KPMG

FinTech in Nigeria

Understanding the value proposition

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Contents

Foreword

The buzz around FinTech has gained significant attention from traditional financial institutions, start-ups, venture capitalists and regulators. Banks and regulators are hard-pressed to revisit their operating models and regulations respectively, to create a conducive environment for collaboration and dynamism among participants in the FinTech ecosystem. In Q1 2016, two Chinese FinTechs; Lu.com and JD Finance raised $1.2 billion and $1 billion respectively, in record Asian deals. Lu.com is a wealth management platform while JD Finance is redefining the lending space in China.

The past three years have been formative for the Nigerian FinTech sector and saw the emergence of numerous FinTech start-ups, incubators and investments. In preparing for the KPMG FinTech Summit, we engaged 56 FinTechs and 7 Incubators/Accelerators in Nigeria. Investment in Nigerian FinTechs over the last 2 years exceeded the $200 million mark. Indeed, Nigeria, Egypt and South Africa were the top three recipients of FinTech investments in Africa over the last 2 years.

Our prognosis is that the FinTech opportunities in Nigeria are significant and could potentially redefine the financial services landscape over the next five years. The fast growing young population (115 million people below the age of 35), exponential growth of mobile phone lines (estimated at 150 million as at July 2016), huge financial inclusion potential (less than 50 million people with bank accounts in a population of 170 million people, based on Bank Verification Number (BVN) data) and relatively strong talent pool (buoyed by Nigerians in diaspora) are pertinent indicators of the FinTech opportunity.

And the race has begun. FinTechs focused on payments were the forerunners. In the next wave, we expect to see more traction on lending, financial inclusion, blockchain and digital banks. WealthTech and InsurTech are already emerging and we expect these FinTechs to question the status quo in the wealth management and insurance sectors.

However, there are key challenges that need immediate attention for the budding FinTech ecosystem in Nigeria to gain traction and potentially locate Nigeria on the global map as a FinTech hub. Our comparative analysis of Nigeria against global FinTech hubs (US, UK, Hong Kong, Australia, Israel and Singapore) revealed a pressing need for government incentives and regulatory support to strengthen the ecosystem. We also distilled the need for more incubators and accelerators to aid the nurturing process and ultimately help budding FinTechs build capabilities and structures that will attract funding.

The right mix of technical skills, capital investments, government incentives, regulatory framework and an entrepreneurial and innovative mind-set is the catalyst needed to establish FinTech as a key enabler of financial services in Nigeria.

Building a strong FinTech ecosystem where startup firms engage in external partnerships with financial institutions, universities, research institutions, technology experts and government institutions is expected to facilitate growth and innovation in the FinTech sector.

Finally, this report seeks to highlight opportunities and leading practices, and serve as a guide to establish Nigeria's position in the global FinTech landscape.

We hope that you enjoy reading our publication and as always, we look forward to your feedback/suggestions.

Boye Ademola
Partner & Head, FS Tech
KPMG in Nigeria

Introduction

This report assesses the rise of FinTech (financial services technology) as a new chapter in the Nigerian Financial Services (FS) sector.

One of the core objectives of this report is to throw light on the emergence of FinTech tools across new frontiers such as next generation payments, P2P lending, security and biometrics, Bank in a Box, blockchain, Robo-advisory and Financial Inclusion in Nigeria.

Alongside, we aim to capture a glimpse of the FinTech evolution in Nigeria and its adoption of the "fourth industrial revolution" by Nigeria's financial and technology hubs. For this, we have taken an approach that learns from the best-in-class FinTech ecosystems of mature markets of the United Kingdom (UK), the United States (US), Singapore, Israel, Australia and Hong Kong.

We sincerely hope that the insights provided through this report prove to be useful for all stakeholders in the FinTech ecosystem.

Context

This publication, by KPMG in Nigeria, is developed with a vision to chart the course for the country to become a key FinTech hub through global benchmarking and collaboration. The focus of our research is the Nigerian FinTech landscape with a view to identifying key growth drivers and assessing their maturity vis-à-vis mature markets globally.

We subsequently recommend actions for stakeholders in the ecosystem that we believe will enable Nigeria establish itself as a globally recognized FinTech hub.

Content

The content of this publication is structured to address the following key questions:

- What are the growth drivers and benchmarks set by key global FinTech ecosystems and where does Nigeria stand in comparison?
- What are the prerequisites and prerogatives for different stakeholders (financial institutions, start-ups, government and regulators) to establish a successful FinTech ecosystem in Nigeria?
- Which new frontiers are enabling growth and innovation for incumbent financial institutions?

Approach

The following three stage approach has been taken by the research team to analyse the Nigerian FinTech market.

- Studying the Nigerian market stakeholders: Leveraged KPMG's extensive client base and sector expertise to analyse stakeholders in the Nigerian FinTech ecosystem.
- Assessing the Nigerian landscape from a global perspective: Leveraged KPMG's extensive research capabilities and global network to extract insights from global FinTech hubs and structured them to benchmark the Nigerian ecosystem. Based on findings, detailed recommendations were articulated for each stakeholder group.
- Key theme identification: Identified key FinTech themes which are shaping the industry and analysed each theme to understand leading practices that can be replicated in Nigeria.

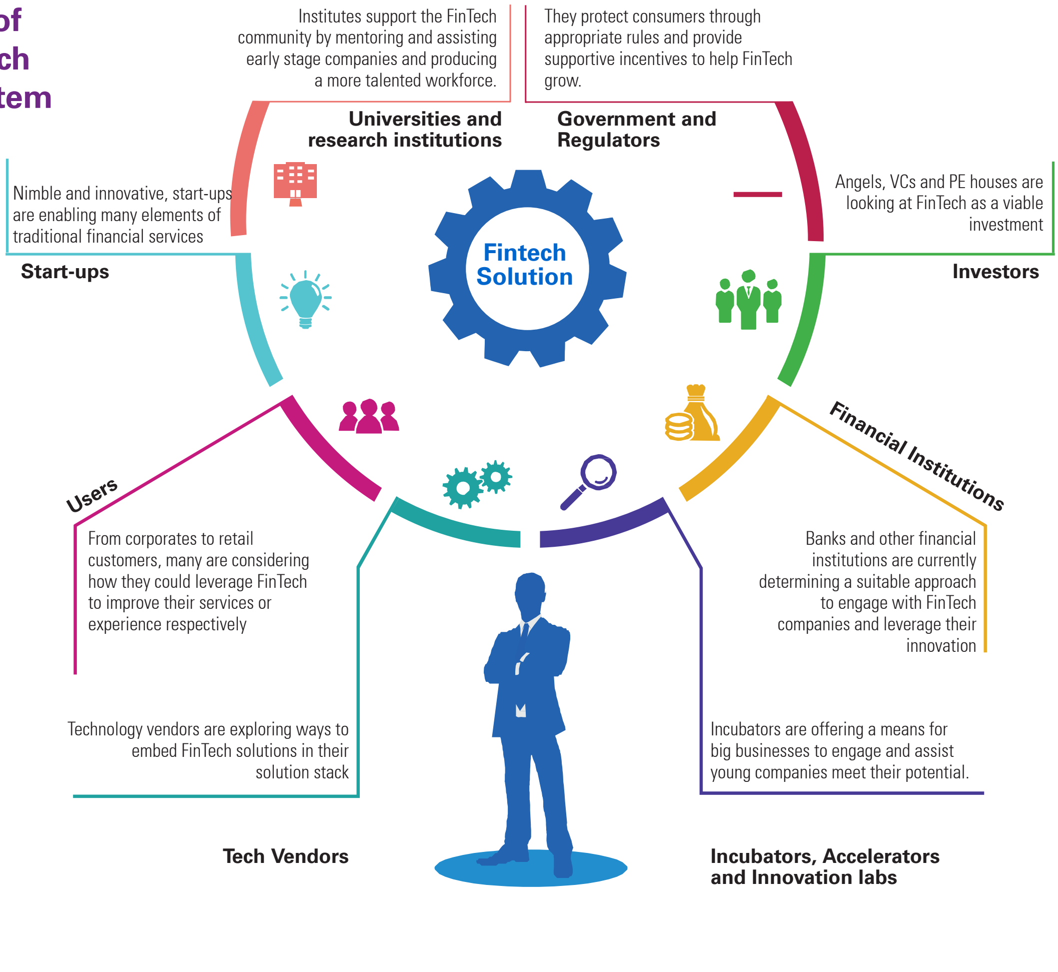
Fintech ecosystem:

A collaborative network

Innovation and technology have brought about a radical change in traditional financial services. The world has seen the emergence of more than 12,000 start-ups and massive global investment of USD 19 billion in 2015[1] in the FinTech space. These innovators are utilising technology tools to bring in seamless and innovative financial services for the banked and unbanked population. The global FinTech software and services sector is expected to boom as a USD 45 billion[2] opportunity by 2020, growing at a compounded annual growth rate of 7.1 per cent[3].

