Africa and the Global Fintech Revolution
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www.africinvest.com

CREDITS

Authors
Christian Lim, AfricInvest Senior Manager | christian.lim@africinvest.com
Khalil Lakhoua, AfricInvest Manager | khalil.lakhoua@africinvest.com
Ziad Mazzawi, MSc in Engineering candidate, Mines ParisTech

With the contribution of a team of INSEAD MBA candidates: Paulo Ribeirinho, Daniel Barzilay, Chenneveau Will, Georgios Spyroglou

Supervision
Khaled Benjilani, AfricInvest Senior Partner | khaled.benjilani@africinvest.com
Mehdi Gharbi, AfricInvest Senior Partner | mehdi.gharbi@africinvest.com

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ABBREVIATIONS

AML  Anti-Money Laundering
APY  Annual Percentage Yield
B2B  Business-to-Business
B2C  Business-to-Customer
bn   billion
EAC  East Africa Community
ECCAS Economic Community of Central African States
ECOWAS Economic Community of West African States
GDP  Gross Domestic Product
GSM  Global System for Mobile Communication
IPO  Initial Public Offering
IT   Information Technology
KYC  Know Your Customer
m    million
MFI  Microfinance Institution
MNO  Mobile Network Operator
M2M  Machine-to-Machine
NFC  Near Field Communication
NPL  Nonperforming Loans
OECD Organization for Economic Cooperation and Development
POS  Point of Sale
P2P  Peer-to-peer
SADC Southern Africa Development Community
SME  Small and Medium Enterprise
US   United States of America
UK   United Kingdom
WAEMU West African Economic and Monetary Union
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Case 10: M-Shwari
Case 11: Cash Credit
Case 12: M-Kopa
Case 13: Mint
Case 14: Moneysupermarket.com
Case 15: Square
Disruption by social media in China

Three hundred million Chinese were using WeChat Wallet by the end of 2015, after its launch in 2014. WeChat enables them to store money, make transfers and purchase online and offline. This demonstrates that a social media platform can rapidly become a major player in the payment space. In addition, WeChat is creating WeBank to offer additional financial services.

From payment processor to lender

Square started as a provider of an inexpensive payment device enabling small businesses to accept card payments. It leveraged its unique access to the financial data and flows of its users to develop a highly competitive suite of financial services. Through Square Capital, it is expected to issue $600 million of cash advances to American small businesses in 2016.

The global rise of peer-to-peer lending

Peer-to-peer loans grew to $150 billion in China in 2015. With the US and the UK, China is one of the markets where nonbank lenders are growing the fastest.

From high street to the cloud

In Northern Europe, bank customers visited a branch 25 times on average in 1995, but they are expected to visit one only once in 2016. In industrialized markets, banks are closing branches while developing digital distribution channels.
The projected increase in mobile payment penetration in the US, from 2014 to 2019

8% ➰ 65%

Mobile payments expected to take off in the US

In the US in 2014, only 8% of the population made a mobile payment. This number is expected to reach 65% by 2019, largely driven by Google Wallet, Samsung Pay and Apple Pay. Global technology companies are leveraging their extensive customer base to aggressively enter the payment and financial services sector.

Orange Bank

Mobile phone operators acquiring banks

Orange will launch in 2017 Orange Bank, a mobile bank, following the acquisition in 2016 of 65% of Groupama bank and insurance. For the first time, a global mobile network operator has put the provision of financial services at the center of its strategy and translated it concretely into a major acquisition.

Mobile lending and savings going mainstream

In 2015, M-Shwari disbursed about 25 million loans through mobile phones. This is equivalent to about two loans for every three Kenyans, and as many as there are mobile money users. M-Pesa had already shown that simple payment services can be offered through mobile and become mainstream. But with its remarkable success, M-Shwari demonstrates for the first time that lending and savings services can also be successfully offered to a massive unbanked population.

Blockchain around the corner

ASX, the Australian stock exchange, is working on replacing its infrastructure with a blockchain structure. ASX announced that its primary market should start migrating in 2016. After many years of debates, experiments and speculation about the profound disruptive potential of blockchain, this constitutes the first application of this technology to a real-life financial market.
1. EXECUTIVE SUMMARY

The financial sector is undergoing profound changes globally, mainly driven by technological innovations, new customer behaviors and changes in regulations after the 2008 financial crisis. Pure fintech companies like Lending Club (peer-to-peer lending platform) and new entrants from other industries (such as mobile network operators like Orange or technology companies like Samsung and WeChat) are now offering traditional financial services, but structured in an innovative and efficient manner. These range from payments, to loans, savings, insurance and financial management.

In developed countries, these changes are often perceived as a threat to the traditional providers of financial services, such as banks and insurance companies. Indeed, banks are traditional market intermediaries and can now be bypassed by some of these innovative business models. For instance, peer-to-peer lending companies directly connect borrowers and savers, limiting themselves to the role of a matching platform. These models are called Shadow Banks in Goldman Sachs’ report “The Future of Finance” 2015).

Meanwhile in Africa, these changes create an unprecedented opportunity to achieve universal access to finance. Models like branchless distribution, mobile banking, big data credit scoring and machine-to-machine lending, by greatly reducing costs and risk, are enabling reach to the previously unbanked population, including in poor and low-density areas.

This report examines the transformation of the African financial sector in the context of changes at the global scale, driven by financial technology as well as other factors. First, the report analyzes the global trends and emerging business models. It also discusses various enablers such as big data and artificial intelligence, biometry, the spread of mobile phones and the internet, and regulation, which at a fundamental level drive the trends and emerging business models. It then focuses on the African financial sector, highlighting its specificities and its expected transformation in the medium and long term.

1.1. Changes in the Global Financial Sector

1.1.1. Global Trends

The diversity and rapid evolution of emerging business models for financial services make it difficult to read the overall direction of the financial sector. Global investments in fintech have grown from $4.5 billion in 2013 and $12.5 billion in 2014 to $22.3 billion in 2015. As a consequence, the number of startups in fintech has grown from 770 and 870 to 1,100 over the same period. These investments translate into a flurry of new business models, including pure online banks and insurance companies, nonbank lenders, credit scorers using big data, payment services offered by technology companies (Google Wallet, Apple Pay) or blockchain platforms (R3Cev project grouping 40 leading international banks such as J.P. Morgan, Nomura).
However, a careful analysis can help shed light on the key changes taking place in the financial sector. Our research identified five overarching trends:

- **Dematerialization**: Banking and insurance services are being rapidly distributed through the internet, telephone and agents, bypassing branches. As a result, in Northern Europe, the average number of branch visits per client declined from 25 visits in 1995 to one today.

- **Disintermediation**: Savers lend to banks, which in turn lend to borrowers. In peer-to-peer models, savers are directly lending to borrowers. In China, the peer-to-peer market reached US$150 billion in 2015.

- **Disruptors**: Nonbanking institutions and insurance companies are now aggressively entering the financial sector not only to offer electronic money (like Safaricom in Africa), but also credit and savings services. Such disruptors include technology companies (Facebook) and mobile network operators (MTN). Disruptors also include pure fintech companies such as nano-lenders leveraging scoring techniques.

- **Convergence**: Not only are banks and insurance companies converging, as the bank-assurance model becomes commonplace, but also banks and disruptors (as defined above) are also partnering or even merging, as illustrated by Orange’s acquisition of Groupama.

- **Blockchain**: Financial exchange platforms are migrating to distributed ledgers. Distributed ledgers are based on blockchain, the technology behind Bitcoin. They are records of transactions that are immutable and therefore create trust between users. The technology virtually eliminates the need for intermediaries and dramatically improves the efficiency of transactions.
1.1.2. New Business Models

We found that most emerging financial sector business models can be grouped under five main categories, summarized in the exhibit below:

**Exhibit 2** The five categories of emerging financial sector business models

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIRECT BANK AND INSURANCE</strong></td>
<td>Offering digitally and through agents the full range of traditional banking and insurance products, without brick-and-mortar branches</td>
<td>Direct banks: Ally Bank, Microcred</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct insurances: Oscar, Direct General</td>
</tr>
<tr>
<td><strong>PAYMENTS</strong></td>
<td>Offering digital wallet, payments and transfer services but with a broad variety of approaches, including over mobile, internet or vouchers.</td>
<td>Provided by technology firms: Google, WeChat, Apple, Samsung, Alibaba</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provided by MNOs: M-Pesa, Orange, Money, Airtel Money</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provided by cash networks: Zoona, Wari, Cash Service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remittance: BitPesa, Afrimarket, Transferwise</td>
</tr>
<tr>
<td><strong>LENDING &amp; INSURING</strong></td>
<td>Offering only niche lending (consumer, leasing or business loans) or insurance products in an innovative and more efficient way than traditional banks or insurances</td>
<td>Peer-to-peer lending: lending Club, PaipaiDai</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nano mobile loans: M-ShiWari, KCB M-Pesa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine-to-machine leasing: M-Kopa, Mobisol, Upowa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Big data insurance: Progressive (car), Climate corporation (farming)</td>
</tr>
<tr>
<td><strong>FINANCIAL MANAGEMENT</strong></td>
<td>Offering services to manage one’s finances (such as aggregation of accounts, and comparison of financial offers), often building on these to cross-sell additional financial products.</td>
<td>Personal/SME Financial Management: Acom, Mint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Price Comparison Services: Moneysupermarket, Loan/Insurance Comparison services</td>
</tr>
<tr>
<td><strong>PURE TECHNOLOGY PROVIDERS</strong></td>
<td>B2B players, Who offer innovative software and hardware solutions that help businesses provide financial services to end users.</td>
<td>Payment processing: Square, Tagatitude</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Credit scoring: Experian, CashCredit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other pure technology providers: Vanso (mobile banking software), Cardabel, Sysnet (Reg Tech)</td>
</tr>
</tbody>
</table>
These categories of business models relate to each other as follows:

- Direct banks and insurance companies provide the full range of services of traditional banks and insurance companies, in a new way.
- Companies providing payments, innovative lending and insuring, or financial management, provide only one specific financial product in an innovative way.
- Direct banks and insurers, as well as traditional banks and insurance companies, can also offer these innovative products, in-house or through partnerships.
- Pure technology providers are using business-to-business (B2B) operating models and are offering solutions to all the business-to-consumer (B2C) financial sector companies above.

The full report details the economic model and competitive advantages of each model, as well as presents case studies.

While the global trends and business models are also evident in Africa, they play out very differently due to the unique combination of low banking penetration and high mobile phone penetration. This allows for a more profound and rapid process of disruption and creates a tremendous market growth opportunity.

1.2. Africa’s Financial Sector Transformation

1.2.1. The Decade Ahead

Historically, the supply of financial services in Africa has lagged demand, driven in particular by the surge of an educated middle class and small and medium enterprises. Indeed, banking penetration (number of banking accounts to population) remains low at 17% on average compared with 50% in other emerging markets in 2014. Credit-to-GDP is limited at 34% of GDP compared with 211% for OECD countries. In addition, inadequate regulation, low income levels and a lack of financial education for entrepreneurs and individuals have limited insurance penetration. It stands at a meager 0.9% (premiums as % of GDP) for the continent, excluding South Africa, against 8% in advanced economies.

However, penetration of financial services in Africa is dramatically accelerating thanks to a combination of factors: the entry of disruptors, the convergence of banks and mobile network operators, and the dematerialization of financial services.

In Africa, mobile network operators, which are aggressively entering the financial sector, through partnerships with banks, microfinance institutions and insurance companies. In Cote d’Ivoire, as a result of a push from Orange and MTN, mobile money penetration (number of mobile money accounts over population) increased from 10% to 64% between 2012 and 2016. In Kenya, the partnership between CBA and Safaricom through M-Shwari resulted in 25 million nano-loans issued in 2015 for a population of 44 million inhabitants.

Disruption also includes fintech companies such as machine-to-machine or pay-as-you-go lenders (new leasing models that use mobile networks to remotely disconnect goods when loans are in arrears, hence reducing risk), or lenders that leverage big data credit scoring to serve borrowers without traditional credit history. Such models provide services to underserved segments of the population and micro and small businesses.

In many cases, disruptors and traditional financial services providers will eventually converge as already illustrated by the acquisition of a virtual mobile network license by Equity Bank in Kenya. This is often driven by regulation, as disruptors are required to partner with banks or insurers to protect the consumer, manage systemic risks or ensure appropriate know-your-customer processes and anti-money-laundering measures.

In Africa, dematerialization mainly takes the form of the distribution of financial services through agent networks and mobile phones, and to some extent through the internet, which still has low penetration at 23% in 2014. In Kenya, for instance, as of June 2014, 15 commercial banks had contracted 26,750 active independent agents (like supermarkets, grocery shops, retail shops, etc.) to serve a previously unbanked population, and facilitated more than 106 million transactions valued at $5.7 billion. This has allowed increased access to finance in remote areas without having to invest in building an expensive branch network.

As a consequence, in the coming years, we expect that access to financial services should at least triple to about 50% – the banking penetration in
other emerging markets – creating a new market of 350 million additional customers. Financial services penetration should eventually catch up to the mobile phone penetration rate, which currently stands at 77%.

Exhibit 3 350 million new customers to join the African financial services market within 10 years

1.2.2. In the Longer Term

One can only speculate about prospects beyond 10 years. However, a number of developments can already be anticipated.

One major change is that as universal access is achieved, and Africans are connected through internet, smartphones and possibly the internet of things, data would finally be available and big data models would prevail. This would, for instance, give greater advantage to scoring models and peer-to-peer lending.

A very important factor will be the extent of interoperability of systems, across banking, telecom and internet. This would, of course, increase the amount of data available and hence reinforce the first point above. But it would also lower transaction costs – including through increasing competition, making a cashless economy possible, and turning many business models more profitable than they were (for example, loans and insurance policies could be much smaller and still achieve scale, making them finally affordable to even the poorest).

As internet and smartphones prevail, we should also expect a stronger role from the tech giants and social media. Indeed, it is quite likely that companies like Google, WeChat or Facebook will then have a reach even superior to that of mobile network operators today, putting them in a position to challenge them.

The main unknown relates to the development of blockchain and distributed ledgers. If the regulatory and cooperation barriers can be overcome and blockchain provides the infrastructure for financial transactions, we should expect even more profound changes. These could include a further deepening of disintermediation, as peer-to-peer lending models would become extremely competitive, and transaction costs would virtually disappear. It would also prompt the emergence of new powerful entrants in the market. One of them is the providers of access to distributed ledgers, the likes of Coinbase or Circle. As gatekeepers to the blockchain, they would gain privileged access to clients and data, hence positioning themselves to capture a large share of the value in the industry.
1.3. Conclusion

To seize the universal access opportunity of the African financial sector, traditional banks and insurance companies require a meaningful transformation. They must build new capabilities, spanning strategy, governance, IT and operations. They also need to enter into new business partnerships, as they will not be able to develop all these capabilities in-house. Moreover, deployment in some cases should be done early to gain first-mover advantage.

