



Partnership for **FINANCE**
in a **DIGITAL AFRICA**

Ecosystem

The opportunities for and threats to the growth of digital financial services



**Caribou
Digital**

Learning Themes 13

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NOTES

The views presented in this paper are those of the author(s) and the Partnership, and do not necessarily represent the views of the Mastercard Foundation or Caribou Digital.

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ABOUT THE PARTNERSHIP

The Mastercard Foundation Partnership for Finance in a Digital Africa (the "Partnership"), an initiative of the Foundation's Financial Inclusion Program, catalyzes knowledge and insights to promote meaningful financial inclusion in an increasingly digital world. Led and hosted by Caribou Digital, the Partnership works closely with leading organizations and companies across the digital finance space. By aggregating and synthesizing knowledge, conducting research to address key gaps, and identifying implications for the diverse actors working in the space, the Partnership strives to inform decisions with facts, and to accelerate meaningful financial inclusion for people across sub-Saharan Africa.

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What we know

The digital ecosystem is the collection of organizations, individuals, and policies that interact in complex ways to enable and deliver digital financial services. It continues to evolve and transform due to its modularity, economies of scale and scope, and dynamism.¹ While predicting exactly what lies ahead is difficult, there are clear signs indicating the shift to a digital ecosystem: smartphone adoption will continue, with a global forecast rate of 65% of total network connections by 2020 (55% for sub-Saharan Africa)²; it is expected that more than half of the global population will be online by 2020;³ the app model—not the open publishing model of the Web—will be the default for software and content development in emerging markets;⁴ and, alongside this, mobile technology will shift consumer engagement, particularly through the rapid growth of messaging platforms.⁵ Looking ahead, digital finance is expected to be “...easy to use, more tailored to user needs, more varied in terms of services and more integrated into people’s lives.”⁶ Yet how will the shift to the digital ecosystem impact this next generation of digital finance, and what opportunities or threats will help or hinder innovation and development?

The path from cash-heavy to a digital ecosystem remains unclear

Existing research has identified some likely scenarios and stages of development that a country may experience as it transitions from a cash-heavy to a digital ecosystem. Andrade and Mas map out five different scenarios for the transition to digital finance, from a “tipped market”—driven by the dominant market leader—to an “innovation” scenario—driven by FinTech players with new service models that unleash customer value.⁷

Similarly, Radcliffe and Voorhies identify four development stages on the path towards a digital finance ecosystem, which include first offering basic connectivity, then digital remote payments, followed by a full suite of digital financial services, and, finally, digital in-store purchases.⁸ However, they emphasize that not every market is expected to follow this linear path and that some will leapfrog or reverse these stages.⁹ China is a notable example of this leapfrogging. Digital payments and e-commerce were the initial drivers of adoption, and expansion into remote payments and other digital financial services followed thereafter.¹⁰

Further, BFA and the Better than Cash Alliance (BTCA) reviewed countries at different stages of the cash-lite transition, and theorize that the transition can be realized through a coordinated approach of shifting behaviors: moving first by digitizing easier use cases (such as bulk payers) and then to the more challenging

1 Elsenach and Soria, “A New Regulatory Framework for the Digital Ecosystem.”

2 GSMA Intelligence, “The Mobile Economy 2017.”

3 Gemalto, “Infographic: The Number of Internet Users by 2020.”

4 Pon, “Winners and Losers in the Global App Economy.”

5 GSMA Intelligence, “The Mobile Economy 2017.”

6 MasterCard Foundation, “Caribou Digital.”

7 Andrade and Mas, “A Digital Money Grid for Modern Citizenship.”

8 Radcliffe and Voorhies, “A Digital Pathway to Financial Inclusion.”

9 Ibid.

10 Duoguang and Xiugen, “Digital Financial Inclusion in China.”

ones, which require greater behavioral change, such as merchants and consumers.¹¹

While researchers have many different theories for the shift to a digital ecosystem, the most effective route remains unclear. Nevertheless, market considerations will play a big role in determining the most effective path in a given country.