FinTech may be defined as technology-based businesses that compete against, enable and/or collaborate with financial institutions[4]. FinTech start-up firms engage in external partnerships with financial institutions, universities and research institutions, technology experts, government agencies, industry consultants and associations. Through these partnerships, they create a highly integrated ecosystem that brings with it the expertise, experience, technology and facilities of all the entities together. Growth and market success of any FinTech hub originate from an integrated ecosystem. A successful FinTech ecosystem is where all the market participants connect, engage and share ideas across vibrant communities and networks, as well as identify and convert opportunities into business. In the current age of technology driven financial services, no market participant can afford to operate in silos.

Pillars of a FinTech ecosystem



1. The Pulse of Fintech, KPMG, 2016.
2. India emerging a hub for Fintech start-ups, Business Standard, http://www. business-standard.com/article/ companies/india-emerging-a-hub-for- Fintech-start- ups-116051700397_1.html, 17 May 2016.
3. NASSCOM
4. KPMG website, http://portal.ema.kworld.kpmg.com/Adv/GM/Pages/MarketIssues/Fintech.aspx, accessed on 17 May 2016.

Fintech in Nigeria:

New techno banking realm

Nigeria is transitioning into a dynamic ecosystem offering FinTech start-ups a platform to succeed and potentially grow into multi-million dollar businesses.

The Nigerian economy which is predominantly cash driven has been responding well to the FinTech opportunity, partly demonstrated by the exponential growth in mobile money operations from an average monthly transaction value of US$5 million in 2011 to US$142.8 million in 2016.[1] The growing FinTech penetration can be attributed to a surge in e-commerce, and smartphone penetration.

Nigeria's growth wave is still far behind global counterparts, but it is stacked well, largely due to a strong talent pipeline of easy-to-hire and inexpensive tech workforce.

From payments to lending to insurance, FinTech services are redefining the way businesses and consumers carry out routine transactions. The increasing adoption of these trends is positioning Nigeria as an attractive market worldwide.

The following sections elaborate on key components of Nigeria's FinTech ecosystem, with emphasis on key growth drivers, emerging strengths and challenges.

"Nigeria's growth wave is still far behind global counterparts, but it is stacked well, largely due to a strong talent pipeline of easy-to-hire and inexpensive tech workforce."

Ecosystem coverage of the Nigerian FinTech sector

Government

The government plays a significant role in the success of FinTech and steps have been taken by governments across Africa through funding and infrastructure support to enhance the growth of a digital economy.

A number of programs have been initiated by the Government in Nigeria to drive the development and growth of technology.

- In 2014, The Federal Government (FG) announced plans to establish six innovation hubs across the country including Lagos and Abuja.
- The Lagos State Government (LASG) in conjunction with other private investors have also made efforts to create a community of tech start-ups in Yaba with uncapped internet and electricity access to support growth.
- The Stanford Graduate Business School and the Stanford Seed Transformation Network (STN) have expressed their readiness to support the Lagos State Government's efforts to actualise its objective of establishing a hub for tech entrepreneurs. The ultimate goal is to transform Yaba, Lagos into the home for many tech start-ups similar to Silicon Valley. Currently, more than 20 tech start-ups now have offices in Yaba including Paga, Konga, Jumia and Andela etc.
- As part of its initiatives to make Lagos a technology frontier in Africa and to develop skillls for future technology opportunities, the Government of Lagos State (through the Ministry of Education and in partnership with the Ministry of Science and Technology) launched a computer programming initiative tagged "Code Lagos" in November 2016. This initiative is expected to develop a coding curriculum and also facilitate the training of over 1 million people (at primary, secondary and tertiary institutions) on how to code by 2019.
- Kaduna Start-up initiated by the Kaduna State Government, the Bank of Industry and Kaduna Business School, is a networking event for entrepreneurs, tech stakeholders, innovators and regulators in Kaduna (Northern Nigeria).

[1] Central Bank of Nigeria (CBN) Statistical bulletin (figures have been translated using exchange rate as at 21 October 2016)

Regulators

Whilst there is no specific regulatory framework for FinTechs, a number of regulatory policies govern some areas where FinTechs play such as payment services. Over the last few years, the Central Bank of Nigeria has heavily promoted the evolution of a cashless economy which has led to the licensing of bank and non-bank mobile payment operators to provide mobile payment services under predominantly bank-led guidelines. This has led to rapid development in the FinTech payment space.

The payments system is governed by a number of regulations including:

- The Payments System Management Bill drafted in 2009, governs payments, clearing and settlement systems in Nigeria and seeks to establish a legal framework for management, administration, operation, regulation and supervision.
- The Electronic Transaction Bill seeks to promote e-commerce in Nigeria by eliminating legal barriers and harmonizing legal rules on e-payments in the country.
- The Mobile Payment Regulatory Framework which specifies requirements for various participants in the mobile payments services industry in Nigeria.
- Guidelines on international mobile money remittances in Nigeria.

Crowdfunding has also come under the regulatory spotlight recently; in August 2016, the Securities and Exchange Commission (SEC) disclosed that lack of rules and certain inhibiting provisions in the Companies and Allied Matters Act (CAMA) and Investment and Securities Act (ISA) currently make crowdfunding a challenge in the Nigerian environment.

Clearly, there are significant opportunities to develop the regulatory environment to support FinTech in Nigeria. Globally, regulators are trying to keep up with the rapidly evolving FinTech landscape and also actively initiating policies to support innovation through FinTech companies. For example:

- In the UK, Financial Conduct Authority (FCA) launched the "Project Innovate" initiative to help start-ups work with British financial regulators to launch innovative products in the market.
- The Securities and Future Commission (SFC) established the FinTech Contact Point in March 2016 to enhance communication with businesses involved in the development and application of financial technology in Hong Kong.
- In December 2015, Infocomm Development of Authority Singapore, in association with DBS Bank and Standard Chartered Bank, developed the first distributed ledger-based application to be used for invoice financing. This application is based on blockchain technology.
- In June 2016, the Monetary Authority of Singapore (MAS) signed an agreement with the Australian Securities and Investments Commission about a potential agreement to ensure growth of FinTech start-ups in both countries and increase cross-country collaboration between the two.
- The prime minister of India launched the 'Start-up India' initiative in January 2016.This program is intended to build a strong ecosystem for nurturing innovation and start-ups in the country.

"There are significant opportunities to develop the regulatory environment to support FinTech in Nigeria. Globally, regulators are also trying to keep up with the rapidly evolving FinTech landscape."

Major FinTech Deals in Africa

Players	Business Category	Country	Investment Period	Investor	Deal Value (USD'm)
Interswitch Limited	Payment switching and mobile payment	Nigeria	December 2010	Helios Investment Partners LLP; Adlevo Capital Managers, LLC	110.00
Fawry Banking & Payment Technology Services Ltd	e-billing	Egypt	November 2015	EFG-Hermes Private Equity, Helios Investment Partners LLP, Egyptian-American Enterprise Fund	100.00
Vanso International Corporation	Mobile payment	Nigeria	March 2016	Interswitch Limited	75.26
Fawry Banking & Payment Technology Services Ltd	e-billing	Egypt	July 2015	BSI Netherlands BV	20.89
Venture Garden Nigeria	Fintech holding company	Nigeria	September 2015	Convergence Partners Managemnet	20.00
Interswitch Limited	Payment switching and mobile payment	Nigeria	September 2011	International Finance Corporation	20.00
Zoona Transactions International Limited	Mobile money transactions	South Africa	April 2016	International Finance Corporation (IFC), Omidyar Network, Lundin Foundation, 4Di Capital, Quona Capital Manage-ment Limited	15.00
Pagatech Limited	Mobile payments	Nigeria	October 2015	Omidyar Network; Capricorn Investment Group LLC; Adlevo Capital Managers, LLC; Goodwell Investments BV; Alitheia Capital; JCS Investments Limited; Acumen Fund, Endowment ARM	13.00
Pagatech Limited	Mobile payments	Nigeria	June 2012	Omidyar Network; Capricorn Investment Group LLC; Adlevo Capital Managers, LLC; Goodwell Investments BV; Alitheia Capital; JCS Investments Limited; Acumen Fund, Endowment ARM	8.00
Pagatech Limited	Mobile payments	Nigeria	August 2013	Adlevo Capital Managers, LLC	2.00
Hepstar Financial Servic-es Limited	Digital insurance distribution	South Africa	February 2016	Amadeus Capital Partners	1.99
Zeepay Ghana Limited	Mobile money	Ghana	November 2015	N/A	0.20
Flutterwave	Payment switching	Nigeria	June 2016	Y Combinator	0.12
Flutterwave	Payment switching	Nigeria	May 2016	VC FinTech Accelerator	0.05
WizzPass	Manage and book visitor parking	South Africa	September 2016	Barclays Seeker Fund	N/A
Nomanini	Enterprise payment platform	South Africa	October 2015	Goodwell Investments BV, Alitheia Capital and JCS Investments Limited	N/A
WiGroup	Mobile money transactions	South Africa	August 2015	Investec Asset Management	N/A
Paynet Kenya Limited	Transaction processing solutions	Kenya	September 2014	Interswitch Limited	N/A
Kenswitch Limited	Payment Managent	Kenya	January 2010	Paynet Kenya Limited	N/A

Source: Capital IQ and press articles

"Nigeria is one of Africa's main FinTech investment destinations and has witnessed increasing deal activity over the last few years, with about 14 deals reported as at September 2016 compared to just 2 deals in 2010."