Conversely, disruptors such as mobile phone operators and technology companies need to enter in partnerships with traditional banks and insurance companies for both economic and regulatory reasons. Indeed, they are often new to the financial sector and are sometimes new to Africa. In many cases, for instance, to be allowed to take deposits, they are also required by regulators to partner with traditional financial service providers.

There is no doubt that the growth of the African financial sector is accelerating, creating considerable value to customers and financial institutions. But how will the value be shared? In particular, how much of the value will be shared between traditional banks, insurance companies, disruptors and fintech companies will depend on the individual capacity of such companies to leverage their competitive advantages, anticipate the changes, transform themselves, navigate the changing business and regulatory environment, and structure the most conducive partnerships.
2. METHODOLOGICAL NOTE

2.1. Trends, Business Models and Enablers

Trends and business models are driven at a more fundamental level by enablers (technology, internet, big data, regulation). For example, it is quite obvious that the development of mobile money, which in turn enables disruptors such as mobile network operators to enter the financial services sector, is fundamentally made possible by the wide adoption of mobile phones and the internet. However, one should note that the relationship between the enablers, trends and business models is multidirectional. For example, while internet penetration in Africa is still low, it is to some extent the rapid development of mobile internet-based business models that brings tremendous value to customers, that creates demand for smartphones and internet access. This is illustrated in the exhibit below. In this report, while we will discuss trends, business models and enablers in three separate sections, we will highlight for each concept the relevant relationships with the two other ones.

Exhibit 4 Relationship between business models, trends and enablers

- Disintermediation
- Dematerialisation
- Convergence
- Disruptors
- Blockchain

- Big Data & AI
- Biometry
- Internet
- Mobile
- Regulation

- Direct Banking & Insurance
- Payments
- Lending & Insuring
- Financial Management
- Pure Technology Providers
2.2. Calculation of Penetration Ratios

Analyzing the penetration rates of various services in Africa and other parts of the world, such as mobile phone, internet, banking, etc., is key to understanding the changes in the financial sector.

However, various sources use widely diverging definitions of penetration ratios, making it impossible to compare data. For example, banking penetration in one source would be calculated by adjusting for multiple accounts for one individual, while mobile phone penetration would adjust for multiple accounts. Or the ratio would be calculated over the adult population in one case, but over the total population in another one.

We therefore built for this research a normalized database of relevant penetration rates. It spans industrialized and developing countries and includes time series.

We used a single definition across all ratios to facilitate comparison. In all the ratios, we divide the total number of accounts (including active accounts and multiple accounts) by the total population (not population over 15 or the adult population). Detailed definitions for each ratio are indicated in the annex.

Statistics on multiple accounts per user, active accounts over total accounts and percentage population over 15 were also collected where available, and taken into account in the analysis of the ratios presented in the report.

As it is useful to bear in mind orders of magnitude of these ratios as one reads through the statistics of this report, we indicate here some of them as of 2014. The ratio of the population over 15 is on average around 50% in Africa. The ratio of total mobile payment accounts to active users in Kenya is two. And the average number of SIM cards owned by a user in Africa is two.
3. TRENDS

The diversity and rapid evolution of emerging business models for financial services make it difficult to read the overall direction of the financial sector. Global investments in fintech have grown from $4.5 billion in 2013 and $12.5 billion in 2014, to $22.3 billion in 2015. As a consequence, the number of startups in fintech has grown from 770 and 870 to 1,100 over the same period. These investments translate into a flurry of new business models, including pure online banks and insurance companies, nonbank lenders, credit scorers using big data, payment services offered by technology companies (Google Wallet, Apple Pay) or blockchain platforms (R3Cev project grouping 40 leading international banks such as J.P. Morgan, Nomura).

However, a careful analysis can help understand the key changes taking place in the financial sector. Our research identified five overarching trends: dematerialization, disintermediation, disruptors, convergence and blockchain.

Exhibit 5   The five global financial sector trends

3.1. Dematerialization

As indicated in the Striking Facts section, in Northern Europe, while bank customers visited a branch 25 times on average in 1995, they will visit one only about once in 2016. In July 2016, Lloyds Banking Group announced that it was axing 3,000 jobs and closing 200 branches as customers deserted the high street for digital channels. It is clear that, even in industrialized countries where banks already have dense networks, bank customers now access their bank and services through dematerialized means, including internet and phone, simply because it is more efficient for them. And the response of major banks globally is to close down branches. In emerging economies like in Africa, where bank networks are severely underdeveloped, it is quite likely that financial services will leapfrog distribution through brick-and-mortar branches, moving directly through digital distribution. Dematerialization also allows for more efficient and lower cost of distributing financial services.

3.2. Disintermediation

The essence of banking is intermediation between savers and borrowers. Banks lend the money that savers entrust to them, carrying in the process the credit risk on their balance sheet, achieving diversification and transforming interest structures and maturities.

The advent of the internet was the start of a movement of disintermediation in many markets. The financial sector is already changing with the surge of peer-to-peer lending in the US, UK and China, which directly connects savers and borrowers in the personal and SME lending space. Savers take the lending decision and to a large extent the risk themselves, making the peer-to-peer intermediary a mere matchmaker. The peer-to-peer market currently stands at $150 billion in China, after only a few years of existence.

Even more profound changes are foreseen in the medium to long term, with blockchain and smart contract technologies and the ample use of e-money in financial
services. These technologies enable markets to operate and transactions to be executed without intermediaries, regulators and transaction costs. This would profoundly change and challenge the role and sometimes relevance of banks, brokers and even central banks and other centrally driven financial systems, like stock exchanges and payment systems.

3.3. Disruptors

Another consequence of dematerialization is that it opens the door for many new entrants, beyond the incumbent banks and insurance companies, to offer financial services. Very often, they start by offering payments, which can be offered without a banking license, reach critical mass and then start offering the full range of financial services, in partnership with banks or acquiring a banking license themselves. These new entrants are disruptors not because they offer new services but because they offer traditional services (payments, loans, savings) in a new way, with overwhelmingly better convenience and lower cost than traditional banks or insurance companies. They are therefore in a position to take large market share from them, or to capture new markets not reachable by traditional models. Disruptors include pure fintech companies, but also mobile network operators, social media, e-retailers and other technology companies.

Fintech Companies

We would like to start with an attempt to define fintech companies. The concept is certainly still fluid as new fintech business models emerge every day. However, we believe the common trait of fintech companies is that:

1. They leverage technology (software, hardware, internet, mobile) to provide in an innovative way any financial service, including payment, lending, savings, financial advice and financial infrastructure, resulting in greater efficiency, better service and lower costs.

2. These financial services are their core business.

This is the case, for example, of peer-to-peer lending platforms that provide essentially traditional savings and lending products but directly connect savers and borrowers, as opposed to playing the role of an intermediary (that would borrow from savers to lend to borrowers) like traditional banks.

Interestingly, mobile network operators that provide mobile payment services fall under criteria 1, but because their core business is providing telecommunication services, they do not meet criteria 2 and we therefore do not consider them as fintech companies in this report. However, we believe it would be legitimate to call them fintech companies in the broader sense.

Many fintech companies are often mono product, providing, for example, only nano consumer credit, national transfers, remittances, leasing on one type of asset, auto insurance, etc. Because they achieve much lower costs and better service than traditional banks and insurance companies, they have the potential to disintermediate them, or rapidly grow much bigger than them as they succeed in meeting a large unserved demand.

Mobile Network Operators

Orange is the first global telecom company to formally make the distribution of financial services an essential part of its strategy. When Orange acquired 65% of Groupama bank and insurance, Stéphane Richard, chairman and chief executive officer of Orange, stated that “this agreement is a major step forward in our ambition to diversify into mobile financial services.” Orange also spun off Orange Money from Orange telecom in Ivory Coast in order to give it more autonomy and boost its growth. Safaricom is working on growing its financial services outside Kenya, where it was successful with M-Pesa.

Mobile network operators have understood the potential of leveraging their huge client base to market financial products, giving them a way to increase profits from the expensive mobile networks that they need to build and constantly upgrade, and to mitigate the risks posed by regulation.

Social Media

People are spending on average 30% of their time on their smartphones using social media apps such as Facebook. Those apps are mainly monetized through advertising, but they now look at diversifying their sources of revenues. Providing financial services by leveraging their huge network of clients can be an attractive strategy. Those companies can leverage the large quantity of personal data about their client, their habits and preferences, and the connection they create between them, to offer highly compelling financial services.
WeChat – the Chinese equivalent of Facebook’s Whatsapp – has heavily invested in WeChat Wallet, its payment solution, and gained 300m clients in less than two years since its launch in 2014. It is now a leading payment means in China, both for online and offline payments. It has created WeBank, which will enable it to offer financial services to its now huge customer base.

Other social media platforms, such as Facebook, are working on payment solutions, on the back of which additional financial services can be offered.

E-retailers

E-retailers are leveraging their huge client base, which has already shared credit card details, to experiment with their own e-money and are also developing new financial services, like consumer credit. This is the case for Alibaba in China with Alipay, Jumia in Africa and Amazon Payments.

Other Technology Companies

Google, Apple and Samsung created Google Wallet, Apple Pay and Samsung Pay, respectively, all offering payment services, linking a debit card to their e-wallet, directly usable from the phone. Google Wallet struck an agreement with Verizon, AT&T and T-Mobile so that Google Wallet will be preinstalled on any Android phone sold by them. Apple Pay uses NFC technology and is now available on all new Apple phones. Samsung Pay uses a technology that simulates the signal from debit cards, and hence is usable on any POS, even non-NFC-enabled ones. For now it is available only on the higher-end Samsung phones. As a result of the big push for mobile money by these three giants, Business Insider forecasts that mobile money penetration in the US should increase from a mere 8% in 2015 to 65% by 2019.

3.4. Convergence

Another consequence of dematerialization is the acceleration of the convergence of banking and insurance, and now of banking, insurance, mobile network operators and other disruptors. Indeed, dematerialized products can now be distributed through different channels and networks, be it a network of agents, a mobile network or an internet network. It is therefore natural for users and owners of such networks to maximize the profitability and attractiveness of their networks by expanding their product offer. As a result, we can anticipate that in the future more types of digital businesses (social media, e-commerce, information, entertainment, education, health) and public services (administration) will converge.

3.5. Blockchain

3.5.1. How it Works

Blockchains can be described as electronic records of information (assets, transactions, algorithms, identity information) that are immutable because they are (i) stored in multiple replica versions on the servers of each user of the record and (ii) verified by consensus of all the users. Each change on the record is confirmed when more than 50% of the users confirm it.

Public blockchains are open to anybody and enable all users to participate in the consensus process. Private blockchains are open only for authorized users, and only selected ones can participate in the consensus mechanisms. If the blockchain is fully private, only one party approves changes in the record; otherwise a consortium of players is granted this permission.

Blockchain’s fundamental value is to create absolute trust in the records without the need of a central authority or a third party (e.g., a central bank, a broker, a custodian).

Its applications enable the storage of basically any information in an immutable way. Blockchains have in this way enabled the creation, among others, of (i) cryptocurrencies such as Bitcoin, which combine an algorithm that creates virtual money and a ledger of transactions, and (ii) distributed ledgers that record the ownership of assets beyond currencies, such as diamonds (Everledger) or financial securities.

Blockchains can support smart contracts, which are contracts that are immutable and execute themselves automatically based on rules agreed between the parties. For example, a call option can execute automatically once an exercise price has been reached, reliably transferring ownership of the underlying security.

Another interesting property is that transactions can be executed and recorded in blockchains much faster and cheaper than with traditional methods. Transaction and intermediation costs are cut dramatically, as verification systems and third parties become unnecessary.
3.5.2. Cryptocurrencies

The main cryptocurrency is Bitcoin. Another emerging one is Ethereum (which is also a blockchain platform; see below). The market capitalization of Bitcoin was about USD 10 billion in September 2016. Bitcoin is held as an asset and increasingly being used for transactions, especially in e-commerce. However, its progress has been hampered by a number of issues.

Even though prominent providers of Bitcoin accounts all have an acceptable know-your-customer process, it is still possible for anyone not to go through such third parties and create a Bitcoin account anonymously. This raises the concern that bitcoins, despite many legal uses, are also used for money laundering and the financing of terrorist activities.

In addition, a number of security breaches resulting in losses for users of Bitcoin have hampered broad-based adoption. The highest profile of such breaches was the theft in 2014 of about USD 450 million worth of bitcoins from Mt. Gox, at the time the leading Bitcoin exchange. Though the security issues were not with the Bitcoin technology itself, but with the exchange platform, this created negative publicity for the currency as well. It also spurred development toward improving security of platforms operating with Bitcoin.

As a result, regulators’ main concerns with cryptocurrencies are illegal transactions and consumer protection. For example, in 2016, in the light of increasing use of Bitcoin in the country, the central bank of Kenya advised Kenyans not to use cryptocurrencies and reminded formally that they are not legal tender.

However, because of the many advantages of cryptocurrencies, solutions are constantly being developed and tested to address the preceding issues. Still, it could take many years before cryptocurrencies are widely adopted.

3.5.3. Distributed Ledgers

Developments in the distributed ledgers space are numerous. We highlight here two main categories: general platform providers and marketplaces.

General platform providers sell or offer open-source blockchain solutions that can be adapted by anyone for a diversified set of needs. They enable creation of one’s own cryptocurrency or distributed ledger. For example, Ethereum is a decentralized platform and programming language that helps run smart contracts and allows developers to publish distributed applications. Another example is Eris Industries, which aims to define standards for smart contracts and provides smart contract development services.

In addition, many companies develop marketplaces, built on the Bitcoin blockchain or Ethereum. They take the form of ledgers registering ownership and trades between economic agents of a specific industry, such as banks for interbank payment, or stockbrokers and investors in stock markets. For example, Everledger has positioned itself as the central ledger for the diamond market. It has developed a private ledger to support all transactions within the diamond market thanks to smart contracts, and where a consortium of actors (insurance companies, retailers, law enforcement, banks) hold the consensus rights. This platform is designed in particular to prevent conflict diamonds and insurance fraud. The company is developing another platform to handle art assets.

Distributed ledgers are getting more and more attention from global players. To date, $1 billion is invested in blockchain startups, with half of it only in 2015. Globally, the largest banks are investing time, human resources and money into this technology. In Africa, Barclays, Standard Bank, Standard Chartered and other major players, even central banks, are focusing their innovation efforts on this technology.

With already tangible marketplaces underway, such as the Australian Stock Exchange or Everledger, and the very large investments in the space made by the leading global banks, we could see a number of functioning isolated markets within a few years. Once this stage is reached, distributed ledgers could be connected, enabling the application of blockchain technology for trades between markets.
In this section we present emerging financial sector business models globally, describing how they work, their economics, competitive advantage compared with traditional models, and how they are driven by trends and enablers.