For digital finance providers,¹² market considerations for success are well-documented—For newer players, considerations are still being scoped

To successfully offer products and services, digital finance providers can consider a variety of factors, for instance: access to mobile data connectivity and channels (especially for banks and other non-mobile operator providers); smartphone penetration (for better user experiences and to reduce dependence on mobile operators); the extent of informality and whether companies are incentivized to conduct business digitally; the structure of potential agent networks (including existing retail networks); and security and cash transport costs.¹³

For mobile money providers, there is stronger evidence on what it takes for mobile money to succeed, as the first-ever large-sample quantitative assessment was completed in 2016 by the GSMA.¹⁴ Multi-variable regression analyses identified several factors at the country and provider levels leading to the success of mobile money, of which enabling regulation is an important predictor.¹⁵ Moreover, the research found, among other predictors of success, that MNOS with the largest market share of mobile connections were more likely to capture a greater proportion of a country's overall addressable market for mobile money and that providers whose operations span multiple countries capture a greater market share than single-service providers.¹⁶

Unlike digital finance providers, market considerations for FinTechs, startups, and third-party providers are still being scoped. To help stimulate

innovation, countries require competitive structures, enabling regulation, financial markets that are open to foreign investment and talent, and innovation capital.¹⁷ In addition to increased digital connectivity, researchers are beginning to identify more nuanced requirements. In fact, FiDA's Snapshot 11, [What ecosystem improvements will unlock investment in digital finance?](#), discusses the six elements FIBR identified as crucial to FinTech success in Ghana: mobile money growth, open APIs, a data protection and sharing environment, business partnerships, access to affordable credit, and access to venture and risk capital.¹⁸

Opportunities and threats: Key trends in the shift to a digital ecosystem

Opportunities and threats are not in short supply in the shift to a digital ecosystem. With greater interconnectedness and rapid growth, each respective list could grow on an almost-daily basis. However, for digital financial services, opportunities and threats tend to arise in three principal areas: regulation, technology, and partnerships.

— Regulation

While not a new issue, enabling regulation continues to be necessary in driving digital finance innovation and sustainable ecosystem development. In terms of regulatory approaches, existing literature argues for a “phase of experimentation by market forces” where regulators allow providers to “test and learn” safely and efficiently.¹⁹ Bourreau and Valletti suggest an ex-post approach, allowing competition to guide market development, as was the case for interoperability in Tanzania, which arose from a market-led solution rather than a mandate.²⁰ In 2015, the UK's Financial Conduct Authority was the first to launch a regulatory sandbox (a means to develop regulation that can keep up with the fast pace of innovation) so that FinTech startups could test their services without normal constraints.²¹

11 Bankable Frontier Associates, “The Journey toward ‘Cash-Lite’”; Zollmann and Cojocar, “Cash Lite: Are We There yet? Rethinking the Evolution of Electronic Payments in Kenya Based on Evidence in the Kenyan and South African Financial Diaries.”

12 Schiff and McCaffrey differentiate between digital finance providers and FinTech organizations (new players) in their report “[Redesigning Digital Finance for Big Data](#)” (5). They define digital finance providers as generally banks and telecoms offering mobile money or agent banking services at the retail level in the developing world. FinTech companies are defined as generally being technology companies, based in the developed world.

13 Andrade and Mas, “A Digital Money Grid for Modern Citizenship.”

14 Naghavi et al., “Success Factors for Mobile Money Services: A Quantitative Assessment of Success Factors.”

15 Ibid.

16 Evans and Pirchio, “An Empirical Examination of Why Mobile Money Schemes Ignite in Some Developing Countries but Flounder in Most”; Heyer and Mas, “Fertile Grounds for Mobile Money”; Di Castri, “Mobile Money: Enabling Regulatory Solutions.”

17 Manyika et al., “Digital Finance for All: Powering Inclusive Growth in Emerging Markets.”

18 FIBR, “The Environment for ‘FIBR FinTech’ in Ghana.”

19 Bourreau and Valletti, “Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability”; Di Castri, “Mobile Money: Enabling Regulatory Solutions”; Muthiora, “Enabling Mobile Money Policies in Kenya Fostering a Digital Financial Revolution.”