Investors

FinTech investment in Africa has increased significantly from US$198 million in 2014 to about US$800 million in 2016[1], as investors are increasingly attracted to the industry's potential to tap into Africa's huge unserved/underserved population.

Accordingly, Nigeria which is one of Africa's main FinTech investment destinations, has witnessed increasing deal activity over the last few years, with about 14 deals reported as at September 2016 compared to just 2 deals in 2010[2]. This has been driven by growing availability and adoption of innovative FinTech solutions.

Investments in Nigeria and Africa as a whole have been primarily focused on payment solutions as other FinTech segments such as lending, wealth management, etc. are in a relatively nascent stage.

Also, start-ups are increasingly accounting for a significant portion of FinTech investments, accounting for 30% of the total funding raised by African tech businesses in 2015[3]. Similarly, reported investments in start-ups in Nigeria have increased to US$49 million in 2015[4] compared to US$16 million in 2014[2].

VC/Angel investors have been early stage investors in FinTech businesses in Nigeria in line with global trends. However, Nigerian banks which previously invested in FinTech start-ups such as Interswitch and ValuCard are now predominantly consumers.

Start-ups

Evolution of start-ups is imperative for a successful FinTech ecosystem. The flourishing effect of FinTech start-up has been catalysed by an increasing demand for digital financial products by consumers, rampant rise of connected devices and support of venture capitalists.

While start-ups are redesigning the financial services processes with their high-end technological expertise, incumbent players are also following suit and investing heavily in creating new products of their own. The trend is increasingly shifting from start-ups seen majorly as disrupters to also being enablers of change. Hence, there is greater collaboration being seen and expected between different players of the ecosystem with the start-ups.

However, for FinTech start-ups to maintain their momentum, they need to demonstrate to regulatory bodies that they can benefit the society by putting forth ample evidence that they can be regulated and monitored sustainably.

1. Five Banking Innovations from Five Continents by Banking Reports dated February 2015
2. Capital IQ
3. Article on "Start-up investments Vary Widely Across Africa" by Miguel Heilbron dated March 2015
4. Article on "How African Tech Start-ups received US$185.7 million Investment in 2015" published by Disrupt Africa.

Technology vendors

Support from tech vendors is required for development of the FinTech ecosystem in the country. With complex technologies being used to disrupt traditional functions, start-ups need the backing of expert tech vendors in terms of infrastructure and skills. A few technology vendors are involved in developing financial technology propositions in the following focus areas.

Funding and incubation focus

Many Nigerian service firms have shown a growing focus on investment and incubation in the last year. This is strategically synchronized with increased investment in FinTechs. Example:

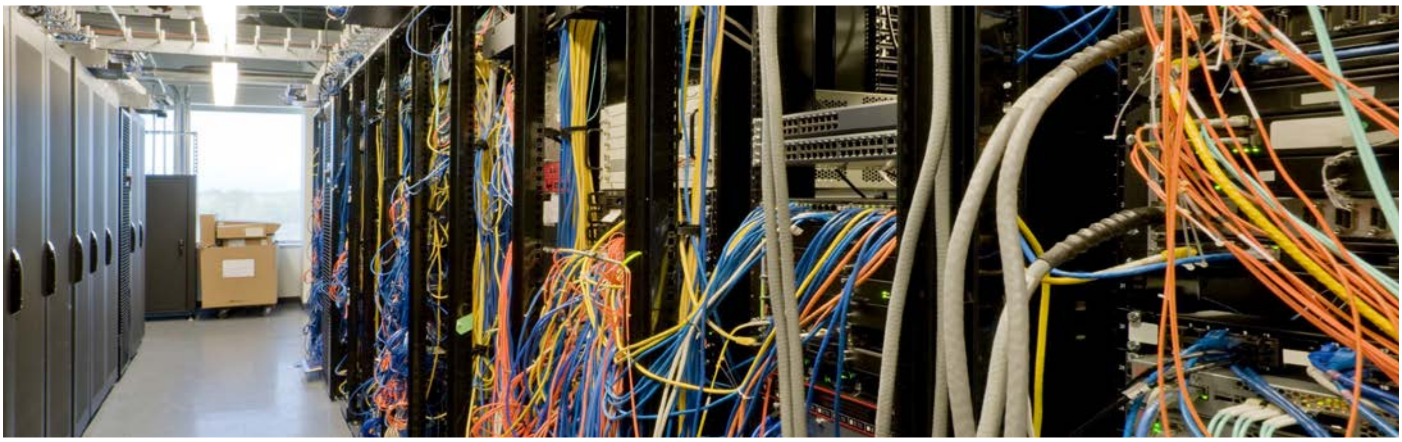
- Vanso International Corporation, a mobile payment Company attracted an USD75 million investment from Interswitch Limited in March 2016[1].
- Interswitch Limited, a payment switching and mobile payment company attracted USD110 million in December 2010 from Helios Investment Partners and Adlevo Capital Managers, LLC and USD20 million from International Finance Corporation in September 2011[1].
- IBM has opened an Innovation Centre in Lagos, Nigeria. The facility is designed to accelerate innovation for Nigerian and West African business, providing IT partners, developers, entrepreneurs, venture capitalists and academics access to enhanced cloud capabilities and extensive big data and analytic resources[2].

Collaboration

Major IT and financial services organizations with a community development focus, are not just setting up funds, but also engaging with other accelerators to multiply their reach and impact. Example:

- IBM convened "Cognihack Lagos 2016", a software coding competition, specifically designed to improve on the cloud and cognitive computing skills of the software development community[3].
- In September 2016, Microsoft, along with CcHUB in Lagos, announced a new partnership in entrepreneurial mentorship and support through technology with the launch of Windows Insiders for Good Fellowship[4].
- Barclays Africa has been involved in collaborations with tech start-ups. In July 2015, Barclays Africa partnered with Think Rise Africa to launch Tech Lab Africa, a three month FinTech and Health Tech accelerator. In August 2015, it supported the launch of Digital Academy, a one year internship for software developers to create finance focused applications[5].

"Major IT and financial services organizations with a community development focus, are not just setting up funds, but also engaging with other accelerators to multiply their reach and impact."



1. Capital IQ and press articles
2. https://www-356.ibm.com/partnerworld/wps/servlet/ContentHandler/isv_inv_tsp_iic_lagos_overview accessed on 10 November 2016.
3. Team CogniBank wins IBM CogniHack Lagos 2016 Hackaton event, 7 September 2016, http://www.techcityng.com/team-cognibank-wins-ibm-cognihack-lagos-2016-hackaton- event/ accessed on 30 May 2016.
4. Microsoft in partnership with Co-Creation Hub announce #WINsiders4goodfellowship http://cchubnigeria.com/microsoft-partnership-co-creation-hub- announce- winsiders4good-fellowship/ accessed on 10 November 2016.
5. Barclays Africa launches a FinTech focused accelerator programme in Cape Town, 14 December 2015, http://techcabal.com/2015/12/14/barclays-africa-launches-a-fintech-focused-accelerator-programme-in-cape-town/ accessed on 30 May 2016.

Financial institutions

FinTech companies have been active across the value chain of the Nigerian Banking & Financial Services Industry (FSI). In many instances, these collaborations have been ad-hoc. However, to leverage the opportunity that FinTechs bring, Nigerian banks are beginning to take a strategic and structured approach in engaging the FinTech community. Some prominent examples include:

- Access Bank teamed up with a FinTech to launch PayWithCapture, a mobile payment app that enables transfers from any bank card and also features a personal financial management tool.
- In June 2016, First Bank of Nigeria hosted a summit with over 50 technology start-ups and has also collaborated with local FinTechs to design and develop some of the solutions currently being used in the Bank.

To address the multi-faceted impact of a strengthening FinTech industry, FSI incumbents are adopting a four-pronged strategy:

Investment driven

The FSI sector is gearing for both acquisitions and funding- based routes to increase its presence in the emerging FinTech space.

Partnership driven

Partnerships by FinTech product firms (in point-of-sale hardware, mobile applications, etc.) and banks with synchronized or disparate go-to-market strategies are addressing the immediate demand of digital-age consumers. Example:

- Vanso provides mobile banking app development services to at least 5 leading Nigerian banks[1].
- Zenith Bank is partnering with Reach, a fintech, on a group savings tool.

Market driven

To counter a steady challenge by venture backed FinTech firms, many incumbents are augmenting their value chain with competing offerings and leveraging their own distribution and client base.