We identified five main categories of business models:

- Direct banks and insurances, offering digitally the full range of traditional banking and insurance products,
- Payments, all offering digital wallet, payments and transfer services, but with a broad variety of approaches,
- Lending and insuring, offering only lending or niche insurance products (car, health, etc.) in a new and more efficient way than traditional banks or insurance companies,
- Financial management, offering services to manage one’s finances (such as aggregation of accounts, comparison of financial offers) and often building on these to cross-sell additional financial products (brokerage, loans)
- Technology providers, often business-to-business, which offer software and hardware solutions that help businesses provide financial services to end users.

It is important to highlight that while direct banking and insurance provide in a new way the full range of services of traditional banks and insurance companies, companies providing payments, lending and insuring or financial management only provide one specific financial product in an innovative way. Their competitive advantage is specific to one product, which also enables them to be less regulated. Direct banks and insurances, as well as traditional banks and insurance companies, can also offer these products in-house or through partnerships.

4.1. Direct Banks and Insurances

4.1.1. Direct Banks

Description

Direct or branchless banks are financial services firms that offer the same products as traditional banks but through internet, mail or mobile phone. They use physical point of sales only for cash-in, cash-out operations. Such points of sale include ATMs and nonbank retail outlets or agent networks such as gas stations, convenience stores, post offices, etc.

Such firms emerged in developed economies as a means to address customer demand for a new banking relationship. They can be an affiliate of a traditional brick-and-mortar bank, or completely independently. In fact, all major traditional banks now have a direct banking affiliate. Examples in advanced countries include Ally and Simple in the US, and N26, ING Direct or Hello Bank in Europe. In developing economies where most of the population is still unbanked, these models include the likes of Microcred, which is developing agent networks to provide branchless financial services.

Economics

Direct banks rely on the same revenues and costs as traditional banks (including net banking income resulting from interest margins and fees), except in the following aspects:

- Capex and opex of digital channels (call center, mobile, web browser) are substantial
- In developing countries where ATMs are not widely available, capex and opex associated with developing an in-house agent network can be high, including the development of an IT platform and fees paid to agents. Using third-party agent networks is also possible, the cost of which takes the form of fees.
However, capex and opex are overall lower than traditional banks because of the absence of a physical branch network.

Customers expect lower fees and higher rates on their deposits as a result of the lower capex and opex.

Marketing costs are important, as no branch network is available to communicate on the brand and to create trust.

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**CASE STUDY 1: ALLY BANK**

Ally Bank was founded in 2001 as a direct bank. It has no branches and purely operates online, through its website and applications for tablets and smartphones.

Its banking activities offer savings and checking accounts, as well as certificates of deposit. There are no monthly maintenance fees, and a free debit card and free standard checks are offered with the account. It offers a basic interest rate of 0.5% APY without requiring a minimum balance, and a premium one of 1.05% for all amounts above $15,000. The bank has $59 billion in customer deposits. Ally Bank is FDIC secured (Federal Deposit Insurance Corp.), which means that all deposits are insured up to $250,000.

Ally Bank's credit offering is limited and proposes only automobile financing. The company partners with car dealers throughout the US and accompanies them in proposing leasing solutions for their customers. More than 5 million cars have been financed since the beginning.

The interface with clients is an important aspect of the company, the service being designed and convenient, and customer service being available 24/7. An Ally Wallet Wise feature is also available as a financial management tool for customers.

Ally Bank recorded a $1.3 billion net income for 2015, up 12% from 2014.

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**Competitive Advantages**

The dematerialized distribution of financial services enables:

- Providing lower-cost services by passing on the savings from eliminating brick-and-mortar branches,
- Offering profitable financial services for very small amounts, and in remote low-density areas,
- Clients to conduct faster transactions at any time without the need for transport, and therefore to enjoy higher convenience and decreased personal costs.

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**Drivers**

In industrialized countries, where internet and mobile phones are now widely available, direct banking is set to grow to dominance. Indeed, all major banks are reducing their branch networks. However, this will only happen progressively, as banks operate very extensive branch networks employing many staff.

In Africa, the increase in the penetration of internet access, mobile phones and new security devices using, for example, biometry is the main driver for the creation of new branchless and direct banks.

In addition, governments and regulators are encouraging direct banking as part of their efforts to increase the reach of financial services, while trying to reduce or eliminate cash transactions in an effort to combat the
informal economy, fiscal fraud, money laundering and crime-related activities. For example, the Bank of Korea is planning a “cashless society” by 2020, and Nigeria launched in 2012 its cashless project. In this vein, France introduced in 2016 a €10 000-per-month limitation on cash withdrawals.

4.1.2. Direct Insurances

**Definition/Description**

The direct insurance model, such as the ones developed by MicroEnsure and Oscar, while offering the same range of products as traditional insurance companies, distributes insurance products without branch networks, in particular online or via call centers.

Currently there is significant differentiation in the paths used to promote different types of insurance services. The direct model is more popular in some insurance businesses like home, car, personal travel, etc., compared with life insurance (e.g., life, disability, critical illness, health insurance), as life insurance business requires more detailed assessment of each case (e.g., completing health questionnaires, medical exams, etc.) as well as physical presence.

In contrast to other products where the focus falls mainly on the volume of sales and the cost of selling, in insurance there is the significant aspect of managing the cost of goods sold per customer. In traditional insurance this is partially the work of the agent, who determines the rates that will produce the targeted unit profits. The agent can combine database marketing techniques with traditional actuarial approaches to maximize profits and to offer the right premium to attract the potential customer. By eliminating the agent, this process has to be implemented by an IT system that can make these decisions based on advanced analytics. The efficiency of the algorithms that implement the decision-making process is key.

**Understanding the Economics**

Regarding the cost side of the direct insurance models, cost savings are achieved through the elimination of the agent costs. These costs are partially but not fully counterbalanced by increased IT costs or by call center-related costs, if the service is sold over the phone.

**Competitive Advantages**

The cost advantage from digitally distributing insurance products was discussed above.

In addition, direct insurance provides access to the younger members of the market both because they are natively digital and because they have great potential for future sales. At the same time, because of their adoption of technology, digital insurance customers can also be more affluent than average and have more interest in profitable (less-commoditized) insurance products. Finally, digital channels can significantly accelerate the deployment of new products across different geographies.

These digital channels can combine with direct banking models and create new generations of digital bancassurance models that would otherwise be difficult to expand. Direct banks such as Boursorama in France already offer a broad range of insurance products.

**Drivers**

The growth of the direct insurance model is driven by different factors affecting the provider side, the customer side or the technological level.

In more detail, customers are moving strongly toward digital channels looking for enhanced customer experience and higher transparency. At the same time they are seeking convenience, which translates into omnichannel sales all around the clock as well as full-service delivery online.

On the provider side, insurers are under pressure to optimize operations through digital technologies to increase efficiency and effectiveness in processes and service delivery. Insurers are already using automation to facilitate human underwriters in improving their decision-making process and making it more robust.

From a technological perspective, increasing penetration of internet access and lack of proper distribution networks in some geographies are driving penetration of direct insurance. Increased competition in the marketplace requires accelerated deployment of products and services that favor digital solutions. Insurance firms are therefore leveraging digital solutions to speed up insurance distribution processes across multiple channels. Advanced analytics and big data applied across the business improve the potential to increase revenues by enhancing loyalty and cross-selling and at the same time optimize premiums charged to customers.
Like every IT-based service, direct insurance is threatened by information security issues, with a relatively high value at stake. At the same time another barrier to be overcome is the integration with other channels of the business in order for the company to operate seamlessly, a task that can prove challenging, especially in companies that implement omnichannel environments with similar weights on each channel.

Moreover, the automation of the underwriting process is not equally easy to apply to every market segment and therefore limits penetration of the direct insurance model to specific segments. On an internal level, the company needs to have relevant capabilities and a proper company culture that will enable it to manage digital change. Last but not least, competition from other emerging insurance models (e.g., crowd insurance) is expected to intensify.

CASE STUDY 2: OSCAR HEALTH INSURANCE

Oscar was launched in 2013 as a fully online health insurance company. It uses technology to make insurance a user-friendly experience, and helps customers by guiding them through their health issues and by keeping track of their health record.

For end users, subscription to the service is very easy, taking less than 10 minutes, along with a technology interface that is made simple to use. Oscar offers its clients up to three telemedicines per year, and the platform is renowned for its customer service and transparency: Claims are processed in less than 20 minutes.

For its partnering health care providers, Oscar also brings some interesting points. It automates the claim confirmation process and allows differentiation through a review system platform.

Oscar also introduces new features that incentivize its customers to keep a healthy lifestyle. In exchange for the data provided by electronic wristbands, their insurance costs can be lowered. In 2015, the company also partnered with Misfit Wearable to offer a free wearable device to each member of its health plan. Oscar pays customers $1 for every day they walk a targeted number of steps.

The company has 146,000 customers in 2016, up from 40,000 in 2015. This amounts roughly to 200 million in annual premium. In 2015, Oscar had a 5% market share in New York’s highly competitive health insurance sector (seventh out of 17 players). The company was valued at the end of 2015 at $1.75 billion, with investors like Goldman Sachs, Alphabet and even Li Ka-Shing, Asia’s richest businessman.
4.2. Payments

Under this section, we cover business models that offer digital wallet, payments and transfer services – or more simply payment services – to end users, and sometimes to companies as well (switches).

Exhibit 6 Types of emerging payment services companies

<table>
<thead>
<tr>
<th>PROVIDER</th>
<th>MAIN USER INTERFACE</th>
<th>CASH-IN, CASH-OUT NETWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology companies</td>
<td>Mobile phone/internet/social media platform/e-retailers</td>
<td>Third-party networks (including banks, ATM, mobile network operators)</td>
</tr>
<tr>
<td>Mobile Network Operators</td>
<td>Mobile phone</td>
<td>MNO’s agent network</td>
</tr>
<tr>
<td>Cash Networks</td>
<td>Vouchers</td>
<td>Proprietary agent network</td>
</tr>
</tbody>
</table>

4.2.1. Payments by Technology Companies

Description

This segment covers payment services offered by technology companies such as PayPal, Google (Google Wallet), Apple (Apple Pay), Samsung (Samsung Pay), Konga Wallet (Nigeria), Alibaba (Chinese e-retailer) and WeChat (Chinese messaging application) that offer e-wallet, payment and transfer services. A credit card is linked to an electronic account, and payments are made through these accounts. They can be used to pay for physical items at merchants accepting such payment, transfer money to friends/other users of the application, or make payments for online purchases.

There are three types of e-wallets as defined by IDC Financial (Business Strategy: Mapping the e-Wallet Landscape, 2016):

- **Proximity e-Wallet:** These are e-wallets that are optimized for face-to-face commerce. As such, they often rely on integration with a point-of-sale (POS) terminal. A peer-to-peer transfer feature can also be present. Examples include Samsung Pay and Apple Pay.

- **Remote e-Wallet:** These are e-wallets optimized for use in e-commerce. Examples include Konga wallet and PayPal.

- **Hybrid e-Wallet:** These are remote e-wallets that have a proximity component added on, using any of the methods employed by remote e-wallets to communicate with the POS terminal. Examples include Google Wallet and WeChat pay.

While no clear winner has emerged yet, technology companies are betting on various models. Software producers tend to focus on remote e-wallets, and hardware producers tend to focus on proximity e-wallets.

Understanding the Economics

The economics of the model rely on high transaction volumes. There are high setup costs to process and clear all the transactions; however, the variable costs per transaction are very similar to established credit card companies. Revenue streams for the technology companies will come from a fee per transaction and from the data generated from capturing their customers’ purchasing behavior.

Competitive Advantages

Their competitors are cash, debit cards, bank transfers, checks, etc. Technology companies can leverage their huge customer base to push adoption of their payment service. They also provide unparalleled convenience to the user: The user now only needs a phone when
shopping, using the identification tools (fingerprint, facial recognition, etc.) already embedded in the device, and can easily track transactions. Technology companies are also able to integrate the purchasing experience with their full set of associated services, enabling the customer to seamlessly go from browsing products or discussing a service online to purchasing. The richness of this experience appeals to both consumers and merchants.

Drivers

One key driver is the network effect, as the value of each e-wallet to customers depends on the breadth of uses they can make of it, and therefore on the number of users of the same e-wallet. Technology companies therefore need to use aggressive marketing and partnership strategies to achieve scale rapidly.

A key driver in developing countries is the spread of internet, smartphones, and POS, which is still limited and required for such services to operate. Feature phones can represent an important alternative to more expensive smartphones. POS can also be substituted by phone-based apps enabling merchants to accept payments.
CASE STUDY 3: WECHAT PAY

In China

WeChat Pay was released in 2014 for the Chinese market. It is designed for WeChat users (messaging app) to make peer-to-peer money transfers and payments to online and offline participating retailers. Recently, WeChat has been setting up WeChat accounts for foreign vendors so they can receive payments from Chinese tourists. In this regard, WeChat Pay can support paying vendors in nine different currencies, enabling seamless cross-border payment for the parties involved. Its Chinese banking partners set the currency conversion rate, with WeChat Pay covering outgoing international transfer fees. In China, WeChat has more than 10,000 third-party applications connected exclusively to WeChat Pay to provide specific services. WeChat has been a driving force behind mobile payments. In 2015, mobile transactions in China were valued at $1.4 trillion, up 57% from 2014.

Users can top up their wallet balance by linking one or several credit/debit cards to their WeChat Wallet. They are required to provide their name and scan an ID.

The company takes 0.1% on transactions, and it is estimated the service executed $50 billion in peer-to-peer payments in January 2016 only. This figure does not include transactions for popular services such as paying for taxis, restaurants and online media like video games and music. Its transaction volume now matches that of its two-years-older rival, Alipay, which processed a total payment volume of $519 billion in 2013 (twice the volume of PayPal). By March 2016, it was reported that 300 million cards were linked to WeChat Wallet.

The strategy of Tencent is to position WeChat Pay as a focal point in the payment ecosystem in order to empower future advertisements with one-click purchasing from users, and to be able to build synergies with financial services like Tencent’s wealth management fund and WeBank, its online bank. Naspers, a South African media conglomerate, holds a 35% stake in Tencent to help it develop WeChat, which explains why WeChat chose the South African market to enter the continent.

Expansion to South Africa and the Continent

The service expanded in November 2015 to South Africa. Like a physical wallet, customers can store up to three cards on it and Visa and Mastercard verify transactions through these cards. It facilitates peer-to-peer money transfers, prepaid electricity and mobile phone credit purchases, as well as in-store payments at participating merchants. WeChat partnered with Standard Bank to offer unbanked customers the possibility to have a WeChat Wallet. When registering, these customers become Standard Bank Instant Money users, a special account that can be topped up through vouchers bought at Standard Bank channels.