20 Bourreau and Valletti, “Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability.”

21 Finextra, “UK Calls for Global Fintech Regulations.”

Regulation can also threaten innovation.²² Recent regulation on lending and data flows has impacted the growth of alternative lending FinTechs in emerging markets.²³ FIBR found that unlike regulations in developed markets like China, the UK, and the US, regulation in Ghana and Tanzania did not allow non-financial institutions to lend.²⁴ Ignacio Mas argues that regulation is also behind the “*great competition and innovation deficit*” for financial inclusion whereby digital innovators (such as Google, PayPal, etc.) do not target the excluded because they are unwilling to deal with regulators for banking licenses, KYC requirements, and customers’ cash.²⁵ Regulators need to effectively manage the risks to stability and integrity (including privacy and fraud) without stifling future innovation.²⁶ Regulation is discussed further in FiDA’s Snapshot 14 (forthcoming).

— Technology

The rise of smartphones is indisputable: between 2013 and 2015, smartphone connections almost doubled in sub-Saharan Africa, and a further half billion connections are expected by 2020.²⁷ Driven by increasingly affordable devices, smartphones mean enhanced user experiences, new products and services, and increased competition.²⁸ Smartphones also mean that people can get online, often for the first time, and digital finance providers will rely less on traditional channels, such as USSD.²⁹

Smartphones are paving the way for new business models, primarily through the collection and use of digital data.³⁰ For instance, to improve the delivery of small credit, providers like Tala and Branch use non-traditional data derived from smartphones to develop algorithms that generate a customer’s credit score.³¹ Smartphones are also driving new opportunities for customer engagement, particularly through the

rise of messaging platforms.³² Here, conversational interfaces and more recently chatbots—although still experimental—can improve financial literacy, customer usage, and impact.³³ Messaging platforms are also facilitating payments: by mid-2015, five had enabled payments,³⁴ and, more recently, Hike and WhatsApp both launched payments in India.³⁵

Technology is also leading to greater efficiencies through interoperability and open Application Programming Interfaces (APIs). APIs will drive ecosystem expansion and innovation, as they unlock the payment “rails” that other companies and services can leverage.³⁶ This interconnectedness is driving digital finance innovation in new areas, such as mobile money-enabled international remittances and e-commerce,³⁷ as well as in other sectors, such as education, energy, and water.³⁸ At the same time, providers have expressed concerns about APIs’ cannibalization of revenue, reputational risks, consumer protection and fraud risks, and internal conflicts.³⁹ The potential and challenges of employing APIs are discussed in more detail in FiDA’s Snapshot 12, [Building the infrastructure for a healthy digital finance ecosystem](#).

With new technologies come new threats, such as data breaches and malicious malware strains. For example, of the 9.5 million Android viruses tracked in 2015, more than 60% were related to mobile payments.⁴⁰ Similarly, an assessment of mobile money smartphone apps found that the majority failed to provide the security protections needed by financial services.⁴¹ Users with limited digital literacy are more likely to be unaware of cyber threats, and this lack of awareness is a leading cause of viruses across the globe.⁴² With smartphones, digital literacy and skills can be a significant barrier for users, and research has identified 53 digital skills needed to leverage smartphones and adopt products, particularly digital financial services.⁴³

22 Evans and Pirchio, “An Empirical Examination of Why Mobile Money Schemes Ignite in Some Developing Countries but Flounder in Most”; di Castri, “Enabling Mobile Money Policies in Sri Lanka: The Rise of eZ Cash.”

23 FIBR, “Alternative Lending: Landscaping the Funding Models for Lending FinTech Companies.”

24 Ibid.

25 Mas, “The Great Competition and Innovation Deficit.”

26 He et al., “FinTech and Financial Services Initial Considerations.”

27 GSMA, “The Mobile Economy: Sub-Saharan Africa 2015.”

28 Almazán and Sitbon, “SMARTPHONES & MOBILE MONEY—The Next Generation of Digital Financial Inclusion.”

29 Hanouch and Chen, “Promoting Competition in Mobile Payments: The Role of USSD.”

30 Schiff and McCaffrey, “Redesigning Digital Finance for Big Data.”

31 Costa, Deb, and Kubzansky, “Big Data, Small Credit: Digital Revolution and Its Impact on Emerging Market Consumers.”

32 GSMA Intelligence, “The Mobile Economy 2017.”

33 Juntos Global, “The Tigo Pesa – Juntos Partnership: Increasing Merchant Payments through Engaging SMS Conversations.”

34 Katakam, “Three Major Mobile Money Trends to Watch in 2016.”

35 Russell, “Hike Beats WhatsApp to Launching Messenger App Payments in India.”

36 Grasser, “Three Reasons Why Open APIs Will Transform Fintech Innovation in Emerging Markets”; Morawczynski et al., “Digital Rails: How Providers Can Unlock Innovation in DFS Ecosystems Through Open APIs.”