Collaboration driven

Setting up, managing or investing in centers of excellence and FinTech hubs is an excellent strategy to take an inside view of the emerging FinTech firms' working, and to nurture talent for a future competitive advantage. For instance, Meltwater Entrepreneurial School of Technology (MEST) in Accra, Ghana is focused on training, mentoring and investing in African tech entrepreneurs. Backed by the Meltwater Group in San-Francisco, other partners include Interswitch, Samsung, RackSpace, AWS, etc[2].

FinTech in Nigeria holds a particularly critical promise as a potential solver of Nigerian financial institutions' traditional problems - low penetration, scarce credit history and cash-driven transaction mentality. If the triple-front participation from financial institutions – as investors, partners and clients – can be harnessed, Nigerian FSI sector is set for a grand evolution riding on the growth wave.

1. Interswitch has acquired Vanso in a N15 billion buyout, 9 February 2016, http://techcabal.com/2016/02/09/interswitch-buys-vanso/ accessed on 30 May 2016.
2. Training, mentoring an investing in world-class tech entrepreneurs in Africa, http://meltwater.org/ accessed 30 May 2016.

Users

Nigerian customers (both consumer and enterprise) have shown an unexpectedly fast rate of adoption to FinTech offerings. Decades of usage behaviour fixated on cash, branch banking and relationship-driven service expectations are being fast replaced with larger ticket size of cashless transactions, full-suite mobile banking irrespective of location, language and grade classifications. The change is coming from different fronts, such as:

Mobile and Internet coverage

Nigeria has seen significant growth in both the number of smartphone users and internet users over the past few years. Internet penetration in Nigeria has been driven largely by smartphone ownership. Example:

- Smartphone penetration in Nigeria (i.e. percentage of adults owning a smartphone) is estimated at 28%[1] making Nigeria one of the world's most mobile connected countries with 76% of internet traffic routed through mobile phones. This level of penetration offers FinTech firms an opportunity to address the legacy issue of low banking penetration.

Digital payment processing in public services

Digital payment processing is still a long way from large scale adoption for public services. However, privatized utilities such as power have witnessed a growth in digital payment processing with FinTechs providing payment platforms for instant service delivery.

Maturity of e-commerce to handle larger ticket sizes

E-commerce in Nigeria has been established, and is now trusted to deliver large-ticket products in major cities without the protective clause of Cash-on Delivery. This evolution of the Nigerian mind-set will bolster the adoption of payment processing of FinTech firms.

> **"Major IT and financial services organizations with a community development focus, are not just setting up funds, but also engaging with other accelerators to multiply their reach and impact."**

[1] Smartphone ownership and internet usage continues to climb in emerging economies, 22 February 2016, http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/ accessed: 21 October 2016

Universities and research institutions

> **Academic bodies need to build entrepreneurial mindshare in Africa's young technical talent for a successful innovative ecosystem.**

For a successful innovative ecosystem, academic bodies need to build entrepreneurial mindshare in Africa's young technical talent. While individual entrepreneurship cells across African universities exist, they are largely student-managed and need larger backing from administrations to make an impact.

The leading institutions in Africa have consistently led the administration and management of innovative initiatives, setting up events, competitions and courses. Example:

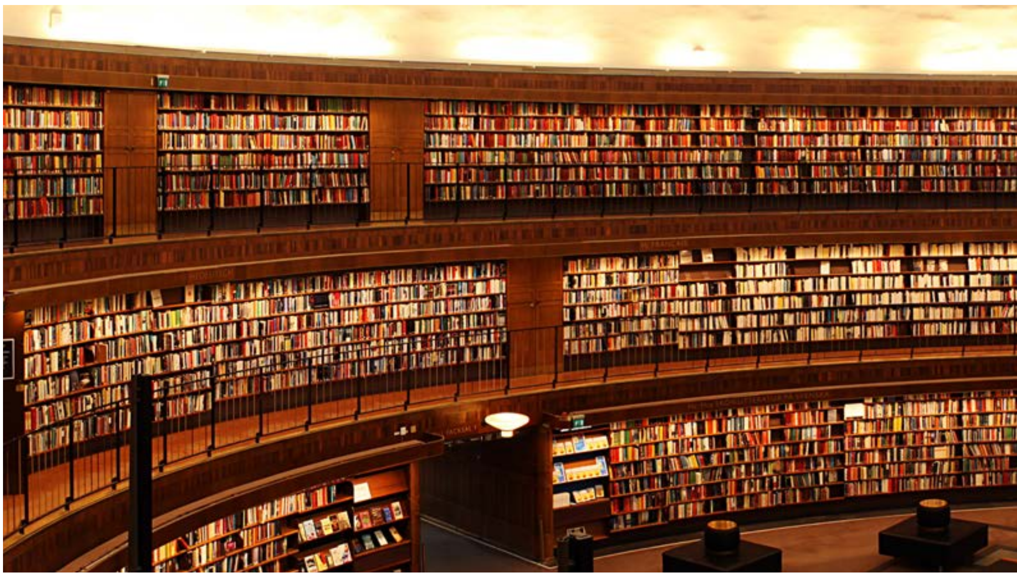
- Universities have started incubators/ accelerators (mostly in partnerships with other organizations) to support tech start-ups / entrepreneurship initiatives. Examples include, University of Nairobi, Kenya, Stellenbosch University, South Africa, Strathmore University, Kenya, University of Cape Town, South Africa, American University in Cairo, Egypt, Witwatersrand University, South Africa amongst others.

- University of Nairobi, Kenya is reputed to be one of the most entrepreneur friendly universities in Africa. The university runs C4DLab, an incubator cum accelerator that has run a significant number of initiatives. UNICER and Intel are key partners amongst others[1].

- University of Cape Town has an on-campus incubator, the MTN Solution Space, but its activities go a lot further. It hosts a number of events and projects, including the recent MTN Entrepreneurship Challenge, and also offers scholarships to prospective entrepreneurs. Funding is also available from time to time, while its also has a specialised unit focused on entrepreneurship in the form of the Bertha Centre for Social Innovation and Entrepreneurship[1].

- Meltwater Entrepreneurial School of Technology (MEST): MEST Incubator programme is an educational program and innovation hub which trains and mentors entrepreneurs from Ghana, Nigeria, Kenya and South Africa.

While some African academia and research institutions are setting up funds and incubators, matching the scale of their global counterparts will require more, and perhaps external resources, given Africa's largely subsidized higher educational model.



[1] African universities are increasingly playing a part in encouraging student-led tech start-ups, in the hope that young people can become job creators, Disrupt Africa, 29 July 2016, http://disrupt-africa.com/2016/07/7-universities-backing-african-tech-start-ups/ accessed 30 May 2016.

Incubators, accelerators and innovation labs

Over the last five years, the Nigerian technology space has witnessed an upsurge in support and mentorship of entrepreneurs. The roles of incubators, accelerators and innovation labs have contributed to the growth of the Nigerian tech ecosystem. Some of the notable initiatives that drive industry exposure across the country are categorized below:

Incubators

Co-Creation Hub (CcHub): The CcHub was launched in 2011 with a $200,000 grant provided by Omidyar Network and a $45,000 grant provided by Indigo Trust to provide the environment, stimulation and connections to capital and expertise necessary to help Nigerian entrepreneurs[2].

iDEA Hub: This was launched in 2013, with a grant provided by the National Information Technology Development Agency (NITDA). Operating in Tinapa, Cross River State and Yaba, Lagos State, iDEA Hub provides co-working spaces and acceleration centre for start-ups[1].

FocusHub: FocusHub is a Port Harcourt-based innovation hub in the Niger-Delta region of Nigeria and provides entrepreneurs with mentorship, coaching, office space,etc[1].

TD4PAI: Founded in 2014, TD4PAI is a not-for-profit technology hardware incubation hub in Abuja, Nigeria. The hub organizes workshops and trainings on building products primarily focused on upstream ICT[1].

Accelerators

Passion Incubator: The Passion Incubator was established in 2014 with its cashless acceleration model which provides entrepreneurs with resources to launch lean start-ups.

440NG: 440NG was founded as a joint venture between 88mph and L5Lab, in order to invest in mobile and internet start-ups in Nigeria. The accelerator kicked off operations in 2014 with 9 start-ups in its first cohort.

LeadPath Nigeria: LeadPath Nigeria launched in February 2015 with a $1.5 million accelerator fund and startup workspace. LeadPath is exclusively aimed at start-ups doing business in software applications, mobile applications, electronic payments and big data[1].

Capital Firms investing in Nigerian Tech Start-ups

L5Labs: L5Labs is an investment firm that invests in high potential tech-related companies in Africa. Jobberman, Cheki.com.ng and the succesfully exited Oya.com.ng are some of the start-ups that got early stage investments from L5Labs[1].

Venture Garden Group: Venture Garden Group (VGG) Nigeria is an investment holding company that incubates, invests and operates financial technology companies developing technology solutions. Established in 2010, some of the more notable start-ups in their portfolio include Suregifts, Tutor.ng, Cashenvoy and Prepclass[1].