In Africa, WeChat will have to compete with Facebook that is present on the continent mainly with Whatsapp. While Facebook has 120 million users across the continent, its subsidiary Whatsapp accounts for 11% of Africa’s internet traffic. On the other hand, WeChat is only two years old and has 3 million users in Nigeria and 5 million in South Africa. It recently announced a $3.5 million seed fund for local startups to provide offline services via WeChat such as micro-jobbing service M4Jam (Money for Jam) and delivery service Picup.
CASE STUDY 4: SAMSUNG PAY

Business Model

Samsung Pay is a payment platform that allows users to pay for goods or services by waving their Samsung phone in front of a credit card reader or other point of sale. This reduces the need for customers to take out their credit card or share payment information.

The platform works as an app that users download on their Samsung phone. Currently the service is available only in the newest models – Galaxy S6, S6 edge+, S6 edge, S6 Active and Note 5. Register the desired credit cards and the Samsung Pay will draw from the chosen account. However, industry observers note that Samsung Pay could contribute to dramatically accelerating the spread of mobile money in the US because it works on regular POS thanks to a chip that replicates credit card signals. This is different from Apple Pay, which requires merchants to upgrade to NFC-enabled POS. With Samsung’s technology, all existing POS can readily accept mobile payments.

Samsung Pay can generate revenues from:
1. Charging retailers or card issuers a flat or variable transaction fee
2. Commission on the sale of gift cards from retailers
3. Monetizing the purchasing data of customers

Launched in August 2015, currently Samsung Pay is available only in the United States and Korea. It is in the process of rolling it out to the United Kingdom. There is no official communication on the rollout of Samsung Pay globally. However, it will be increasingly present in Europe and China in 2016.

Security

Samsung Pay works securely through what the company calls “tokenization.” Each device has a specific code, which is different from your card number; the specific code is what is shared with the retailer when making a purchase. The device also generates a unique token that is added on to every transaction with the retailer.

Payment Limits

The participating banks or retailers determine the payment limits. If the customer has a transaction higher than the set limit, he or she will just need to supply a PIN.

Costs of Business Model

From a costs perspective, Samsung Pay manages only the point-of-sale transaction. All the other typical transactional and bank-clearing activities are handled by partner banks. This keeps the capex investments required by Samsung Pay very low in each new market. It only needs to create relationships with the local banks.
4.2.2. Payments by Mobile Network Operators

Description

Mobile network operators have in recent years taken the lead in Africa toward providing basic payment services to the unbanked population. Many projects have sprung offering the possibility for mobile network subscribers to carry an electronic wallet on their phone from which they could execute simple tasks such as transferring funds from one account to another or paying bills, including through text messaging. We provide thereafter a case study on M-Pesa, the most successful mobile money example to date.

Economics

Mobile network operators earn revenues mainly through commissions on transfers and withdrawals. Opex include mainly commissions paid to agents who provide cash-in and cash-out services to clients. Capex include the IT platform required to process payments.

Competitive Advantages

Mobile network operators are ideally positioned to provide the previously unbanked population with financial services. They can reach this population easily and cost-effectively, compared with bank and ATM networks that are not dense and expensive. They can also naturally market their mobile money products to their existing clients.

Drivers

Mobile phone penetration is, of course, a major driver for adoption of mobile money products. Especially in Africa, mobile penetration is far ahead of banking penetration and has a much stronger competitive advantage to be the payment service provider of choice.

Most regulations are conducive to mobile money, as mobile network operators can operate under a simple payment service provider license. Typically, under such licenses, mobile network operators can open mobile money accounts on their own and are required to partner with a bank or other financial institution only for savings and loans products.

In some cases, however, regulation constitutes an impediment to the market. For example, in Nigeria, mobile network operators are not allowed to open mobile money accounts, only banks and licensed corporate organizations. This explains to a large extent one of the lowest mobile penetration rates on the continent, at 1.2% in 2014.

They therefore can scale rapidly and benefit from the network effect, as several did in Africa, in particular in the East African community. This network effect creates a strong barrier to entry that alternative payment systems have to overcome.
CASE STUDY 5: M-PESA

Note: Sh 1 ranged from 0.012 to 0.011 USD between 2013 and 2015.

M-Pesa is a mobile phone-based money transfer service. Vodafone launched it in 2007 in partnership with Safaricom and Vodacom, the largest mobile network operators in Kenya and Tanzania. Since then, the service expanded to South Africa, Lesotho, Democratic Republic of Congo, Egypt, Mozambique, India, Romania and Fiji.

The service allows users to deposit money into an account stored on their cell phones, to send balances using PIN-secured SMS text messages to other registered or nonregistered users, including merchants, and to redeem deposits for cash. Cash-ins and cash-outs are executed through a network of agents that includes airtime resellers and retail outlets acting as banking agents.

Users are charged a small fee for sending and withdrawing money using the service. This fee decreases in percentage with the amount sent and varies with the type of transaction undergone. For high amounts, say exceeding Sh1500 ($15), the average fee is 0.8%. For amounts in the Sh10-1,500 band ($0.1-15), which represent 65% of all M-Pesa peer-to-peer transactions, fees range from 1.5 to 6%.

Regulation is still not mature and unique across its markets; it was first crafted in Kenya thanks to M-Pesa’s experiment. M-Pesa needs to back its customers’ e-wallets with the same amount of cash deposited in bank accounts. In terms of know-your-customer and anti-money laundering standards, regulation also varies geographically, but customers need to prove their identity through an official document. If this is not possible, caps are introduced for some accounts in terms of transaction limitations per month.

In 2012, Safaricom launched savings and loans products on the back of M-Pesa with M-Shwari.

In 2015, the Central Bank of Kenya awarded M-Pesa a remittance license. This allowed the company to launch a new service enabling its customers in Kenya and Tanzania to make cross-border transfers between M-Pesa’s accounts. It has partnered with MTN to enable cross-border transfer into East African countries.

In 2015, M-Pesa had 20 million subscribers and a network of 80,000 agents in Kenya, and 7 million subscribers in Tanzania. In 2014, M-Pesa contributed 20% of Safaricom’s total revenue with transactions of Sh4.2 trillion ($42 billion) done using the platform (counting both received and sent flux). The service registered a 23% growth in revenue compared with 2013, amounting to Sh32.6 billion ($326 million) in 2014.
CASE STUDY 6: ZOONA

Zoona started in 2008, at first providing digitized coupons to Zambian farmers receiving subsidies from USAID. It quickly evolved into one of the leading providers of financial services to Zambia’s unbanked. It mainly offers money transfer services, local remittance (through a partnership with Mukuru), bill payments, B2C bulk payments and B2B supplier payments (mainly with Zambian Breweries). In addition, Zoona has launched a partnership with Airtel Money where end consumers are able to come to Zoona agents to register for Airtel Money mobile wallet accounts and perform cash-in, cash-out transactions.

In Zambia, Zoona is based on a network of 730 agents who can be found in bright green Zoona booths and kiosks, operating in 84 out of Zambia’s 87 districts. People looking to use Zoona’s services approach an agent who processes an over-the-counter transaction directly on a phone, without the need for the customer to be subscribed before or complete any paperwork. The end user typically gives the agent information on the recipient and the cash corresponding to the sum to be transferred. An SMS is then sent to the recipient, who by showing it to his nearest Zoona agent can collect the received cash. A fee is charged by Zoona depending on the size and type of the transaction.

Zoona’s success in rapidly expanding its footprint stems from supporting its agents in becoming owners of their outlet. In order to become an agent, one has to become a self-entrepreneur, dedicating a serious effort to be part of the network. Starting agents are eligible for resources such as booths, cell phones, marketing materials and working capital, which are supported by Kiva loans (a P2P lending marketplace). They repay Zoona for the loan value over time. They then receive a personal account on Zoona’s online portal, home to a suite of services.

Accounts reconciliation is a critical part of the business management. Zoona’s agents typically open a bank account at a Zoona partnering institution and link it to Zoona’s system. They can then convert cash and electronic credit between Zoona accounts and their personal account.

The average Zoona agent makes USD 1,450 in monthly commissions, the median being USD 525, which is a very profitable business. In 2014, Zoona had 700,000 active users, approximately 300,000 of whom conducted at least one transaction in a given month (counting both senders and receivers). The company’s revenues exceeded USD 8 million, 94% of which was due to person-to-person over-the-counter transfers. As of November 2014, over 500,000 transactions were being performed every month, at a value exceeding USD 25 million.
4.2.3. Payments by Cash Networks

Description
Cash networks are companies that are neither a bank nor a telecommunication company and that create their own network of agents. These agents are retail outlets, at which clients of the cash network can deposit or withdraw cash, or make transfers. We describe a typical cash network model in the case study about Zoona. Other examples of such firms include Wari and CashService in West Africa, and Cash Express in Central and Western Africa.

Economics
As for mobile network operators, cash networks earn revenues mainly through commissions on transfers and withdrawals. Opex include mainly commissions paid to agents who provide cash-in and cash-out services to clients. Capex include the IT platform required to process payments.

Competitive Advantages
The first advantage is that cash networks provide mainly over-the-counter transactions that don’t need end users to register, in contrast with solutions provided by technology companies and mobile network operators. Cash networks can build competitive advantage if they succeed in creating a strong presence throughout the country thanks to dedicated agents. The capillarity of their network is the most valuable asset.

Drivers
In countries where mobile money agents are not yet fully developed, there is an opportunity for cash networks-based payment services to gain large market shares and build barriers to entry thanks to the network effect. However, mobile money is progressing fast in many countries, and where mobile money operators are gaining traction, it will be difficult for new cash networks to enter.
At a later stage, regulators may encourage interoperability more, which would help lower barriers to entry and increase competition.

4.2.4. Remittance

Description

Banks and nonbank agents such as Western Union, Ria or MoneyGram have traditionally occupied the remittance market in emerging markets. In Africa, the 30 million-strong diaspora sends about $40 billion each year to the continent, about 5% of its GDP. This does not take into consideration remittance inside the continent nor unofficial remittance, which is believed to be three times larger.

To address the expensive fees, companies have sprung up with innovative approaches to cut costs. TransferWise, for example, proposes remittance in selected countries, though not so much in Africa yet. Its approach is to match senders and receivers locally in each country, hence executing orders without actually performing an international transfer. When the matching is not perfect, it adjusts balances on international currency markets. But this remains limited and therefore it is able to charge much lower fees. Another interesting model is cash-for-goods, like the ones developed by Niokobok or Afrimarket, which enable senders to send the receiver vouchers for goods to be used in partnering shops.

The use of cryptocurrency in this space is progressing, in particular with companies like Ripple, which built an interbank settlement protocol based on a cryptocurrency. If widely adopted, such protocol could provide instant, inexpensive and secure interbank settlement, bypassing the correspondent banking system. It has been gaining traction in recent years, with integrations being tested with 30 banks and payment technology companies, including UBS, National Bank of Abu Dhabi, UniCredit, Standard Chartered and Temenos. Ripple is progressing toward achieving sufficient scale to benefit from the network effect.

In Africa, progress has been slow because of reluctance from regulators and the lack of demand for Bitcoin, which acts as an intermediary between the sending and receiving currency in some remittance models. BitPesa is an example of such a company using Bitcoin to help lower the cost of remittances in Africa.

Economics

The common way of cutting costs in most models described is by matching supply and demand locally to avoid an international transfer through the slow and expensive correspondent banking system, and making up for mismatches on the international FX market in batches. Working capital is required to settle local mismatches between batches.

Competitive Advantages

These companies are normally able to propose the same service as banks and nonbank remittance companies at smaller fees. They also distribute their service through new and more convenient channels, such as mobile phones and internet, or retail stores.

Drivers

One of the key obstacles to the development of models such as that of TransferWise in Africa is the imbalance of capital flows between the North and Africa. This makes it difficult to match supply and demand locally. This is one of the main reasons for the lack of development of TransferWise in Africa, while it has grown substantially in America and in Europe.

Regulation will play an important role, as in some countries international transfers are required to be executed through the central bank, making it impossible to settle international transfers through locally matching supply and demand. In addition, regulators need to put in place the necessary legal framework to enable the mainstream use of cryptocurrencies in international transactions.

Finally, the success of models such as Ripple will depend on whether they can get a sufficient number of banks on board, hence giving users the benefit of the network effect.
4.3. Lending and Insuring

In this section, we present new ways of lending and insuring, often for a single or niche product. Such models emerge because technology enables more efficient ways to deliver such products, but these new methods require a number of conditions, such as access to large amounts of data and a large nonaddressed demand in the market, and therefore are only applicable to a number of products. For example, new models of insurance leveraging big data technologies are relevant in the field of health or car insurance because large amounts of data can now be collected on driving and health behavior. But such technologies, so far, have not found a cost-effective use, for example, for complex and unique risks like industrial risks.

As such models concern one specific loan or insurance product, they should not be confused with direct banking or insurance, the digital provision of all traditional banking and insurance products. As a matter of fact, a traditional brick-and-mortar bank or insurance company, or a direct bank or insurance company, could well distribute the new lending or insurance products below as part of their portfolio, without changing the rest of their portfolio of products and the overall nature of their business model.

4.3.1. Peer-to-Peer Lending

Description

Market financing, more commonly known as peer-to-peer lending, is a way to provide credit to individuals or businesses through online platforms that match savers with borrowers. Savers themselves make the decision to lend directly to a borrower or group of borrowers, and they bear the risk. This contrasts with traditional lending through banks, which take deposits and savings from savers and lend them to borrowers, making the credit decision and taking the credit risk.

These online investment platforms enable borrowers to attract lenders, and lenders to identify and purchase loans that meet their investment criteria. Peer-to-peer platforms collect data on borrowers to give them a credit rating and price the loans.

Loans offered by these platforms can be secured or unsecured, and enforcement of defaulting loans depends on the legislation and regulation of the country the loan was processed in. There is more innovation in credit modeling and underwriting in peer-to-peer lending than with traditional lending. Many peer-to-peer platforms incorporate a wide range of data elements in their assessment, often online, including social media information and mobile phone data.

Economics

The lending intermediaries generate revenue by collecting a one-time fee on funded loans from borrowers and by charging a loan servicing fee to lenders or borrowers (either a fixed amount annually or a percentage of the loan amount).

Lenders have the possibility to invest in individual loans or diversify by investing in portfolios. Platforms usually offer the two possibilities in order to match their different types of lenders, be it institutions or individuals. A possibility of automating loan selection is also usually available through the setting of predefined criteria that the investors fill in.

Competitive Advantages

One competitive advantage of peer-to-peer lenders is that because they do not take risk as intermediaries, they are not required to cover credit risks with minimum capital as banks do. As a result, the portfolios of peer-to-peer lenders can grow without having to invest equity, which dramatically reduces the cost of funding. However, this is partly offset by the fact that banks can refinance the loans with deposits, which are inexpensive.

Second, in developed countries, credit scoring is based on online data, and therefore can be completely automated, enabling loans to be approved in a matter of minutes and dramatically cutting operational costs.