37 GSMA, “State of the Industry Report on Mobile Money: Decade Edition: 2006-2016”; Schiff and McCaffrey, “Redesigning Digital Finance for Big Data.”

38 Braniff, “Digital Finance and Innovations in Financing for Education”; Faz and Waldron, “Digitally Financed Energy: How Off-Grid Solar Providers Leverage Digital Payments and Drive Financial Inclusion.”

39 Morawczynski et al., “Digital Rails: How Providers Can Unlock Innovation in DFS Ecosystems Through Open APIs.”

40 Tyler, “Smartphone-Led Digital Finance: Three Areas to Watch”; Cheetah Mobile, “2015 Cheetah Mobile Security Report.”

41 Reaves et al., “Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World.”

42 Harris, Goodman, and Traynor, “Privacy and Security Concerns Associated with Mobile Money Applications in Africa.”

43 de Reynal and Richter, “Stepping into Digital Life.”

It should also be noted that existing infrastructure or operational barriers for digital finance won't necessarily disappear with the shift to a digital economy, although some may be reduced. As economies make the shift to digital they will have to continue grappling with issues like electricity failure, lack of mobile network coverage, access to mobile channels, insufficient agent coverage or lack of liquidity, the potential for fraud and risk, and poor customer service or recourse.⁴⁴ FiDA's Snapshot 12, [Building the infrastructure for a healthy digital finance ecosystem](#), elaborates on these operational and infrastructure barriers.

— Partnerships

Collaboration and partnerships are central to the development of a digital ecosystem, discussed in detail in FiDA's Snapshot 10, [What makes a successful commercial partnership?](#) Currently, digital finance providers have to invest significantly in core operations (such as distribution networks, platforms, and marketing), in turn this means that they lack the resources to dedicate to innovation.⁴⁵ Additionally, these providers may not be licensed to offer other financial products like credit and insurance.⁴⁶ While startups and FinTechs have the innovation, they often lack the required scale, visibility, or credibility.⁴⁷ Already the industry has yielded some successful partnerships, such as pay-as-you-go energy providers (M-KOPA and Fenix International), MSME lending and support (Nomanini and Kopo Kopo), as well as behavioral change and content providers (Juntos and Arifu).

While partnerships will drive innovation in the digital ecosystem, they also introduce threats to both parties. For instance, partnerships may increase reputational risks, which can impact both brand and customer trust, or technology risks, where third-party technology could impact system downtime and diminish customer trust.⁴⁸ For FinTechs and startups, partnerships could threaten contract enforcement or dispute resolution.⁴⁹ For both, data protection and security are also very important. As discussed in FiDA's [Snapshot 10](#), each player in a given partnership must have a long-term vision for the partnership as well as clearly defined roles and an explicit motivation for engaging in the partnership.

Who might be left behind?

With the shift to a digital ecosystem comes the risk that certain providers and potential consumers may be left behind or further excluded. Without account-based services and with a high cost of operations, digital finance providers who deliver their services primarily over-the-counter (OTC) to customers will remain vulnerable to the threat of new internet players offering app-based services who build or partner with distribution networks.⁵⁰

While this may not be the case in every market, sophisticated technology and services and the digital skills that follow may mean that certain segments are left behind. For example, GSMA research identified a persistent gender gap in both mobile money and mobile internet use.⁵¹ In Rwanda, research revealed that women—more often than men—cited price sensitivity, lower confidence and understanding, and lower levels of trust in a service as barriers to access and use of mobile money.⁵²

44 Blumenstock et al., "Promises and Pitfalls of Mobile Money in Afghanistan"; Mesfin et al., "Monetary Practices of Traditional Rural Communities in Ethiopia"; Hanouch and Chen, "Promoting Competition in Mobile Payments: The Role of USSD"; Schiff, "Consumer Risks and Rewards Amid Increased Competition in Kenya."