Africa Angels Network: The Africa Angels Network (AAN) is an investment holding company that invests in Africa-focused start-ups, primarily in the tech sector. AAN was founded by Pule Taukobong of South Africa in 2013 and later consolidated to CRE Venture in 2015[1].

1. The Nigerian tech ecosystem: Everything you need to know, 30 September 2016, https://techpoint.ng/2016/09/30/nigerian-tech-ecosystem-everything-you-need-to-know/, accessed: 26 October 2016.

Growth levers for FinTech:

A mature market driven approach

FinTech is gaining significant attention across the globe – with hubs evolving across Americas, Asia Pacific (APAC) and Europe. Different countries are making substantial efforts to build a robust environment for FinTech for different reasons. Emerging economies in Asia are aiming at a high level of financial inclusion of the unbanked and under-banked, while developed economies like the US and the UK are more focused on efficiency, cost-savings and personalized customer services.

A right mix of numerous factors are driving growth in these FinTech hubs. The availability of right technical skills, significant growth in capital investments, emergence of government policies, and an entrepreneurial and innovative mindset are the driving forces to establish FinTech as an enabler.

KPMG proposes to formulate an approach towards planning the growth strategy for the Nigerian FinTech landscape, derived from the learnings of a dynamic run-time analysis of mature FinTech markets.

This approach consists of three stages:

1. Mature-market tracking: Our framework identifies mature FinTech markets to track the attributes that germinate, enable and guide the markets to success.
2. Market driver prioritisation: Our framework analyses the data points from mature markets, to identify a current set of some of the most impactful driving forces (i.e. drivers to which a market is being the most responsive) for a set assessment timeframe.
3. Focus-market adjustment: On the basis of Stage 1 and 2, a global-overall roadmap for Nigerian FinTech.

For the present market conditions, KPMG presents a preliminary walk-through of this approach to delineate a list of prioritized strategic focus areas for market participants.

Stage 1: Mature market track stage

Selection of tracking criteria

This stage involves selection of key mature markets after collection and analysis of their key data points such as regulatory vintage, business ecosystem maturity (presence of digitally transformed leaders in FSI, innovation centres presence), deal activity (size, deal-stage distribution and exits) and coverage across key technologies.

KPMG used the criteria above to select the following mature markets: the US, the UK, Hong Kong, Singapore, Israel and Australia.

Selection of attributes/tracking criteria

We have identified six key attributes/ tracking criteria on which to calibrate the identified mature markets:

1. Entrepreneurial and innovative mind-set
2. Government programmes and incentives specific to FinTech
3. Technology readiness of the market
4. Regulatory support of the market
5. Business environment
6. Funding

The constituents of the six attributes/ tracking criteria are given in the adjoining table. To analyse these attributes, a total of 30 data points collated from IMD, World Bank and the World Economic Forum are taken for each market.

Rationale for selection only mature markets for tracking:

We acknowledge an unprecedented growth in many emerging markets globally. However, KPMG's benchmarking framework has selected only tenured, mature markets for the tracking stage.

This is important because for any emerging market disrupted or enabled by radical developments, the evolution journey is driven by multiple market forces for which an interplay and cause-effect relationship is reflected retrospectively.

The learnings and interplay of relationships is the mainstay for quantitatively and qualitatively deriving a definitive strategic guidance for emerging markets.

Attributes of a successful FinTech hub

Entrepreneurial and innovative mindset

Entrepreneurs infuse the right spirit and culture to drive growth of innovative start-ups. The metrics used to measure it includes IMD's entrepreneurship index, innovation and sophistication index, openness and attitude towards globalization.

Government programmes and incentives

Government sets the platform for smooth operations of start-ups with their favourable policies and tax incentives specific to the FinTech sector.

Technology readiness

Technological skills and infrastructure form the foundation of FinTech. Index used to measure this includes IT skills index, percentage of qualified technology workforce, cybersecurity levels and internet penetration in the nation.

Regulatory support

State efficiency and a supportive legislative framework encourages the establishment of start-up firms in a nation. This is measured through indices such as regulatory compliance, flexibility and adaptability of the legal system etc.

Business environment

The ease of doing business index, country competitive index, number of days and procedures to start a business help in creating a conducive business environment.

Funding

Availability of venture capitalists and other investors interested in investing in risky start-up firms are imperative to induce capital in the sector.

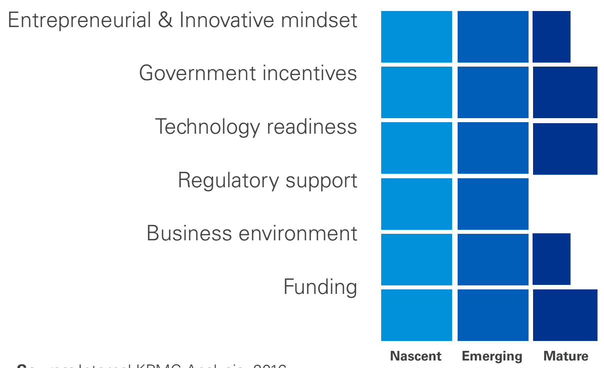
Source: KPMG Analysis

Stage 2: Market driver prioritization stage

On the basis of quantitative analysis involving more than 30 variables and complimentary qualitative studies, impact levels of key attributes were market drivers found for each mature FinTech market, as detailed in this stage below.

The United States

The US is the gravitation centre of entrepreneurs as well as hi-tech talent, which has attracted the highest FinTech investment and built the largest network of start-up firms[1, 2, 3].



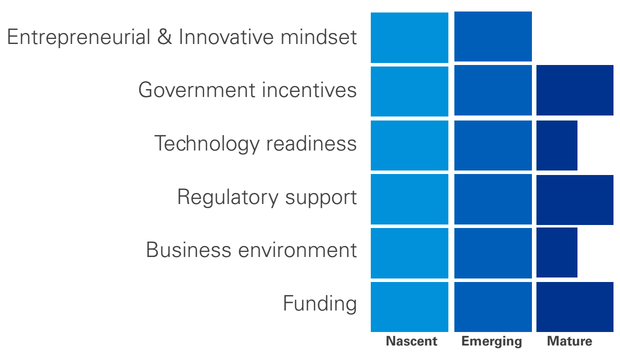
Source: Internal KPMG Analysis, 2016

The US dominates FinTech industry with major hubs such as Silicon Valley and New York. It has access to the highest FinTech investment from the government, corporate, large banks and venture capitalists along with significant support from universities and research institutes to set up innovation labs, develop FinTech courses and launch accelerator programmes to build innovative and creative products, services and companies.

The US has more than 25 unicorn FinTech start-ups with value worth USD 1 billion[4, 5]. The Silicon Valley has more than 15,000 start-up firms, about two million hi-tech workers and the most experienced start-up employees.

The United Kingdom

The UK has established itself as one of the most attractive locations in FinTech with high digital connectivity, an indigenous financial services workforce and solid funding landscape[6].

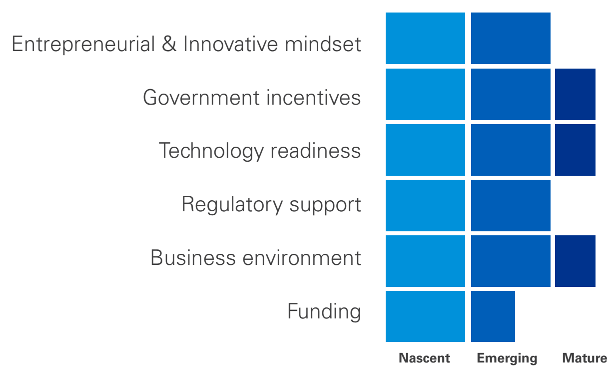


Source: Internal KPMG Analysis, 2016

Apart from getting more consolidated as a global financial hub post the financial crisis of 2008, the UK has also emerged as a strong FinTech ecosystem, with USD 1.078 billion of investment activity in 2015. This development was imminent due to the upsurge of banking technology in a strained traditional financial sector and its experienced managerial and financial workforce (approximately 60,000 FinTech employees), and a mature and visionary policy regime. The demand side has been addressed by an abundant investor and an affluent customer base with regulatory protection by the government[7].

Hong Kong

Hong Kong is shaping up as a strong FinTech hub in Asia, backed by robust investment support from the government and venture capitalists to nurture entrepreneurship[8, 9].



Source: Internal KPMG Analysis, 2016

Hong Kong has emerged as a major financial centre, employing a population base in excess of 235,000[9]. Its affluent and well educated population, entrepreneurial history and the proximity to funds provide start-ups a promising platform to establish their roots and grow their businesses. The country ranks among top five nations on entrepreneurship and global financial centre index.

The government of Hong Kong has introduced several initiatives, incentives and incubator programs like InvestHK, Startmeup.HK, Cyberport and many more[10] that will further bolster growth of this key FinTech ecosystem of Asia.