In China, where credit history and online data are not readily available, many peer-to-peer lenders conduct credit assessments through client visits, the same way traditional microfinance companies do. They were therefore not successful because of automated processes. However, the small – and medium – enterprise market is neglected by large state-owned banks focused on large projects, and microfinance institutions are not allowed to take deposits or leverage their balance sheet, making them expensive. As a result, this created a space for peer-to-peer lending.
Because of the absence of capital requirements and high automation, peer-to-peer lending platforms can cut costs and offer both lower borrowing rates and higher savings rates.

Drivers

The availability of online data is essential to automate scoring processes, and it is a key driver of the industry.

Regulation is important as well, as several high-profile frauds in both the US and China have damaged the image of the industry. In February 2016, Ezubao, the peer-to-peer lending platform, was found to be a large Ponzi scheme. Allegedly $7.6 billion was stolen from investors, China’s biggest case of financial fraud to date.

Controls definitely need to be tightened, but this business model remains attractive where data are available. This is not the case in Africa yet. But it is in developed countries, and established banks are increasingly trying to compete in this space.

CASE STUDY 7: LENDING CLUB

Lending Club is the leading peer-to-peer platform in the United States. It matches borrowers’ requests for loans to investors who are looking for an attractive return. The company was founded in 2006 and took off as people were turning away from banks after the financial crisis, millennial borrowers were attracted by the online experience and older individual investors found returns more enticing than bank savings.

Borrowers can apply for unsecured personal loans, from $1,000 to $35,000, to be repaid within three years. Approved borrowers are rated according to their creditworthiness and put into one of 35 grades, ranging from the letter A to G and with each letter assigned a number from one to five. Annual interest rates range from around 5% for A1 grades to around 31% for G5 ones.

Investors can invest in notes composed of selected loan grades. They browse listings on the platform and choose among borrowers based on the information they provided, the amount of loan needed, the loan grade and loan purpose. They earn the monthly repayments of selected loans. Lending Club is paid with an origination fee from 1.1% to 5.5%, depending on the loan characteristics, and with a service fee by keeping 1% of each repayment the borrower makes. The service fee is not taken in case of nonrepayment, but Lending Club makes the necessary steps to collect the remaining amount and takes a share of it (between 18 and 30%).

Default rate is around 3.4%, and nominal average interest rate is 14%. The average returns for investors are between 5.4 and 10.2%. The average borrower has 16 years of credit history, an income of $74,000 and takes a loan of $14,500.

The company claims it has facilitated a total of $15.9 billion in loans by the end of 2015. For instance, student loans correspond to $100 billion originated each year in the United States. For car loans, this figure goes up to $400 billion per year. Lending Club’s 2014 revenues were $213 million. It employs 1,000 people.
CASE STUDY 8: PAIPAIDAI (拍拍贷)

Launched in 2007, Paipaidai is the first direct peer-to-peer lending company in China. Its processes are purely online, facilitating lending of small and microloans for borrowers.

Borrowers typically submit an online loan application on Papaidai’s website, where they are required to provide a photo ID, an address and a phone number. Once this information is verified, Paipaidai holds an online video interview with applicants to ask further questions in order to assess their credit rating. If applicants have an online trading history, Paipaidai also relies on it to verify the borrowers’ data and assess their creditworthiness. Paipaidai then publishes borrowers’ loan requests, along with their credit scoring, on its website, and investors are able to view all applicants through an auction-style listing. Investors can then pick the investments that match their strategy. Paipaidai guarantees investors’ principal if they fully diversify their portfolio.

Paipaidai experienced 200% growth over the past five years, totaling 1.2m members between 2014 and 2015.

CASE STUDY 9: CREDITEASE (宜信)

Launched in 2006 initially for lending small loans to students, CreditEase grew to be a wealth-management company that mostly offers peer-to-peer lending.

The company acts like a broker, facilitating transactions between borrowers and investors. It relies mostly on offline processes and on a network of local offices to source borrowers and investors, verify credit information and contract lending. A percentage of borrowers can also directly borrow online once their verification process has been done.

CreditEase proposes six types of loans that can be separated into two categories: (1) collateralized ones with property as collateral that can range from $50,000 to $600,000, or (2) noncollateralized loans of up to $15,000. Loans can be repaid within two years. The company charges borrowers a flat rate of 12% interest on the value of a loan, regardless of risk level, on top of which it adds an additional interest rate fee that depends on the type of loan product involved and on the risk rating. A typical borrower will pay between 12% and 24% interest on the principal.

Investors are sent a list of preselected borrowers to choose from. They are offered a flat 12% interest rate return on their principal. The rest of borrowers’ charges are deposited into a “bad loan reserve” by CreditEase that is used to satisfy loan guarantees on principals.

The average investor amount is about $76,000, and the average loan size is about $7,500. As of 2015, it is estimated that CreditEase had originated $25 billion in loans for 2m borrowers, and it employs 44,000 employees. Its online platform, Yirendai, which is much smaller in loan volumes, has recently become the first Chinese peer-to-peer lending IPO.
4.3.2. Nano Mobile loans

Description

Nano mobile loans are small very short-term loans – typically under USD 100 for one month – issued on the borrower’s mobile phone, under the form of mobile money. Loans can be airtime credit loans, as company MoDe offers in several African and Asian countries, or general-purpose mobile money loans that can be converted into cash through any mobile money account. Savings accounts (mobile or regular) are usually associated with these loans. Loans are offered by nano mobile lenders – which can be banks or not – in partnership with mobile network operators.

In case they offer savings, nano mobile lenders must be regulated and licensed as deposit-taking institutions. Examples include CBA and KCB, two banks in Kenya, in partnership with M-Pesa. The partnership with mobile network operators includes access to the mobile network operator’s client database, used for marketing and scoring, and integration with the mobile network operator’s mobile money platform. We present the example of M-Shwari, offered by CBA and CashCredit, a nonbank lender, in the boxes below.

Economics

The economics are similar to those of a typical bank with revenues earned from interest that should cover the cost of equity and interest expenses, capex and operating expenses. However, interest is earned from a very large number of small loans, and refinancing comes from a very large number of small savings. This is possible only because the processes are entirely automated and digital, saving the cost of a branch network and manual processing of loans. Capex mainly cover IT platforms.

Interest is shared between the nano mobile lender and the mobile network operator, with which additional revenue and cost-sharing arrangements can be in place.

Competitive Advantages

There are three main competitive advantages for these types of models. The first is that they have access to data that were previously unavailable concerning their targeted customers. These data, which encompass, for example, mobile money account movements and phone credit history, enable an automated credit scoring risk. The second competitive advantage is the ability to market directly to the clients of the mobile network operator, opening a market to a large unbanked African population. The third one is that companies leverage a new form of security: access to airtime top-up for arrears collection. As a result, the model can be entirely automated, dramatically lowering costs.

Drivers

The widespread adoption of mobile money is a main driver behind the emergence of nano mobile loans. Previously unbanked populations access financial services first through a digital wallet that allows them to make transfers and simple operations such as paying bills. Once they mature in their needs and once financial data are available for consumer finance companies for credit scoring purposes, the market is ready to add new products.

Regulation also plays a key role in structuring the market. Only institutions with banking or microfinance licenses can take deposits, making partnerships between mobile network operators and banks or microfinance institutions necessary. Mobile network operators are today in a strong position to capture most of the economic value of such models because their clients are to a larger extent captive, as they have to borrow through the mobile network operator’s mobile money wallet. However, if interoperability develops or is imposed by regulation (i.e., the ability for mobile money owners to seamlessly shift their money from one account to another), this could help banks offer their loans independently from mobile network operators, allowing them to capture a greater share of the economic value. But it is unlikely mobile network operators would accept sharing the data history of their clients or that they would spontaneously implement full interoperability, without being required by regulators.
CASE STUDY 10: M-SHWARI

M-Shwari is a combined savings-and-loan product launched in late 2012 through a strategic partnership between CBA and Safaricom.

The M-Shwari account is primarily a CBA product but can be accessed and used only through an M-Pesa mobile money account provided by Safaricom. Both CBA and Safaricom bring complementary strengths to M-Shwari.

Safaricom brings its large customer base thanks to being the first mobile phone operator in Kenya. It also provides very valuable information on potential customers such as their airtime and M-Pesa history, which are used for credit scoring, and know-your-customer data. Safaricom also has a large capacity to market the product by engaging in above-the-line advertising and by incorporating M-Shwari directly on the M-Pesa menu.

CBA mainly leverages its banking license in the partnership: It has the possibility of issuing savings accounts and delivering loans. It has the capital to fund the loan portfolio and can report directly to the credit bureau. Also, in the event of nonperforming loans, CBA is the one that carries the losses. However, customers who do not repay their loan and who top-up their M-Pesa account afterward will see the added money going directly to the repayment of their M-Shwari debt.

M-Shwari has been successful as it has been the first nano lender to build on top of the success of M-Pesa on an exclusive basis for the first two years of operations. It has also been able to use some security features of M-Pesa, which is key to building a sound loan portfolio. For instance, M-Pesa would not allow customers in default on M-Shwari to pay a third party using M-Pesa before paying back their M-Shwari loan, and ID verification to open an M-Pesa account is rigorous.

As of March 2015, it was reported that CBA had signed the 10 millionth customer to M-Shwari, having handled a total of $153 million in deposits and issuing over 70,000 loans per day in Kenya alone, with average loan size of $30, with a loan facilitation fee of 7.5%, shared between Safaricom and CBA. However, just after this stage was reached, Safaricom and Kenya Commercial Bank (KCB) jointly launched the KCB M-Pesa account. Safaricom’s CEO invoked the fact that the exclusivity clause with CBA had elapsed, allowing the company to partner with other banks. On the other hand, CBA applied to acquire a mobile virtual network operator to distribute M-Shwari directly. Equity Bank already acquired one.
CASE STUDY 11: CASH CREDIT

Cash Credit partners with mobile network operators to offer subscribers a wide range of credit products. The company launched its product in 2012 in Bulgaria. It is currently expanding in South Africa, Philippines and Cameroon, and plans to partner with mobile network operators in Africa, Asia and Europe.

The technology leverages mobile network operators’ customer data and other traditional and nontraditional data sources to assess credit scoring. Cash Credit then offers mobile network operators’ customers loans in various financing forms, including cash, airtime top-up, device leasing or bill payment. The amount limits for loans depend on each country. In Bulgaria, loans between $100 and $1,200 are available, for a repayment period ranging from one to 18 months.

Customers are able to access credit through a number of distribution channels, which include mobile network operator stores, retail chains, ATMs or mobile money accounts. The company’s technology allows the customer to handle the loan process directly via an app or via SMS and USSD protocol. In the future, the firm may offer P2P lending through its platform as a means to diversify its revenue.

Cash Credit uses its own balance sheet to fund microloans. It has a profit-share agreement with a mobile network operator in return for using its data and existing infrastructure.

The company raised $25 million in 2013 from an institutional investor.

4.3.3. Machine-to-Machine-Based Lending

Description

Machine-to-machine (M2M) technology enables previously unconnected objects to be linked, sharing information and enabling remote control. The internet of things revolution is a result of such technologies. M2M technology helps create new and more efficient ways of lending. M2M-based lending takes two main forms. First, firms offer loans to acquire objects linked to the firm’s system, making it possible for the firm to shut down the object in case of arrears. Second, firms can monitor objects of the borrower (like usage of production machinery), gaining insights useful for risk and pricing.

Examples of such companies are solar energy companies such as M-Kopa or Mobisol that enable leasing of solar systems with flexible and secured terms. Many of them have sprang in Africa’s landscape, positioning themselves on different devices’ price ranges. Mobisol sells devices with 80- to 120-watt power, targeting a population that earns $3 to $4 per day. M-Kopa targets a population earning even less than $1 per day. The case study on M-Kopa below explains how the latter works.

Economics

The economics are the same as those of a typical lender, in particular leasing companies, with revenues earned from interest, and potentially secondary sale of assets after the leasing period. However, as indicated below, the competitive advantages of the M2M model can enhance profitability compared with traditional lending/leasing.

Competitive Advantages

By dramatically reducing risk through either the capacity to remotely switch off assets of the borrower or monitor activity, M2M technology enables lenders to accelerate credit decisions and reduce default rates. As credit decisions are highly simplified, products can be distributed through low-cost channels and agents without credit skills, making it possible to reach a broad customer base.
Drivers

The widespread adoption of mobile networks is the main driver of M2M lending. Internet will be a second driver through the internet of things. M2M lenders, through the information they gather, may also be able to provide additional services such as insurance, the premiums being informed by data analysis.

For M2M lending firms that lease solar panels, underelectrification of Africa is a major factor of adoption of such solutions: Over 50% of African households are not connected to the grid.

The research made upon M2M technology may also help companies develop new leasing models. Eseye, for example, is specialized in providing this technology. Currently, it is reported that the technology is costly and sometimes unreliable, as security issues, such as hacking, can disrupt the economic sustainability. In the future, once connectivity is cheaper and security issues are solved (through blockchain technology, for example), companies with new leasing models can spring. Products targeted will, however, remain mainly (i) the nonvital ones, as one cannot block the use of vital devices of a borrower, (ii) at least initially cheap products, which makes it not worthwhile to try hacking remote switch-off systems, and (ii) electric products for the mass market, in which remote control can be introduced in a standardized way.

CASE STUDY 12: M-KOPA

M-Kopa is a new consumer lending company that uses an innovative SIM card-based payment system to help off-grid consumers at the bottom of the pyramid finance the purchase of home lighting systems enabled by solar panels.

The company provides its customers with an 8W battery-powered system that comes with three lights, mobile phone charging and a solar-powered radio. More recently, customers can opt for a 20W system with a digital TV.

M-Kopa’s pay-per-use purchase model spreads the price of the system out over several months. Customers pay through their mobile money account whenever they need to use electricity and/or according to their revenue. Once their account has been topped-up, M-Kopa’s system unlocks electricity delivery from the solar panel’s battery. All in all, customers have to pay an initial deposit of $35, followed by 360 payments of 47 cents (the equivalent of a daily use of kerosene, the former way to have light) if the customer pays daily. Once the device is fully paid, the customer is granted ownership of the system.

Launched in Kenya in 2011 for M-Pesa’s customers, the company has since connected more than 330,000 homes in Kenya, Tanzania and Uganda, with over 500 new homes being added every day.

East Africa is M-Kopa’s primary market, but it projects to expand or license its product in West Africa and South Asia. The company projects to make $100 million in revenue per year by 2018. According to the CEO, M-Kopa is still in deficit but could be profitable. The deficit is due to the strategy to expand at full pace and reinvest its benefits. Indeed, the company holds the burden of financing its new customers’ devices through the immobilization of important working capital. In the all-possible scenarios, the company said it would be profitable by 2017.

Clients’ repayments are at a 95% rate. On average 25 to 30% of clients exceed the one-year (365 days) period to fully repay the system. This group of “late” payers needs around 15 to 16 months to own the system. As of December 2014, the valuation of M-Kopa stood at $70 million, which represented 33.5 times shareholders’ funds.
4.3.4. Big Data Insurance

Description

Big data insurance is the use of large quantities of data (such as social media activity, GPS or health tracking) in order to better price the premium or to better design the policies around the insurance contract. This differs from regular insurance because insurers actively leverage large amounts of data involving users, so it is possible to automatically tailor products for each user. Even if it currently has fewer applications on large risks, such as industrial risks, for example, where big data is less available and where patterns are less defined, this type of insurance product could have many applications in personal insurance.