45 Morawczynski et al., "Digital Rails: How Providers Can Unlock Innovation in DFS Ecosystems Through Open APIs."

46 Ibid.

47 Ajadi and Bayen, "Building Synergies: How Mobile Operators and Start-Ups Can Partner for Impact in Emerging Markets."

48 Lonie and Denyes, "DFS Risk: 'When It Works, It's Great; When It's Bad, It's Awful.'"

49 FIBR, "The Environment for 'FIBR FinTech' in Ghana."

50 Gilman, "OTC, Smartphones, and the Future of Mobile Money."

51 Lindsey, "The Digital Gender Gap."

52 Minischetti, "Taking a Look at Women's Financial Inclusion via Mobile Money—Barriers and Drivers to the Mobile Money Gender Gap in Rwanda."

Notable new learning

A greater focus on opening and unlocking innovation for digital finance

In recent years, industry focus on open innovation for digital finance has increased, particularly through APIs, increasing tech incubators and accelerators, and through challenge funds and business support.

CGAP published a handbook capturing how innovation in the digital finance ecosystem is unlocked through open APIs.⁵³ FinTechs, startups, and developers can drive significant innovation in the ecosystem, but, without access to APIs, they are excluded from existing digital finance rails.⁵⁴ Open APIs allow providers to increase their customer base and monetize assets that were previously unavailable to third parties.⁵⁵ To raise industry capability and ensure best practice, GSMA launched harmonized mobile money API guidelines in 2016, which outline the design principles, objects, behaviors, and error handling for a mobile money API.⁵⁶

Tech hubs, incubators, and accelerators have also grown rapidly in sub-Saharan Africa in recent years, and, while a 2015 mapping found 117 tech hubs in the region, a mapping a year later uncovered more than 300 active hubs.⁵⁷ These hubs offer space for startups, as well as business support, services, and help to build large communities of stakeholders. Similarly, there has been an increase in challenge funds in the region, particularly from mobile operators: in 2014, Safaricom launched its venture fund to invest in early stage startups; MTN partnered with Jumia to launch an entrepreneurship challenge in 2016;⁵⁸ and Orange recently committed 50 million euros

to its new arm, Orange Digital Ventures Africa.⁵⁹ While these challenge funds emphasize mobile as a primary enabler, FinTech is a key focus area for each. Taken together, this focus on opening and unlocking innovation within the digital ecosystem will benefit digital financial services and citizens in the region.

53 Morawczynski et al., "Digital Rails: How Providers Can Unlock Innovation in DFS Ecosystems Through Open APIs."

54 Ibid.

55 Ibid.

56 Camner, "Launching GSMA Mobile Money APIs to raise industry capabilities."

57 Du Boucher, "A Few Things We Learned about Tech Hubs in Africa and Asia."

58 MTN Group, "MTN Partners with Jumia to Launch First of Its Kind Entrepreneurship Challenge across Africa."

59 Orange Group, "Orange Digital Investment Launches a New Investment Initiative of 50 Million Euros Devoted to Start-Ups in Africa."

Implications

Consumer protection and transparency remain paramount

With the shift to the digital ecosystem, consumer protection will remain critical. Through consumer research, CGAP identified seven areas where customers perceive risk or encounter problems with digital finance, including:

- 1 An inability to transact due to network or service issues and/or
- 2 Insufficient agent liquidity or float;
- 3 Complex user interfaces;
- 4 Poor customer recourse;
- 5 Non-transparent fees and terms;
- 6 Customer fraud; and
- 7 Inadequate data protection and privacy.⁶⁰

Providers must continue to assess these risks in light of their priorities and strategies and create solutions for mitigation.⁶¹ As more assets are leveraged within the digital ecosystem, customer data protection and privacy will be especially key.⁶² RegTech could offer interesting solutions here for both risk monitoring and compliance.⁶³

NGFs providers should also strive for greater transparency and consumer-friendly terms. For instance, while digital credit offered greater privacy to

users, research found that it limited expert input on borrowing decisions.⁶⁴ Interviews with M-Pawa and M-Shwari users in Tanzania and Kenya found that only a few borrowers had read the terms and conditions, and further, there was a lack of understanding about what would happen if a loan wasn't repaid on time.⁶⁵ Additionally, because it is relatively easy to obtain small value loans through new digital credit providers, and perhaps because customers are not reading the terms and conditions, 2.7 million Kenyans (10% of the population) have been negatively listed by Kenya's TransUnion Credit Reference Bureau in the last three years;⁶⁶ 400,000 of these loans were for less than \$2.⁶⁷