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1. The Global Startup ecosystem Ranking 2015, Compass, August 2015; 10. Built in NYC, http://www.builtinnyc.com/2015/10/12/nyc-tax- incentives accessed on 22 May 2016.
2. Frontier Finance, http://www.Fintech.finance/news/the-state-of-Fintech-industry-as-we-know- it infographic/ accessed on 14 may2016.
3. The Pulse of Fintech, KPMG, March 2016.
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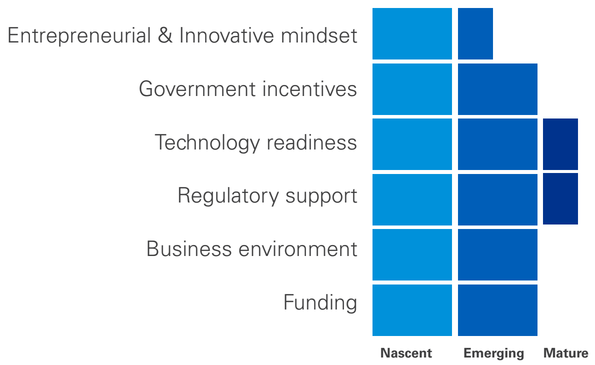
5. The Global Start-up ecosystem ranking 2015, Compass, August 2015.
6. UK's world-leading Fintech industry to be given new government boost, Government UK, 11 April 2016, https:// www.gov.uk/government/news/uks-world-leading-fintech-industry-to-be-given-new-government-boost accessed on 25 May 2016.
7. UK takes Silicon Valley's crown as world's Fintech capital, ICAS, https:// www.icas.com/ca- today-news/ uk-is-worlds-financial-technology-fintech-capital accessed on 30 May 2016.
8. Hong Kong Monthly Digest of Statistics, April 2016.
9. The global start-uo ecosystem rank 2015, Compass, August 2015.
10. Strengthening Hong Kong as a Leading Global International Financial Centre, http://www.fsdc.orghk/sites/default/files/(REV) per cent20Strengthening per cent20Hong per cent20Kong per cent20As per cent20Leading(English).pdf, accessed on 30 May 2016.

Australia

Australia has an emerging FinTech start-up ecosystem, and has recently started gaining substantial attention from government and venture capitalists[1].

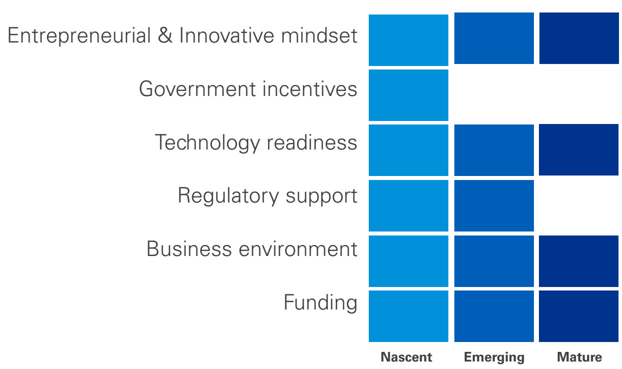


Source: Internal KPMG Analysis, 2016

The Australian FinTech start-up community is quietly growing into a major player in the global FinTech ecosystem, with 14 per cent of the global funding raised flowing into Australia. With a robust financial sector (third largest in fund management globally) that is larger than many Asian and European counterparts in size, it has a strong breeding ground for domestic consumption of emerging FinTech capability. The quality and availability of young, diverse tech-savvy talent along with sophisticated financial services expertise makes the country a favourable location for setting-up FinTech start-ups.

Israel

Israel uses indigenous technology skills and a strong network of foreign investors, providing favourable environment to foster FinTech innovations[2].

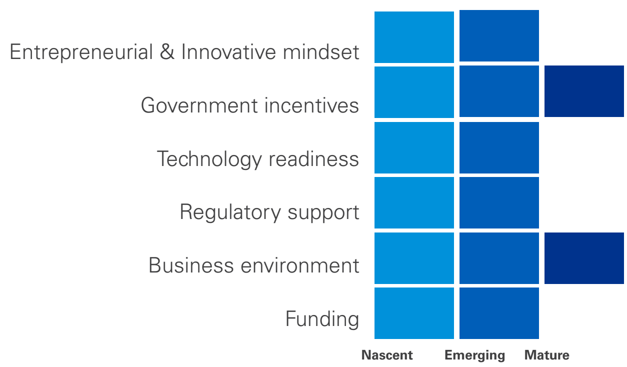


Source: Internal KPMG Analysis, 2016

Israel has emerged with a strong FinTech ecosystem, with more than 500 active start-ups registered in 2015. This is primarily driven by their legacy of innovation and technology. This has been coupled with strong overseas investor interest, presence of more than 14 global innovation centres, three global FinTech hubs, an organized financial sector and steady policy support. Tel Aviv has launched multiple international events to provide a global platform to Israeli start-ups, which are presided by celebrity Israeli entrepreneurs to keep engaging the right audience in the world forum.

Singapore

Singapore is attracting investors and foreign industry players along with extensive government support and expertise of corporate mentors to position itself as an international leader[13].



Source: Internal KPMG Analysis, 2016

Singapore has framed a cohesive regulatory structure specific to FinTech. The country has a strong standing in the major sectors forming the backbone of FinTech i.e. financial services, technology and telecom that collectively contribute significantly towards building a strong digital infrastructure. International entrepreneurs and banks have set up their local Asian units in Singapore, bringing in global expertise and experience.

FinTech innovation is flourishing in Singapore primarily driven by the global talent attracted to live and base themselves there. Singapore is gradually morphing into a major Asian start-up hub of immigrant talent building regional/global business ventures. All of this has resulted in Singapore's top rank on the ease of doing business[3].

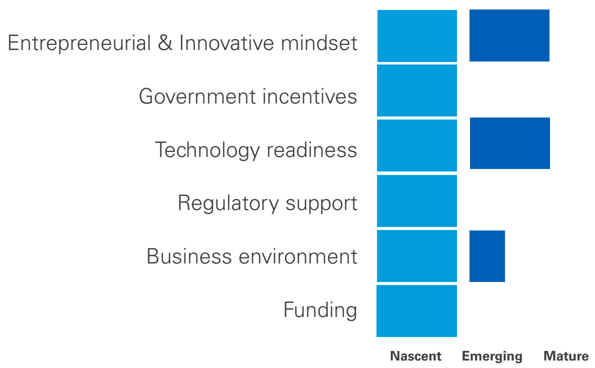
1. Unlocking the potential:opportunities for Sydney, KPMG, 2014.
2. Geektime website, http://www.geektime.com/2016/01/11/annual-report-2015-start-ups-and- venture-capital-in-israel/ accessed on 26 May 2016.
3. Global Start-up ecosystem Ranking 2015, Compass, August 2015.

Stage 3: Focused market adjustment stage

From the study (in Stage 2) of the impact of growth drivers on the mature FinTech markets, a categorized priority list of high impact drivers has been derived. Against this prioritized growth driver list, the current levels of Nigerian market are identified to mark the prioritised and segment-specific areas that need to be focused on to grow the Nigerian FinTech market.

Nigeria

The Nigerian FinTech ecosystem is emerging with a fair supply of proficient and inexpensive talent, a potential to capture a large portion of the unbanked population and a nascent funding structure.



Source: Internal KPMG Analysis, 2016

Nigeria is slowly moving up the FinTech growth ladder, primarily driven by its emerging FinTech ecosystem where several players are increasingly supportive both in terms of providing funds as well as building technological and entrepreneurial skills. A strong talent pipeline of inexpensive and easy-to-hire tech workforce is one of the driving forces behind the emergence of FinTechs. Greater collaboration between market participants to leverage and cross-pollinate learnings and entrepreneurial experiences is an impetus for the growth of this sector.

Some roadblocks in the widespread adoption in Nigeria are the lack of authentic consumer information on digital media and poor technology / digital infrastructure. As identified from our growth driver analysis, regulatory mandates and a robust business environment will be the most impactful levers in getting the Nigerian FinTech market up to speed and enable it better address these roadblocks.

Another important growth imperative for the Nigerian FinTech sector is government incentives at the Federal, State and Local Government levels. All mature markets analysed especially the US, UK and Singapore show very strong support for start-ups via government incentives. For instance, the "StartUp NY" incentive in the state of New York provides a 10-year exemption from property, sales and state income taxes for new and expanding businesses, on the condition that they relocate to specific areas around the state, mostly near university campuses[1]. The government of Singapore provides cash grants, equity financing schemes, business incubator schemes, debt financing and tax incentives. For instance, Spring Seeds (a Singapore Government subsidiary) co-invests with third-party investors up to a maximum of S$1 million[2].

Regulatory support is also vey critical for the growth and development of the Nigerian FinTech sector. The UK Government for instance has appointed a special envoy for FinTech to promote the UK FinTech sector, support regulators in creating a regulatory system that is industry-led and to work with the financial services industry to develop an open banking standard which will allow FinTechs to use bank data to provide a range of value added services to consumers[3].

