned, the longevity of the business, and if the quantity of packages shipped is increasing or decreasing.

Target lending market: SMEs.**State Bank of India (SBI)****Website:** <https://sbi.co.in>**Type of organization:** ESTABLISHED BANK/E-COMMERCE PARTNERSHIP**Year operations launched:** Bank founded in 1806/ e-Commerce partnership in 2016**Headquarters:** Mumbai, India**Active countries/region of operations:** INDIA

Alternative data utilized: SBI E-Smart SME uses data analytics gathered by Snapdeal to assess the sellers' credit worthiness. It uses these analytics instead of traditional lending based on financial statements such as balance sheet and income tax returns. See also: <http://economictimes.indiatimes.com/article-show/50594157.cms>

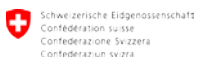
Target lending market: E-commerce SMEs.**Wells Fargo****Website:** <https://www.wellsfargo.com>**Type of organization:** ESTABLISHED BANK/ DIGITAL SME LOAN AND XERO API LAUNCHES**Year operations launched:** 1852; launched FastFlex digital SME loan and a new digital bank Xero API in 2016.**Headquarters:** San Francisco, California, United States**Active countries/region of operations:** United States; Global for some businesses.

Alternative data utilized: Created an API so that SMEs can have their bank account data uploaded directly into the accounting software provided by Xero. By digitally connecting with the bank, SME customers see their real-time, up-to-date cash flow each morning on Xero and can receive payments faster. This also facilitates credit decision-making and allows the bank to better analyze the business as a whole.

In May 2016, Wells Fargo also launched the FastFlex SME loan targeting small business customers with strong cash inflows and short-term credit needs. The bank built the loan offering inhouse. The loan amount under this offering ranges from US\$10,000 to US\$35,000 at a competitive interest rate with one-year terms, and repayments to be made on weekly basis.

Target lending market: SMEs who are active online.

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