There is growing industry interest in best practices, codes of conduct, and standards initiatives for ensuring consumer protection. CGAP identified 14 digital finance best practices and standards initiatives, including from AFI and the Smart Campaign—the majority of which have launched in the last five years.⁶⁸

MNOs, OTTs, and the changing landscape

Mobile network operators (MNOs) lead the majority of mobile money services.⁶⁹ However, growing competition from providers who offer over-the-top (OTT) versions of traditional mobile money channels mean market dynamics are changing quickly. MNOs may need to rethink their business models and consider leveraging other elements of their service

60 McKee, Kaffenberger, and Zimmerman, "Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks."

61 Ibid.

62 Elsenach and Soria, "A New Regulatory Framework for the Digital Ecosystem."

63 Di Castri et al., "RegTech for Regulators: Reimagining Financial Supervision and Policymaking."

64 Mazer and Fiorillo, "Digital Credit: Consumer Protection for M-Shwari and M-Pawa Users."

65 Ibid.

66 Wright, "Key New Year Resolutions for the Success of Digital Financial Services."

67 Ibid.

68 McKee, Kaffenberger, and Zimmerman, "Doing Digital Finance Right: The Case for Stronger Mitigation of Customer Risks."

69 GSMA, "State of the Industry 2015: Mobile Financial Services for the Unbanked."

offerings⁷⁰ as discussed in FiDA's Snapshot 8, [What is the commercial landscape of digital finance?](#)

The GSMA observed three key trends taking shape for mobile money: MNOS de-linking the SIM card from the mobile money account to increase the addressable market, spinning off the digital finance business, and capitalizing on adjacent revenue.⁷¹ For instance, in Brazil, the Zuum mobile money app can be used by anyone, not just Vivo subscribers (Zuum's MNO partner), which has increased Zuum's addressable market.⁷² In the Philippines, Globe Telecom and Smart e-Money, Inc. made their digital finance businesses into separate subsidiaries, Mynt and PayMaya, respectively. This allows both to double-down on their efforts and potentially attract additional investment.⁷³

With adjacent sectors (such as pay-as-you-go energy solutions), MNOS can leverage their payments channel, customer knowledge, and distribution network to grow the ecosystem by partnering with e-commerce providers or acquiring merchants.⁷⁴ Econet Wireless Zimbabwe's diversification away from mobile money to solar energy, agricultural information, financial services, and digital school material together contributed to 11% of its overall revenue in the first half of 2015.⁷⁵

MNOS can also monetize their transactional and customer data, and the Helix Institute of Digital Finance proposes a four-stage shift from short-term transactional revenue to generating long-term growth through a robust client database, as data is the critical asset for digital finance providers in the digital ecosystem.⁷⁶ Here, MNO data can be used to support credit provisioning, business intelligence, and targeted marketing.⁷⁷

While each provider will need to assess their business models within their specific market contexts, one thing remains clear: the status quo may be difficult to maintain.

⁷⁰ Schiff and McCaffrey, "Redesigning Digital Finance for Big Data."

⁷¹ Katakam, "Three Major Mobile Money Trends to Watch in 2016."

⁷² Ibid.

⁷³ Ibid.

⁷⁴ Gidvani, "Rethinking the Mobile Money Business Model to Capitalise on Adjacencies."

⁷⁵ Braniff, "Digital Finance and Innovations in Financing for Education."

⁷⁶ Schiff and McCaffrey, "Redesigning Digital Finance for Big Data."

⁷⁷ Gidvani, "Rethinking the Mobile Money Business Model to Capitalise on Adjacencies."

Conclusion

The dramatic penetration of smartphones in emerging markets coupled with the increasing popularity of the app model, among other factors in the digital ecosystem discussed in this Snapshot, is impacting the next generation of financial services. While the product suite of digital financial services is expanding, digital finance providers and the financial inclusion community should be aware of the opportunities and threats that can influence the growth of digital financial services, principally in regulation, technology, and partnerships as well as the impact this may have on consumers.