The ability of the Nigerian FinTech sector to attract the right funding for its growth is dependent on getting the other growth drivers right. Based on our analysis, entrepreneurial spirit, innovation and technology readiness though not mature, are adequate to propel the FinTech sector to the next level. The emergence of the sector and funding activities recorded so far are indicators of the level of development of these growth drivers. However, for Nigeria to become a globally recognised FinTech hub, there must be a deliberate drive to develop appropriate regulatory frameworks and government incentives for the sector.

Our key recommendations for growth and development of the Nigerian FinTech sector are outlined in the final section (Learnings from Global Experience) of this publication. The recommendations are targeted at key FinTech stakeholders including Government, Regulators, Financial Institutions and FinTechs.

1. How Federal, State and Local R&D Incentives are supporting start-ups, 15 July 2016, http://ww2.cfo.com/business-expansion/2016/07/federal-state-local-rd-incentives-supporting-start-ups/ accessed 25 October 2016
2. Government Funding & Assistance Schemes, https://www.guidemesingapore.com/doing-business/finances/singapore-government-schemes-for-start-ups, accessed: 25 October 2016.
3. UK's world-leading FinTech industry to be given new government boost, 11 April 2016, https://www.gov.uk/government/news/uks-world-leading-fintech-industry-to-be-given-new-government-boost accessed: 25 October 2016

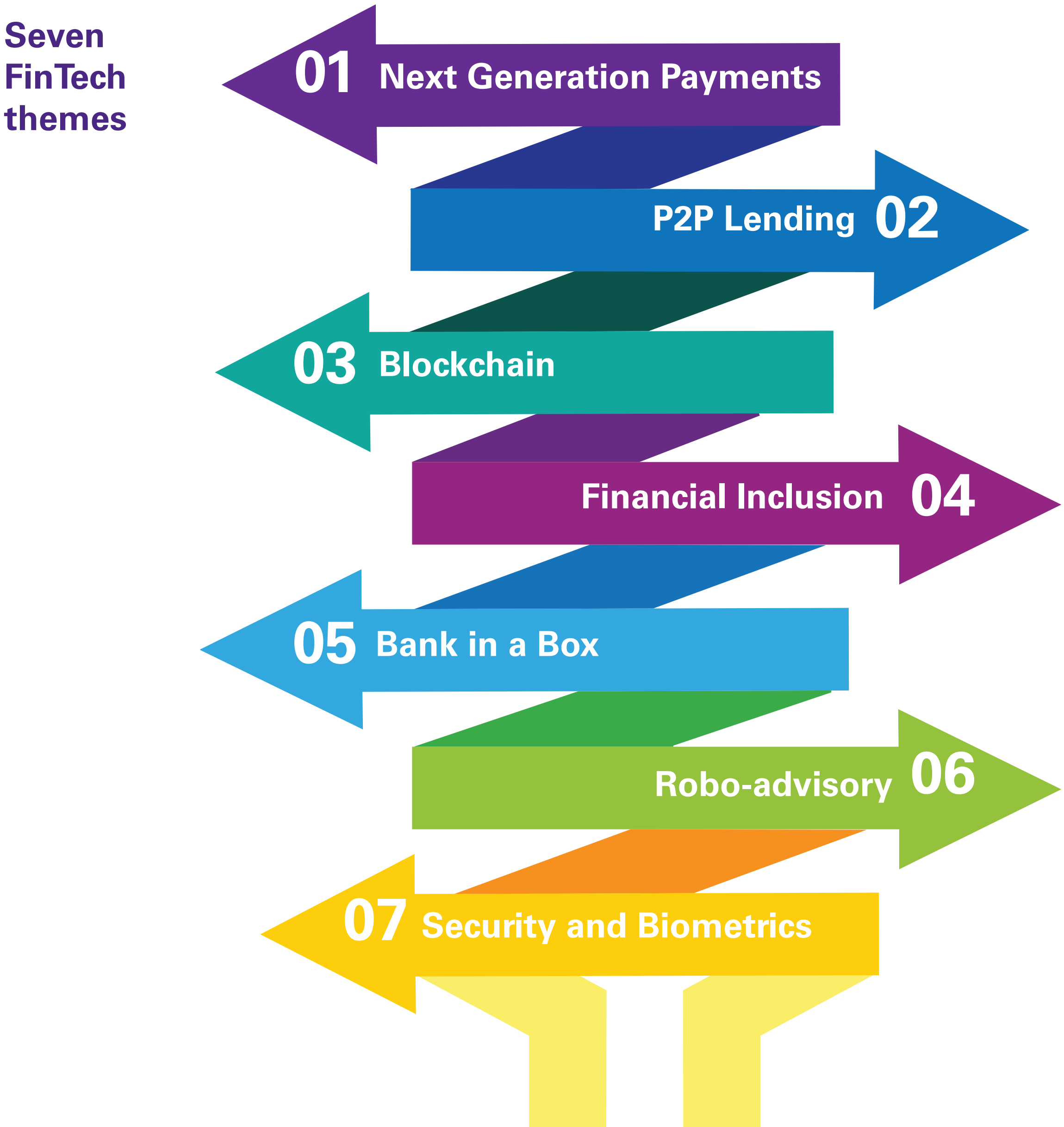
FinTech themes

New frontiers changing the face of financial services in Nigeria

Emergence of FinTech companies in Nigeria is a prelude to the transformation in payments, lending and personal finance that has manifested in significant investor interest in recent times. FinTech is enabling the entire value chain of traditional financial institutions to establish better connections with customers and to provide new market offerings. There are numerous start-ups cutting across various business segments and functions, predominantly in payments and lending.

KPMG has identified seven themes that if harnessed, have the potential to redefine the financial services sector and open new opportunities for banks. The figure below depicts these FinTech themes.

Payments and financial inclusion have gained significant market attention. At the same time, there is a strong case for investing in lending and security/ biometrics. Slowly, a number of companies are beginning to examine robo-advice and Bank in a Box as new investment avenues. Blockchain is an emerging tech-mammoth and has a potential for mass market implementation in the near future.



Next generation payments

Innovative digital technologies disrupting the traditional payments value chain

Overview

Globally, banks are moving from traditional conservative mindsets, revising their strategies to better collaborate with FinTech players in the payments space. Banks have realized that failure to do so might leave them with the risk of being swept away by nimble competitors. To achieve this, banks are collaborating with FinTechs through a number of ways such as venture capital investments, incubator programmes, innovation labs, strategic partnerships and accelerator programmes.

A major breakthrough in payments transformation has been due to the support of regulators in laying down the foundation for technology companies and non-payment providers in innovating momentously in this field.

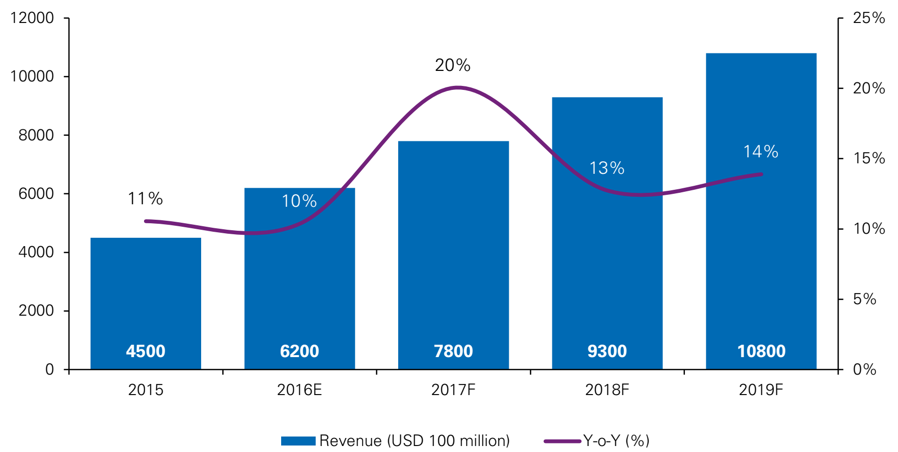
Undoubtedly, retail and consumer payments are leading the way in adoption of innovative payments capabilities. This has been aided by the growth in e-commerce and the increased penetration of mobiles.

Some of the key trends in digital payments have been around:

- Adoption of contactless payments - NFC (Near Field Communication) adoption, Host card emulation and QR code generation have been leading the way for electronic interactions between consumers and retailers. Globally, mobile proximity payment is expected to reach user base of 939 million by 2019[1].
- Omni channel offerings: The framework of digital payments provides a seamless customer experience across channels including ATM and cards, Internet and Mobile banking. Rather than simply adding more channels to the already existing mix, Omni channel represents interconnection among touchpoints from the customer's perspective and removes the distinction between channels.

"The payment space is one of the most attractive segments for FinTechs in Nigeria and has become a key source of revenue for banks and other payment service providers."

Total revenue of global mobile payments market, 2015-2019



[1] Global mobile proximity payment users to surpass 1 billion by 2019, Ovum website, http://www.ovum.com/press_releases/global-mobile-proximity-payment-users-to-surpass-1- billion-by-2019/, accessed on 10 May 2016.