Here are examples of big data insurance models.

- **Car insurance:** Progressive or Metromile (pay-as-you-drive insurance) – Business model is to pay the insurance only when the user is driving.
- **Health:** Oscar – using health-monitoring wristbands (be it Fitbit or Apple Watch) or similar devices to measure the level of physical activity the user does each day. This information can then be used to determine the potential fitness level of customers and their likeliness to need health care. By knowing more about the health of its customers, the insurance company can ensure its products are properly priced and reward customers who reduce their risks of requiring health care.
- **Farming:** The Climate Corp. – using weather forecasts and more data to determine the amount of money to be paid on farming insurance claims in hard-to-reach areas. The data can also be used to better estimate the likeliness of crop failure and therefore reach out to the farmer prior to a claim being placed.
- **Microinsurance:** MicroEnsure is insuring very small claims like cell phone damage/theft. Big data in this case can be used to quickly retrieve the stolen cell phone, making a big dent in the number of claims, maximizing the insurance company’s profits and allowing for an even smaller premium, making a virtuous circle of more people insuring their mobile phones. Another possibility is to charge the premium depending on the person’s risk. It is now possible to understand how risky the person is when using the phone, using big data (such as location, accelerometer use, number of falls, apps used, when used, etc.) and previous cases of claims to draw a score of the riskiness of the person in real time and adjust the premium given the data. We can also use this data for other insurance services, as the reckless behavior a person has with a mobile might reflect the same reckless behavior in other areas, such as driving or abuse of the medical system.

Economics

The basic economics are the same as for a traditional insurance company, with premiums being collected and placed to generate financial revenues and cover for future claims. However, through innovative analytics, big data insurance aims to achieve better claims-to-premiums ratios. Digital distribution and complete automation lower the cost of issuing and distributing each product. Beyond the cost-saving benefit, this opens the door to microinsurance, such as the insurance of single objects, insurance for very short periods or small-size life insurance. As a result, many microinsurance products that were simply too expensive to market and distribute can now be profitable, creating a large new insurance market in developed and developing countries.

In addition, big data collected at the individual level – such as through a health tracker – reduces information asymmetry, hence addressing the common adverse selection problem in insurance. Information enables insurance companies to predict the probability of a claim much better than before, and therefore tailor premiums to each individual.

Competitive Advantages

Big data insurance companies have a competitive advantage over traditional insurance providers due to their increased knowledge of customers. This ensures that risk premiums are priced accordingly to the risk users undertake. Low-risk users can therefore enjoy lower premiums and are more likely to stay with the insurer.

Big data insurance can collect customers’ data in several ways. For example, in big data car insurance models, these data points can include:

- Driving behavior (tendency to go over the speed limit, not stopping completely at stop signs)
- Driving times and routes (when and where user is driving)
- Visual and situational information prior to an accident (reduction of who’s-to-blame investigation costs)
The big data insurance company can then use all this information on top of the current insurance risk assessments to provide a more accurate picture of a customer’s risk of claim. Safe customers can see reduced risk premiums as a reward for good driving habits.

Drivers

The internet of things opens the way for many new big data insurance models. Indeed, connected objects such as health trackers and house appliances are providing data that are particularly relevant to insurance companies. It also enables them to interact with customers at the individual level, creating new ways to incentivize good behavior and lower claims ratios.

In addition, customers’ acceptance of sharing personal information in exchange for rewards is important. It is likely to grow as new generations become more accustomed to sharing information from their digital life.

4.4. Financial Management

4.4.1. Personal and SME Financial Management

A new host of financial management softwares helps individuals or SMEs manage their finance, by aggregating their financial accounts with various banks and assisting with budgeting (Mint, Getliquid), accounting and tax filing (Square’s Xero). Other companies help individuals save money in a seamless way (Acorn).

Many do not charge anything or little to the client. Instead, they leverage the valuable data collected on users to sell third-party financial products. They charge a fee to the third parties, on a per-click or per-purchase basis. Starting as financial management companies, they gain privileged access to their clients and their data, and can therefore grow into brokers with very high negotiation power.

Models like Mint or Xero work well in economies where people do not use cash anymore, making transactions trackable, and people can trust a third party with their login details to financial services. This is less likely to be the case in developing countries than in mature markets like the US, where such products are successful.

CASE STUDY 13: MINT

Mint is an online application that helps customers manage their personal finance. Users share the connection details of all their financial accounts (online bank, investment accounts and bills, for example). It automatically downloads, classifies and consolidates each transaction to provide users with a synthetic view of their situation: expenses by type of expense, revenues from salary and placements… Users can set up budgets – for example, saving $500 for Christmas gifts – and Mint helps the user keep track of that objective, for instance alerting when extra expenses are throwing the person off track. In addition, Mint analyzes the customer’s finances to propose money-saving deals, such as a cheaper mortgage loan. Mint’s approach is to “gamify” personal financial management with targets and challenges using game-like graphics, making it better suited for millennials and ultra-connected customers.

Mint is free for users, and earns a fee from the provider of any financial product bought through Mint.

Created in 2007, Mint had 10 million users in 2013, and today is said to have 15m users. It was acquired by Intuit – a personal and SME finance software company – in 2009 for $170m.
4.4.2. Price Comparison Services

Description

Price comparison services are vertical search engines that shoppers use to filter and compare products based on price, features and other criteria. Most of these services aggregate product listings from multiple online retailers but do not directly sell the products.

Price comparison websites collect data from merchants in multiple ways, including information extraction, fuzzy logic and human labor:

- Merchants provide information electronically through standardized data files, which are then imported into the system. Third-party businesses also provide consolidation of data feeds so that comparison services do not have to import from many different merchants.
- Crawling the web for prices. Comparison services can browse retailers’ web pages to retrieve the prices. Used by mostly smaller, independent websites.
- Collecting data through crowdsourcing. Services that used this method rely on visitor contributions to build pricing data. Visitors are incentivized through prizes, cash or other social incentives.

The most frequently used approach to retrieve information is a combination of the methods described above.

Economics

The usage of the price comparison service is not typically charged to the user. Usually, the monetization of the service is achieved through payments from the retailers displayed on the website. Depending on the model, retailers either pay a flat fee to be included on the website, a pay-per-click fee every time a customer clicks through to the retailer’s website, a pay per action such as customers registering their email or through a combination of these models.

CASE STUDY 14: MONEYSUPERMARKET.COM

Moneysupermarket.com is a price comparison service based in the United Kingdom specializing in financial services. The website enables consumers to compare prices on a range of products, including mortgages, credit cards and loans. It is listed on the London Stock Exchange and is a constituent of the FTSE 250 Index.

The business derives its revenues from four main sources: money services, insurance, home services and travel. Each one allows searching and comparing the following products:

- Money services: credit cards, current accounts, mortgages, loans, debt solutions, savings accounts and business finance.
- Insurance: breakdown, dental, home, life, medical, motor, pet and travel insurance.
- Home Service: broadband, mobile phones, vouchers, shopping and utilities.
- Travel: car hire, flights, hotels and package holidays, among other things.

The companies seen on the Moneysupermarket site – such as banks, insurers and energy suppliers – pay a fee when the customer chooses them from the search results. The process of getting paid depends on what product is being compared. The site gets paid a fee either when the customer switches to the provider, or when the consumer clicks through to a provider. For other products it gets paid a commission – for example a percentage of the cost of an insurance policy.

For 2015 Moneysupermarket achieved revenues of £281.7 million with a growth of 14% from the previous year.
Competitive Advantages

Customers using price comparison services are able to compare different products and services so that they can quickly figure out which is the best one. It is easy and convenient for shoppers to gather pricing data from multiple sources in a single go. Price comparison websites allow consumers to achieve in minutes what would otherwise take hours, and make a potentially boring and difficult job relatively painless by presenting complex information in a simple and accessible way.

Price comparison services deliver a number of significant outcomes. Consumers can save money by finding the cheapest deal, by identifying the right product that matches their needs, and by benchmarking the whole market to gain awareness of prices, brands or providers.

Drivers

Price comparison services are mainly used in markets (i) perceived by consumers to be complex, characterized by a proliferation of offers, information overload and product complexity, with a high risk of choosing unsuitable products and ending up on a worse deal such as insurance (car and home), travel services (flights, hotels, car rentals), energy, broadband and telephone packages and (ii) where therefore the cost of the products and hence potential savings from finding the best deal are high.

In terms of data collection, comparison services rely on the availability of product information either publicly or through the willingness of suppliers to provide it.

Consequently, price comparison websites will grow in Africa as the purchasing power of customers increases, offers diversify and online access to data increases.

4.5. Technology Providers

There are many innovative technology providers. We will present only selections here that have the greatest potential for disruption and/or are particularly innovative.

4.5.1. Payment Processing

Description

Payment processing firms provide adapted solutions for parties involved in transactions handling. Such firms can position themselves as software or hardware providers.

Card processing software companies have a long presence in the financial services world. S2M (Société Maghrébine de Monétique), for example, was founded three decades ago and has positioned itself as a leading provider of payment technology globally and more specifically in the Middle East and Africa. It offers card software solutions development and implementation, payment systems consulting and outsourcing, POS solutions development and supply, and payment means personalization. It is nowadays working on adapting its solutions as a bridge between banks and telecommunication companies that provide mobile money services, enabling interoperability.

Other companies have initially focused on hardware devices to enter the payment processing market. Targeted customers include small businesses that couldn’t afford traditional bank card processing through POS and want to propose payment methods other than cash. In the US, Square enables SMEs to accept bank cards through an inexpensive and small card-swiping device plugged into a smartphone, and also monitor their financial activity through a dedicated platform. Tagattitude, a French company, has also created a technology called Near Sound Data Transfer that equips agent networks – that can be the nagent network of a bank, for example – to accept identification and payments from ordinary inexpensive phones, without any additional hardware required from the client. The phone of the client, which carries a mobile wallet, replaces a credit card. Due to their position in the SME’s payment processes, enabling them to capture data and financial flows, such firms have naturally evolved to propose other services. We provide a case study on Square, which is a compelling example of such an evolution.
4.5.2. Credit Scoring

Description
New credit scoring firms have appeared in recent years, leveraging the large pool of data available online, and new analytical methods such as artificial intelligence. Such innovative firms use data points that go beyond traditional credit history or bank statements, such as mobile usage, mobile money usage or social media activity. An example of such companies are Experian, Tiaxa and Simbrella.

Economics
Such firms earn money through selling the scoring to partners providing loans, such as banks or microfinance institutions. They may share the credit risk with the lenders. Expenses are mostly constituted of staff and IT. Costs could include the cost of access to databases.

Competitive Advantages
Competitive advantage can be developed through the nature of and the method to capture data points, and the performance of the algorithms. It could be a challenge to maintain competitive advantage based on the algorithms, as many companies develop highly efficient artificial intelligence algorithms, adaptable across industries. While the algorithms are at risk of being commoditized, even the most sophisticated algorithm is not worth much without data. Therefore, the key to maintaining advantage may stem from leveraging a first-mover position to build a proprietary and rich database.

Drivers
The rise of internet, mobile phone and mobile money uses provides data to be analyzed by credit scoring companies. Banks and telecom operators alike will increasingly use new credit scoring methods to provide loans – banks to improve their risk assessment and reduce their cost, and telecom companies to learn the quick way how to lend to their customers. Some banks may decide to develop their scoring methodology in-house. This is the case of Goldman Sachs, which in October 2016 launched Marcus, its online lending platform for unsecured consumer loans. Others will partner with institutions that already have a credit scoring technology. This is the case of J.P. Morgan, which partnered with the OnDeck platform for its business loans under $250,000.

4.5.3. Other Pure Technology Providers

We present below an overview of additional emerging business models to watch.

Mobile Banking Software
In a context where digitalization of services is key to business expansion, some companies provide tailored solutions for banks and institutions willing to reach their customers through internet or through their mobile phone. In a sense, they provide solutions for traditional banks and to financial institutions to become direct banks.

Compliance/Regulation Analytics
With the rise of payment channels within our economy, regulators’ rules to prevent wrongdoings are not necessarily adapted to today’s technologies. RegTech companies can, however, bring innovative solutions for regulation monitoring. Cardabel is an example of a startup that developed a machine learning solution to detect known and unknown types of inappropriate trades in capital markets. It sells its technology to global banks that are willing to enforce stricter controls after tighter regulation in this domain.

Sysnet Global Solutions provides solutions for payment processing players, in terms of cybersecurity and compliance, that help them reduce risk. Sysnet works with organizations of all types and size to help them understand where the real risk lies within their business, and it provides a range of solutions that help address that risk.

Blockchain Marketplaces
Leading banks are making considerable investments in marketplaces built on distributed ledger technology, with the aspiration to ultimately make global financial transactions instantaneous and reduce their cost dramatically.

For example, R3 is a consortium of 43 leading banks, among them Goldman Sachs, Credit Suisse and Morgan Stanley. It is working on how to execute business processes through protocols built on a large-scale blockchain platform for the banking system. Other areas of focus include distributed ledger interoperability, privacy, identity and scalability. R3 is conducting the largest tests to date, among them the trading of debt instruments, financial assets, commercial papers, etc. It announced in 2016 a successful test for trading government debt using blockchain technology.
CASE STUDY 15: SQUARE

Jack Dorsey (founder of Twitter) and Jim McKelvey engineered Square in 2009. It was officially launched in October 2010 and had 100,000 activated accounts before the end of that year.

At first, Square was only a payment processing company. It provided small shops and enterprises in the United States with a $10 bank card reader – while traditional card readers cost $500 – and a free Square Reader app. Its customers then plug the reader into one of their devices (any computer, smartphone or tablet) and they are able to receive payments from their own customers. These customers have to sign using the touch screen of the device and can enter their email address to receive a receipt.

SMEs that could not afford traditional card readers no longer need to accept only cash or to process and record transactions on paper. They can link any bank account to receive the payments, usually within one or two days. Square applies a 2.75% fee for swiped transactions and a 3.5% + 15 cents fee for keyed-in transactions.

Following the success of this first product, Square largely diversified its product portfolio. It now has a Square Market tool for selling online, a Square Wallet and Square Cash for keeping and sending money between devices, a gift cards issuance option, a dashboard that allows monitoring revenues or managing employees, a payroll and appointments management application, as well as a delivery service for restaurants through its service called Caviar.

The company also launched Square Capital, which provides cash advances to its SME customers, with interest ranging from 10 to 16%. A typical advance would typically be paid as a percentage of each sale’s transaction (usually 10%) directly withheld by Square as sales are processed through the Square card reader.