- 1 Almazán, Mireya, and Elisa Sitbon.
“[Smartphones & Mobile Money—The Next Generation of Digital Financial Inclusion.](#)”
GSMA, July 2014.
- 2 Bourreau, Marc, and Tommaso Valletti.
“[Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What Doesn’t?](#)”
CGD Policy Paper 65 (2015): 1–30
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Mozilla Foundation, December 2016.
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10 Must Reads in this space

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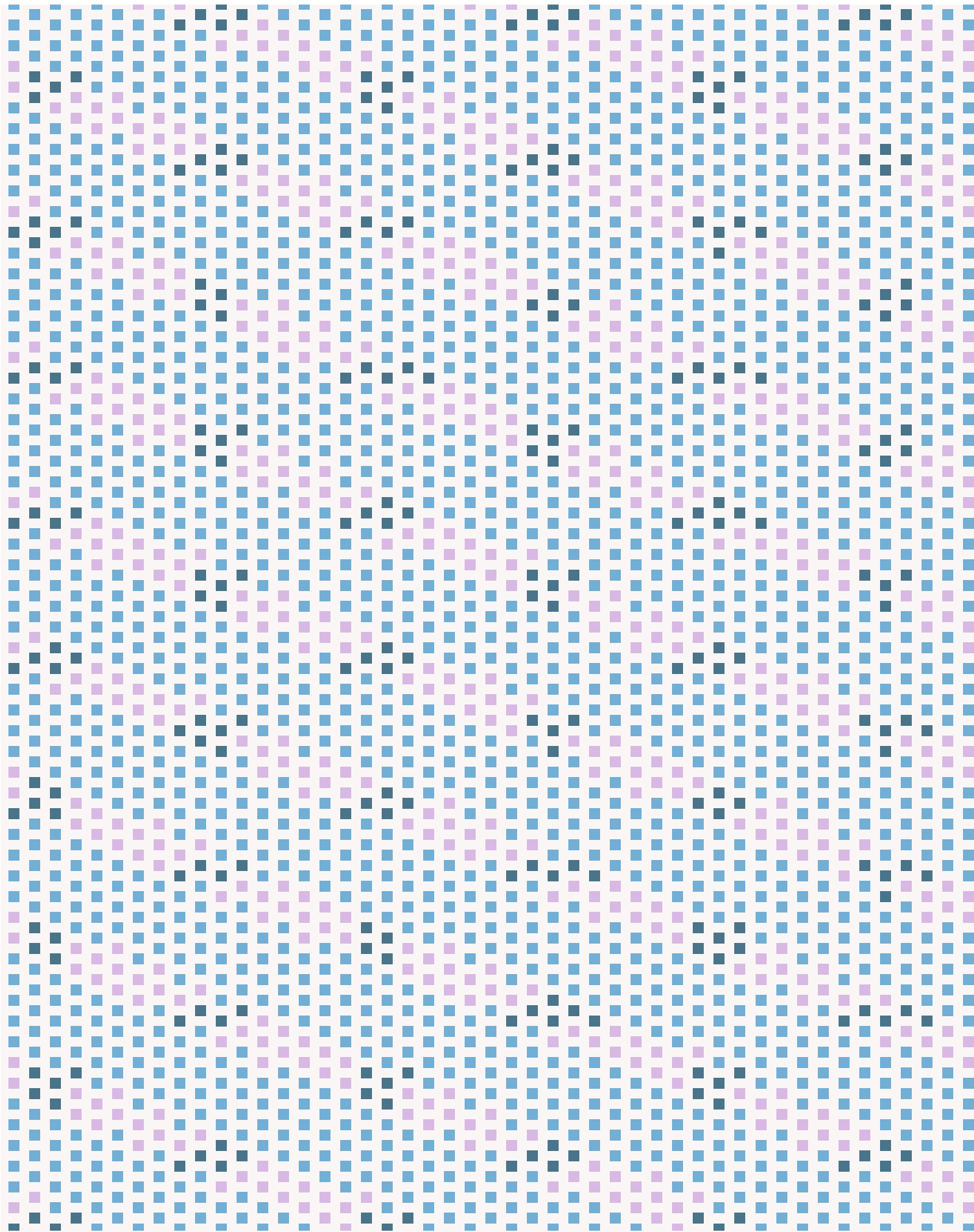
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