In 2015, Square announced it had more than 2 million merchants using its system, processing $30 billion annually. In the same year, Square Capital issued $400 million in cash advances to about 40,000 merchants. It projects to disburse $600 million of loans in 2016.

It was nevertheless reported that Square is still not profitable and lost $37.1 million in the fourth quarter of 2015. Some argue that it is due to new products and employees being constantly added as it tries to expand rapidly in the US SME market. However, a Fortune article says that “internal e-mails show that gross margins on transactions – amount of profit left after paying card processors, payment networks and other intermediaries – are a relatively healthy 34%.”

The company priced its IPO in 2015 at $9 per share, giving it a $2.9 billion valuation.

In addition, Digital Asset Holdings is developing a blockchain platform for financial institutions to settle digital currency trades as well as digitized versions of financial assets. Digital Asset Holdings recently purchased Blockstack, a company that offers adapted blockchain services, and Hyperledger, which developed a distributed ledger allowing for real-time settlements and clearing of interbank transactions. Recently, the Australian Stock Exchange contracted Digital Assets Holdings to replace its trading platforms by 2017, the first phase regarding the primary market to be completed in 2016.
Blockchain-Based Business Processes

International banks are also testing blockchain solutions to replace their own internal processes. They work on private distributed ledgers, where only one party (the firm itself) has the power of confirming the trades. The main advantage of such systems is to increase efficiency by, for instance, automating trades and controls with smart contracts or smart processes. To implement these projects, most firms recruit their own technology teams, but some companies provide outsourced solutions.

For example, Chain helps companies build financial products around blockchain technology. It provides both market-level solutions (it has partnered with Nasdaq, Citi, etc.) and enterprise-level platforms. It has, for example, provided Gyft, an online gift cards solution provider for retailers, to be able to offer its product to the SME market, which was untapped before due to the high costs of issuing gift cards for these small players. It recently announced a partnership with Visa.

Secure Identification

A number of companies are leveraging the immutable nature of blockchain ledgers to revolutionize the identification processes requested by banks and central banks for know-your-customer purposes. For example, ShoCard seeks to provide a digital identification service secured through blockchain. Individuals upload through ShoCard a crypted version of their identification details (name, birth date, signature) certified by an independent third party. Owners of the information own a private key, which enables them to generate a public key giving one-time access to the data to whomever they need to prove their identity to. As the crypted information is on the blockchain, it cannot be changed. ShoCard can have many applications, and it initially aims at substituting 3D-secure online payments.
5. ENABLERS

Trends and business models are driven at a more fundamental level by enablers, such as the adoption of internet, mobile phone, big data technologies, regulation... For example, it is quite obvious that the development of mobile money, which in turn enables disruptors such as mobile network operators to enter the financial services sector, is fundamentally made possible by the wide adoption of mobile phones and the internet. Enablers, and in particular regulation, can play a positive role, but also slow and prevent evolution.

We present below five key enablers: big data and artificial intelligence, biometry, mobile phone, internet and regulation.

5.1. Big Data and Artificial Intelligence

Big data analysis is the analysis of vast amounts of unstructured data. Such data can include social media activity, mobile phone and mobile money activity, health data from personal health trackers, GPS data, etc. Artificial intelligence, or AI, uses simulated neural networks to build models that can learn and make predictions, particularly suited to big data analysis. These models are at the heart of Google DeepMind’s breakthrough, achieved through the 2016 victory of AlphaGo over Lee Sedol, Go champion.

In the financial sector, big data analysis can, for example, help create credit profiles or price insurance without human intervention. The lack of publicly available data can be a barrier to the rapid development of such approaches in Africa. For example, one of the largest pools of data is owned by mobile network operators, which have an incentive to use the information for themselves as opposed to sharing it. In addition, social media – a large source of data in developed countries – is still fairly undeveloped in Africa. Facebook, for example, had a penetration rate of only 12% in 2015 in the continent.

5.2. Biometry

Biometry is essential to provide an inexpensive, reliable and less-prone-to-hacking authentication system, thus enabling fintech companies to comply with know-your-customer and anti-money-laundering regulations and streamline transactions. Several initiatives use fingerprint (Apple), iris, face (Facebook, Google), voice and, possible in the future, even DNA. They all rely on cheap sensors embedded in mobile phones and/or devices that can be connected to computers or mobile phones. They can be used through a network of agents to identify the person behind any transaction in that agent network and can be a substitute or a complement to national IDs in countries where these are not fully secured.

Biometry can help address the concerns of regulators regarding KYC and ALM related to digital currencies, therefore accelerating the adoption of digital transactions, including those executed through blockchain platforms.

India is leading the path with an extensive biometry project, Aadhar, which now holds the biometric data of 1 billion people. The project is initiated by Morpho, a Safran company, in coordination with the Unique Identification Authority of India. Indians can now link their ration cards or their bank account to their Aadhar data.
5.3. Mobile

The spread of mobile enables the distribution of dematerialized services that could not be offered before.

Cell phone penetration in Africa grew exponentially and is now very high. It increased from 2% in 2002 (USA was 64%) to 21% in 2006, to 77% in 2014 (USA is at 111%).

Mobile money penetration is still low in Africa. In 2014, we calculated that on average 6% of Africans use their cell phone to make or receive payment. But the same measure stands at 32% in Kenya. And mobile money’s penetration is accelerating in several countries, including in Ivory Coast, where we estimate mobile money penetration has increased from 12% to 64% from 2014 to 2016.

Exhibit 7  Mobile Phone Penetration in Africa and Beyond

Notes:
Sources: World Bank Indicators, AfricInvest calculations
The next wave of development is the penetration of smartphones. Adoption is accelerating with Chinese manufacturers selling $50 smartphones or featured phones (in between old-school phones and a smartphone). The GSMA calculates a 4% penetration of mobile broadband in Africa for 2011 and 19% in 2015, and forecasts 53% for 2020.

More statistics on mobile phone, mobile payment, mobile internet and smartphone penetration are presented in the annex.

5.4. Internet

Internet is considered by the UN as an essential utility as important as energy and running water. The spread of internet enables, among other things, the distribution of financial services, the collection of large amounts of data and the emergence of disruptors from the internet era.

In Africa, 23% of the population had access to internet in 2014, which is still very low. The spread of mobile is driving the growth in internet penetration, as 2G to 4G are becoming more prevalent.

Exhibit 8 Internet penetration in Africa and beyond

Innovative experiments to improve access to internet are ongoing. Those efforts are being led not by mobile network operators or governments, but by leading technology companies. Google operates as an internet service provider using balloons around the world in an effort to give high-speed internet access in remote locations. It also works on delivering ultrahigh-speed (5gbps) internet for big cities with Google Fiber. Facebook also has a project similar to Google's balloons using drones. It also spearheaded a free internet access initiative in India, Internet.org.

More statistics on internet and Facebook penetration are presented in the annex.

5.5. Regulation

We discuss below regulation for payment services on the one hand, and savings on the other hand. Regulation varies across countries, and it is impossible to discuss accurately regulation across all African countries in the present document. However, a number of high-level observations can be made, presented below.

In drafting regulation, regulators are concerned with two main issues: (i) customer funds protection and (ii) know-your-customer and anti-money-laundering processes.

To ensure protection of customer funds, mobile network operators are required to deposit them in risk-free assets usually through regulated intermediaries like banks.
This usually includes one or more of bank deposits, or securities issued by central governments.

To ensure adequate know-your-customer, in many countries regulators require mobile network operators to collect the same type of information as banks to open a mobile money account. For example, in Kenya, mobile network operators are required to collect the ID card – which includes a picture, signature and fingerprint – and proof of address. Mobile network operators’ failure to do so is now a serious offense and could lead to significant regulatory fines, as MTN experienced in Nigeria with a multibillion-dollar penalty for noncompliance with know-your-customer policies.

In most countries, payment services do not require a banking license. A simple payment service provider license is needed to offer an e-wallet, transfers and payments. This is the case in all of Africa – including Kenya and WAEMU, but also in Europe, for example. Exceptions include Nigeria and Northern Africa (except Tunisia), where a banking license is required even to offer payment services. This, for example, prevents mobile network operators in such countries from offering payment services to customers who don’t already have a bank account, severely slowing the spread of mobile money. Mobile money is actively used by only 1.2% of Nigerians, compared with 32.2% of Kenyans.

In most countries, financial services beyond small payments, and in particular savings, require a banking license or equivalent, effectively forcing mobile network operators to partner with banks or microfinance institutions.

Finally, the position of regulators on the interoperability of mobile phone numbers and of e-wallets will have a major impact on the sector, as greater interoperability will promote competition and challenge the dominance of mobile network operators.
Africa and the Global Fintech Revolution
While the trends, business models and enablers described earlier all apply to Africa, Africa’s path is and will continue to be distinct because the starting conditions are unique. For example, banking penetration is at a meager 17% on average, compared with more than 60% in developed countries. This leaves much more space for new entrants to disrupt the financial sector. Also, enablers are at levels of development different from the rest of the world. For instance, access to internet stands at only 23%, versus 85% in developed countries. This makes it difficult for business models or trends that depend on internet access to thrive.

In the following, we discuss the specificities of Africa’s path, first in the decade ahead, then taking a long-term perspective.

6.1. The Decade Ahead

We believe what will characterize Africa’s path in the decade ahead is the following:

- Mobile network operators will be the main African disruptors
- Winning and losing business models will differ in Africa from other parts of the world
- Dematerialization will be much more rapid and profound than in other parts of the world
- Despite the advance of electronic money, Africa will remain predominantly a cash economy
- Convergence will accelerate
- Africa will finally achieve universal electronic financial services

6.1.1. Mobile Network Operators are the Main African Disruptors

As explained above, in developed economies, disruptors include technology, social media and e-commerce companies, and to some extent mobile network operators.

The strategy most of these new entrants have in common is first to leverage their nonfinancial sector user base and distribution networks to offer payment services. Rapidly building a large payment service user base is key, as payment services are valuable only if many others use the same service. Indeed, one’s subscription to a payment service is worth something only if the recipients one would like to send money to, or the sender one needs to receive money from, is also connected to the payment service. This is the network effect, which explains why it is difficult to reach critical size, and why once it is done it creates a strong barrier to entry for newcomers. This strategy can be illustrated by the example of WeChat, which, on the back of a client base of 800 million active users for its messaging service in China, subsidized transactions on its WeChat Pay service to reach 300 million payment users in 2015. At the same time, it created WeChat Bank, which will offer credit and savings products to its payment users. This is a similar strategy that Google, Apple, Facebook and Amazon are pursuing by offering their own payment service.

Once adoption of payment services is high, the full range of financial services can then conveniently be offered on the back of the payment user base. Indeed, many additional financial services are offered efficiently only on the back of the payment services. For example, credit can be provided once the service provider has captured the cash flows of the borrowers who have used payment services, providing a basis for scoring and even collection. A typical illustration of this strategy is Square, which started only as a payment service provider, offering SMEs a simple and efficient way to accept credit cards. Rapidly, Square has been able to analyze the large flow of transactions executed through its devices to offer targeted credit and even collect debt service directly from the payments made by the customer to the SME on Square’s device.

In Africa, mobile network operators are currently at an advantage in applying the strategy above and acquiring mobile money users, compared with technology, social media and e-commerce companies. Indeed, they have much better access to clients than many of the other potential disruptors. Mobile phone penetration stands at 77% (2014), which gives mobile
network operators access to almost the entire African population. In contrast, internet penetration stands only at 23%, limiting client access for e-commerce and social media companies. Smartphone penetration stands only at 10%, limiting access to social media companies and technology companies like Apple, Samsung and Google.

**Exhibit 9  Penetration of mobile phone, internet and mobile Internet**

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<td>USA</td>
<td>Mobile internet subscribers (% Population)</td>
<td>Internet users (% Population)</td>
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**Notes:**
Sources: World Development Indicators, GSMA Intelligence, AfricInvest calculations
Values in 2014, except mobile internet subscribers, provided for 2015. Penetration of internet is less than penetration of mobile internet, which can be explained from the different reference dates (2014 and 2015).

This, however, is the current situation and it could change as in particular smartphone penetration is increasing rapidly, with Android dominating the market. However, Samsung's and Apple's market shares are limited. This could give Google through Android an advantage in the coming years.

**Exhibit 10  Smartphone penetration in Africa (% of population)**

**Notes:**
Sources: GSMA Intelligence, World Development Indicators, AfricInvest calculations
Smartphone penetration is about half of mobile internet penetration, which may stem from users owning two SIMs per phone.
This does not mean that transforming mobile phone users into mobile money users is easy though. Indeed, while in 2014 Kenya posted 32% of mobile money penetration, mobile money penetration in Africa stood at a meager 6% on average. This is because of the difficulty to achieve scale as explained above. It requires a costly and sustained investment and a strong sales organization, as WeChat had. Safaricom succeeded in achieving scale with M-Pesa because of its strong commitment, but also because it was largely dominant in the mobile phone market, with about 70% market share. In other regions, such as francophone West Africa, mobile network operators such as Orange and MTN tried about 10 years ago to promote mobile money and failed.

But this is now changing with mobile network operators again taking the lead in promoting mobile money. Mobile network operators such as Orange and MTN have learned from past mistakes, and the success of M-Pesa. Orange Cote d'Ivoire spun off Orange Money from Orange the mobile network operator so that it could benefit from a dedicated team and budget. The results are tangible, as according to AfricInvest's estimates, mobile money penetration in Ivory Coast has increased from 12% to 64% from 2014 to 2016.

Furthermore, contributing to their ability to gain first-mover advantage in Africa, mobile network operators face less resistance from banks than in developed countries. Indeed, banking penetration and credit card penetration generally exceed 60% in developed countries. It makes it more difficult for mobile network operators to grow, as they need to compete with established payment and other financial services. It also means banks themselves have the means to offer digital financial services. Furthermore, banks can resist partnering with mobile network operators to offer financial services, effectively preventing mobile network operators from accessing their clients. In Africa, mobile network operators do not need to worry about competing with banks, they just need to reach out to a new market among their existing customer base, and banks are eager to partner with mobile network operators to gain access to their clients. As a result, we see Orange acquiring Groupama Bank in France because it could not build a partnership with banks, while in Kenya several banks are partnering with Safaricom and starting to acquire mobile virtual network licenses to increase their access.

6.1.2. Africa’s Winning and Losing Business Models

As conditions in Africa are very different from those in developed economies, otherwise successful business models will struggle in Africa, while others are particularly relevant on the continent.

It may seem obvious, but it is surprisingly often overlooked that business models that fundamentally rely on internet access, the availability of data available on the web, smartphones, specific platforms such as Android or iOS, the prevalence of social media, e-commerce, and the broad usage of digital currencies and transactions will have a harder time succeeding in Africa than in developing countries. On all these measures, Africa posts substantially lower penetration rates, and this has consequences. We can illustrate this through two examples.

- Despite the banking sector being fairly efficient in the USA, peer-to-peer lending has been successful mainly because of the existence of very well-functioning credit registries and the abundance of online data on borrowers, either through social media or connected devices. Credit registries are exhaustive and used by lenders, which means the incentive to maintain a good credit score is very high. Social media information through platforms such as Facebook is extremely rich, and can provide highly valuable information to assess creditworthiness. Other types of information could include bank statements, widely available in electronic form. As a result, peer-to-peer lenders leverage this wealth of data – including social media and bank statements with the approval of their clients – and report any default to credit bureaus. As a result, they are able to very accurately assess creditworthiness and effectively benefit from the borrower’s credit score as collateral. In contrast, credit registries in Africa are either nonexistent or dysfunctional. Facebook penetration stands at only 12%, and the medium is used by people who already have access to credit. Availability of bank statements is even scarcer, with banking penetration at a mere 17%. As a result of this lack of data, despite the large unmet demand for credit, peer-to-peer lending models are likely to struggle in Africa for some time.

- Financial management companies such as Mint (see description in the business models section) leverage their access to the transaction history of their customers to broker financial services relevant
to their clients. This model builds on the assumption that the digital financial flows captured by Mint are sufficiently representative of the broader financial life of their customers. But this is not the case in Africa, where most economic agents, including SMEs, still rely mostly on cash to transact.

In addition, scaling up in Africa is more difficult than in developed economies. Many technology disruptors build their success on a strategy of aggressive growth first, profits later. This can be a relevant strategy when, for example, the value brought to clients relies on a network effect, or when entry costs are high. This explains why many successful models first started in the largest markets like the USA or China. However, rapidly achieving scale is not easy in Africa because markets are fragmented and small (the country with the largest is Nigeria with about 180 million inhabitants, and the average is only 21 million), and within each economy, the addressable market is often small, because of the limited purchasing power, access to internet, etc.

However some models are particularly suited to Africa. Often, they will address a problem that is specific to Africa and particularly acute, while relying on platforms that are already prevalent. This can be illustrated with two examples.

- One of the better-known machine-to-machine (M2M) lending models in developed countries is the leasing of cars coupled with remote shutdown devices. However, this principle can be used to address more generally the problem of lack of enforceability of collateral in Africa. It typically takes six months to two years to repossess a car or land in case of a default. With M2M lending, it is now possible to remotely shut off almost any device in case of default, creating a very strong security.

- The Africa remittance market is also particularly inefficient, with a high number of intermediaries, difficulties for most banks to find correspondent banks, restrictions on capital flows, and consequently high transaction costs. New remittance models such as TransferWise or BitPesa, leveraging technology to match supply and demand or Bitcoin to create liquidity, could provide attractive solutions.

### 6.1.3. Dematerialization

Dematerialization will occur faster in Africa than in developed economies because incumbent banks are in a much weaker position vis-à-vis disruptors, and don’t have extensive branch networks yet. In the USA or Europe, for example, the vast majority of adults already have a bank account, which makes it more difficult for new entrants to acquire customers who have to be convinced to switch. In addition, European and American banks operate massive branch networks that they cannot close overnight, partly out of inertia but also for social reasons. In contrast, with banking penetration of only 17% and a low-density branch network, new entrants able to cost-effectively reach remote and low-volume customers can acquire these clients without resistance.

Mobile network operators will pioneer the dematerialization of African financial services. The reasons have already been discussed in the section above elaborating on why mobile network operators are the main African disruptors. These reasons include mobile network operators’ unparalleled access to clients’ data and phone numbers.

A number of fintech business models will also contribute to dematerialization, but at a smaller scale. These include payment companies like Zoona that offer financial services through agents instead of branches, and M2M lending companies such as Mobisol, which could seize a substantial share of the leasing market.

Banks will have to adjust to be able to reach their existing clients and possible new ones through dematerialized channels. They may want to accelerate their transformation to direct banking, using internet and agent networks. They may want to refocus on segments, such as corporate banking, where their model is already to a large extent branchless, and where they maintain competitive advantage because of their command of complex and diversified products. To reach the retail segment, they may consider partnering with mobile network operators, or acquiring virtual mobile network operator licenses. However, banks need to realize that because of their privileged access to clients, mobile network operators wield tremendous power in negotiating any partnership, be it service agreements or joint ventures. In the negotiations, banks will therefore need to leverage their competitive advantages, including their license, knowledge of regulation, experience with a full range of financial services, the ability to provide personalized sophisticated service in corporate segments, existing cross-border operations, etc.
6.1.4. Cash-Based Economy

As mobile money becomes more broadly adopted in Africa, one can legitimately ask if this could lead to a cashless economy.

A cost analysis conducted by Genesis Analytics shows that even mobile phone payments remain expensive for small transactions. Indeed, taking the example of M-Pesa, while paying rent or remitting funds to family typically costs less than 0.5% of the amount transferred, paying for groceries usually costs 4% of the value of the goods. This is substantially above the 2% that is commonly considered as the maximum acceptable payment fee.

In addition, many merchants will still be reluctant to accept digital payments, as they are easily tracked by tax authorities.

For the reasons above, cash is likely to continue to prevail in daily transactions. This is not necessarily specific to Africa, but only reflects general barriers that explain why only very few countries in the world are approaching a cashless economy, despite alternative payment methods such as debit cards and wire transfers having been available for a long time.

6.1.5. Convergence

Globally and including in Africa, insurance and banking are already converging. All major banks now offer bank-insurance products, and large insurers have their bank affiliate. This trend will certainly continue, trickling down to smaller banks and insurance companies.

But now that mobile network operators, social media, technology companies, e-retailers and fintechs are entering the financial sector, should we also expect convergence between banks, insurance and these new agents? We believe convergence is likely because of regulation. Indeed, while in most countries, including Africa, payment services for small amounts can be provided by all these players with a simple payment service provider license, any service involving larger payments or taking deposits requires a banking or microfinance license. As a result, as new entrants build on payment services to broaden their offering, they need to either acquire a license or partner with a licensed entity.

Convergence will take many different forms. Giant powerful companies may want to create their own bank, as WeChat did with WeBank. Others may acquire existing banks, like Orange with Groupama. Banks may acquire MVNO licenses, as Equity Bank did with Equitel. Mobile network operators and banks may enter in joint ventures or contractual partnerships, as is the case between Safaricom and CBA. Traditional or direct banks may integrate products from fintech companies in their own product line, like N26 did with TransferWise. Banks will partner with e-retailers to distribute loans, as Wells Fargo did with Amazon to distribute student loans. Mobile network operators may consider coming closer to e-retailers as well, like MTN, which acquired 33% of Jumia.

The share of value between the partners will vary across partnerships, but in most cases will favor the party that faces clients and their data. This was evidenced this year by the example of Safaricom, which entered into a partnership with KBC to distribute an M-Shwari-like product as soon as the exclusivity period with CBA ended. Safaricom had options to choose partners among many banks, while banks often have a limited number of mobile network operator partners, reflecting the high concentration of the telecom sector.

6.1.6. Universal Access

The trends above now make profitable serving the huge unserved African population. Dematerialization led by mobile network operators and the emergence of new business models are already resulting in lower cost and risk to provide financial services to remote, low-density locations and clients who make small transactions. Most of these models are already proven, in particular through Kenya’s successes. Though barriers such as market fragmentation and regulation will slow it down, the process of bringing universal access to financial services has begun.

As a consequence, in the coming years, we expect that access to financial services should at least triple to about 50% – the banking penetration in other emerging markets – creating a new market of 350 million additional customers. Financial services penetration should eventually catch up to the mobile phone penetration rate, which currently stands at 77%.
6.2. In the Longer Term

One can only speculate about prospects beyond 10 years. However, a number of developments can already be anticipated.

One major change is that as universal access is achieved, and Africans are connected through internet, smartphones and possibly the internet of things, data would finally be available and big data models would prevail. This would, for instance, give greater advantage to scoring models and peer-to-peer lending.

A very important factor will be the extent of interoperability of systems, across banking, telecom and internet. This would, of course, increase the amount of data available and hence reinforce the first point above. But it would also lower transaction costs – including through increasing competition, making a cashless economy possible, and turning many business models more profitable than they were (for example, loans and insurance policies could be much smaller and still achieve scale, making them finally affordable to even the poorest).

As internet and smartphones prevail, we should also expect a stronger role from the tech giants and social media. Indeed, it is quite likely that companies like Google, WeChat or Facebook will then have a reach even superior to that of mobile network operators today, putting them in a position to challenge them.

The main unknown relates to the development of blockchain and distributed ledgers. If the regulatory and cooperation barriers can be overcome and blockchain provides the infrastructure for financial transactions, we should expect even more profound changes. Indeed, in this case, one should picture a world where the combination of generalized distributed ledgers and smart contracts, biometry and to some extent cryptocurrencies could create a world of fully trustable transactions and full interoperability, making it possible for transactions to be executed directly between the two ends of the transaction, without a broker, and hence without little delay and transaction costs. Enormous amounts of data would be available as transactions become cashless and hence financial transactions trackable, and all sorts of information becomes available through ubiquitous internet, smartphones and other connected objects. Consequences could include a further deepening of disintermediation, as peer-to-peer lending models would become extremely competitive, and transaction costs would virtually disappear. It would also prompt the emergence of new powerful entrants in the market. One of them is the providers of access to distributed ledgers, the likes of Coinbase or Circle. As gatekeepers to the blockchain, they would gain privileged access to clients and data, hence positioning themselves to capture a large share of the value in the industry.
6.3. Implications for African Financial Institutions and Disruptors

To seize the universal access opportunity of the African financial sector, traditional banks and insurance companies require a meaningful transformation. They must build new capabilities, spanning strategy, governance, IT and operations. They also need to enter into new business partnerships, as they will not be able to develop all these capabilities in-house. Moreover, deployment in some cases should be done early to gain first-mover advantage.

Conversely, disruptors such as mobile phone operators and technology companies need to enter in partnerships with traditional banks and insurance companies for both economic and regulatory reasons. Indeed, they are often new to the financial sector and are sometimes new to Africa. In many cases, for instance, to be allowed to take deposits, they are also required by regulators to partner with traditional financial service providers.

There is no doubt that the growth of the African financial sector is accelerating, creating considerable value to customers and financial institutions. But how will the value be shared? In particular, how much of the value will be shared between traditional banks, insurance companies, disruptors and fintech companies will depend on the individual capacity of such companies to leverage their competitive advantages, anticipate the changes, transform themselves, navigate the changing business and regulatory environment, and structure the most conducive partnerships.
Africa and the Global Fintech Revolution
STATISTICAL ANNEX

METHODOLOGY

CALCULATION OF PENETRATION RATIOS

For this research, we built a proprietary database of relevant historical penetration rates, spanning industrialized and developing countries. We also used a single definition across all ratios to facilitate comparison.

In all the ratios, we divide the total number of accounts (including active accounts and multiple accounts) and total population (not population over 15 or adult population). Detailed definitions for each ratio are indicated below.

Statistics on multiple accounts per user, active accounts over total accounts and percentage population over 15 were also collected where available, and taken into account in the analysis of the ratios presented in the report. As it is useful to bear in mind orders of magnitude of these ratios as one reads through the statistics of this report, we indicate here some of them as of 2014. The ratio of the population over 15 is on average around 50% in Africa. The ratio of total mobile payment accounts to active users in Kenya is two. And the average number of SIM cards owned by a user in Africa is two.

STATISTICS FOR AFRICA AND REGIONS

Data for Africa include 42 out of 54 African countries, representing 85% of the population. Ratios are calculated by first aggregating numerators and denominators. The regions are defined as follows:

**EAC**: East Africa Community; comprises Burundi, Kenya, Rwanda, Tanzania and Uganda.


**ECOWAS**: Economic Community of West African States; comprises Benin, Burkina Faso, Cabo Verde, Cote d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

**SADC**: Southern Africa Development Community; comprises Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe.

**North Africa**: Comprises Morocco, Algeria, Tunisia, Libya and Egypt.
**POPULATION**

**Source:** World Bank Indicators

**Definition:** Total population, accounting for all residents regardless of legal status or citizenship – except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. The values shown are midyear estimates.

**POPULATION IN 2014**

**AFRICA POPULATION BREAKDOWN IN 2014**
FINANCIAL INSTITUTION PENETRATION

**Source:** World Bank Indicators, AfricInvest calculations

**Definition:** The percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution, as a percentage of total population.

**FINANCIAL INSTITUTION PENETRATION IN AFRICA AND BEYOND**

**FINANCIAL INSTITUTION PENETRATION IN AFRICA BY REGION**
DEBIT CARD PENETRATION

Source: World Bank Indicators, AfricInvest calculations

Definition: The percentage of respondents who report having a debit card, over the total population.
MOBILE SUBSCRIBERS

Source: World Bank Indicators, AfricInvest calculations

Definition: Mobile cellular telephone subscriptions divided by total population. Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provides access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e., that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.

MOBILE PHONE PENETRATION IN AFRICA AND BEYOND

MOBILE PHONE PENETRATION IN AFRICA BY REGION
MOBILE PAYMENT ACCOUNTS

Source: World Bank Indicators, AfricInvest calculations

Definition: Mobile payment accounts over total population. It derives from the percentage of respondents who report personally using a mobile phone to pay bills or to send or receive money through a GSM association, mobile money for the unbanked service in the past 12 months, or receiving wages, government transfers or payments for agricultural products through a mobile phone in the past 12 months.

PENETRATION OF MOBILE PAYMENT ACCOUNTS IN AFRICA AND BEYOND IN 2014

Note:
Data were not available for China, United-Kingdom and the United States.

PENETRATION OF MOBILE PAYMENT ACCOUNTS IN AFRICA BY REGION IN 2014
INTERNET USERS

Source: World Bank Indicators, AfricInvest calculations

Definition: The number of internet users over total population. Internet users are individuals who have used the internet (from any location) in the last 12 months. Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV, etc.
MOBILE INTERNET SUBSCRIBERS

Source: GSM Association, AfricInvest calculations

Definition: The number of mobile internet users over total population. Mobile internet services are defined as any activity that consumes mobile data (i.e., excluding SMS, MMS and cellular voice calls). Mobile internet subscribers represent the subscribers who have actually used mobile internet services, rather than simply having the technology to do so.

MOBILE INTERNET PENETRATION IN AFRICA AND BEYOND IN 2015

MOBILE INTERNET PENETRATION IN AFRICA BY REGION IN 2015

MOBILE INTERNET PENETRATION IN AFRICA AND BEYOND 2015

MOBILE INTERNET PENETRATION IN AFRICA BY REGION IN 2015
SMARTPHONES IN CIRCULATION

Source: GSM Association, AfricInvest calculations

SMARTPHONE PENETRATION IN AFRICA BY REGION

EAC  ECCAS  ECOWAS  SADC  Smartphone penetration in Africa (% population)
FACEBOOK USERS

Source: Internet World Stats website, AfricInvest calculations

Definition: The number of Facebook users divided by the total population. The Facebook subscriber data is as of Nov. 15, 2015, the latest available from Facebook.