- Rise of marketplace banks: Challenger banks are being supported across geographies and given licenses to operate freely e.g. rise of Atom and Tandem in UK. Also, banks have started exposing their APIs to third parties for large scale payments transformation e.g. National Australian Bank opened up its API to cloud accounting firm Xero.

- Adoption of payment hubs - Financial institutions are aggressively looking at investing in harmonising their payments infrastructure by moving to payment hubs. These hubs are expected to allow the processing of any form of payments irrespective of the origination channel.

- Harmonisation of standards: Various international bodies are facilitating standardisation in payments.

  Some key examples are T2S, a single pan European settlement infrastructure for creating settlement efficiencies and an international payments framework between the US and Europe. These are leading to a modular approach for implementations.

- FinTech companies digitizing the international remittance process: The UK-based companies Transfer Wise and World Remit have essentially digitized the Western Union network and received significant amount of funding for their innovative approach on international remittances[1].

- Banks' collaboration with non-banking players across the world: JP Morgan partnered with Wal-Mart and Shell for its new payment solution to gain the advantage of scale[2].

- Move towards Cashless Societies - Many of the countries in the Scandinavian region including Sweden, Norway and Denmark are on course to becoming cashless societies and are adopting no cash models. This has been possible because banks in these countries are adopting the FinTech revolution and responding in a positive way to innovations.

- Almost 35 countries[3] have implemented or put a framework in place for real time payments. Recently, Australia implemented its New Payments Platform[4]; Single Euro Payments Area (SEPA) in Europe[5] is envisaged to be a level breaker and the US is on the brink of adopting real-time payments.

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1. WorldRemit Raises USD100M To Take On Western Union In Money Transfers, Tech Crunch, 17 February 2015, http://techcrunch.com/2015/02/17/worldremit/ accessed on 30 May 2016.
2. The latest in the battle to own your digital wallet, CNBC, 26 October 2015, http://www.cnbc.com/2015/10/26/the-latest-in-the-battle-to-own-your-digital-wallet.html accessed on 30 May 2016.
3. Seamless Partners With Dwolla to Provide P2P Service to US Customers, Lets Talk Payments, 30 November 2015, https://letstalkpayments.com/seamless-partners-with-dwolla- to-provide-p2p-service-to-us-customers/ accessed on 30 May 2016.
4. New payments platform, APCA, http://www.apca.com.au/about-payments/future-of- payments/new-payments-platform-phases-1-2 accessed on 30 May 2016.
5. SEPA - Vision and Goals, European Payments Council, http://www.europeanpaymentscouncil.eu/index.cfm/about-sepa/sepa-vision-and-goals/ accessed on 30 May 2016

Next Generation Payments in Nigeria

As part of its Payments Systems Vision (PSV) initiative to reform the payment industry, the Federal Government launched the cashless Nigeria policy giving rise to several innovative payment systems propelled by changing consumer patterns, rising adoption of smartphones, increased internet penetration, and deployment of ATMs[1].

As at December 2015, the value of electronic transactions rose to N48.93 trillion up from N43.85 trillion in 2014, which represents an increase of 11.6 percent. Transaction volume also rose by 43.4 per cent to 162.59 million from 113.42 million in 2014[2]. The Central Bank of Nigeria has played a significant role in promoting the cash-lite economy by implementing policies such as the licensing of mobile payment operators and banks to provide mobile payment services.

This initiative was targeted at improving access to finance for the predominantly unbanked population in line with Nigeria's Financial Inclusion Strategy (FIS). Notably, transaction volumes for instant payments, POS transactions and mobile payments have gone up by 154%, 100% and 86% respectively between 2011 and 2015.

The payment space is one of the most attractive segments for FinTechs in Nigeria and has become a key source of revenue for banks and other payment service providers. As payment systems in the country become more competitive, many start-ups have innovated ways to simplify mobile money transfer.

- SimpleLink is a link payment solution for small businesses who do not have websites. It creates a payment link that can be used when promoting sales on social media.
- PayPad is an mPOS solution that enables merchants accept card payments using a smartphone or tablet.
- mVisa recently announced its expansion to Nigeria. mVisa is a mobile payments solution that allows consumers pay for goods by scanning a QR code on a smart phone or entering a merchant number into their feature phones where payment goes straight from the consumer's Visa account into the merchant's account.
- South African start-up, Peach Payments announced its intention to expand to three African countries – Nigeria, Kenya and Namibia. Peach Payments recently launched PaySafe, a payment solution which offers businesses (SMEs) a way to receive payments across platforms – websites and mobile apps – allowing customers use payment methods like debit cards, bank transfers and mobile wallets.
- Other payment platforms include Quickteller, PaywithCapture, VoguePay, Etranzact, Paga, Amplify, Paystack, etc.[3].

Nigerian banks are also innovating in the payments space. For instance, USSD banking service was introduced into the Nigerian market in the last few years. Initially used for purchase of airtime for mobile networks, the level of acceptance resulted in the solution being extended to include banking services such as account opening, balance inquiry, funds transfer, cardless withdrawal, amongst others. The number of transactions performed using the USSD service has more than doubled the number of transactions on mobile banking platforms for banks that offer the USSD service.

Building on the general success and adoption of the USSD based payments, Nigeria Inter-Bank Settlement System Plc. (NIBSS) established mCash (microCash) in November 2016. mCash is a mobile payment system for making low-value retail payments and was designed to extend e-payment options to low-income buyers and sellers who typically deal in cash. This product leverages existing NIBSS Instant Payments infrastructure (NIP) for immediate value to merchants' account and was developed in partnership with Financial service institutions, major telecom networks.

Innovations recorded in the payments space have had a positive impact on financial inclusion in Nigeria. USSD based payment solutions have a potential to further transform the payments space especially in rural areas where internet services are inconsistent and often unaffordable.

1. KPMG, Payments Development in Africa 2015
2. http://www.itwebafrica.com/home-page/e-commerce/700-nigeria/236455-2016-is-the-year-for-payment-in-nigerias-tech-ecosystem
3. Company websites

P2P

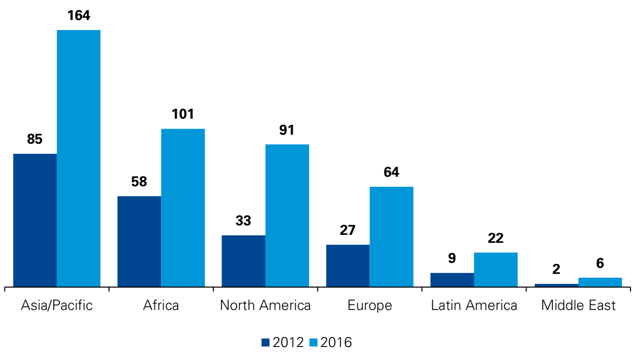
Innovative digital technologies disrupting the traditional payments value chain

Overview

Global P2P lenders are radically reshaping the consumer loan industry by redefining the lending standards. Initially the concept which started with individuals has extended its reach to include smaller SMEs, retailers and many more.

The global market for P2P lending is expected to grow at a CAGR of 60 per cent to USD 1 trillion by 2025 from USD 9 billion in 2014[1], with the US, the UK, Australia and China being the largest P2P lending markets.

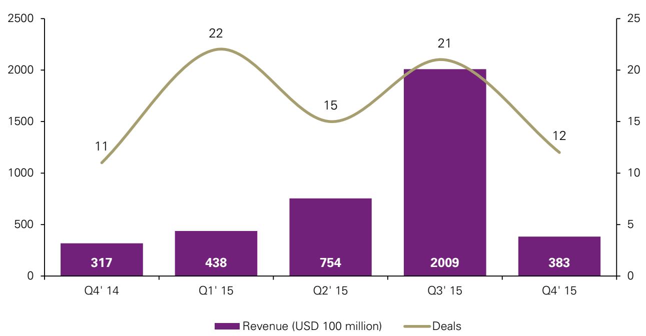
Value of global peer to peer lending (in USD billion)



Source: Value of global peer to peer lending from 2012 to 2025, Statista, website accessed 20 May 2016;.

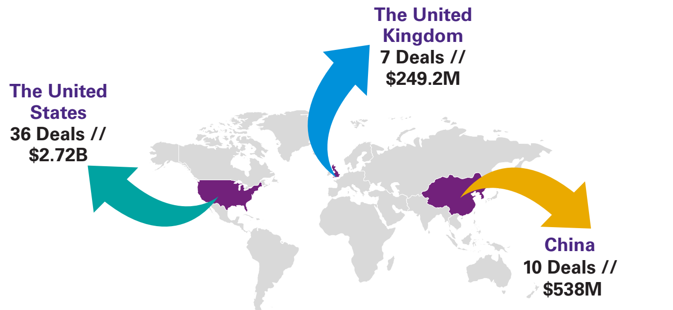
Upcoming FinTech companies in the lending space are attracting significant attention from investors. Recently, marketplace lender SoFi received USD 1 billion[2] in funding.

Leading tech investment activity



Source: The Pulse of Fintech, KPMG, 2016

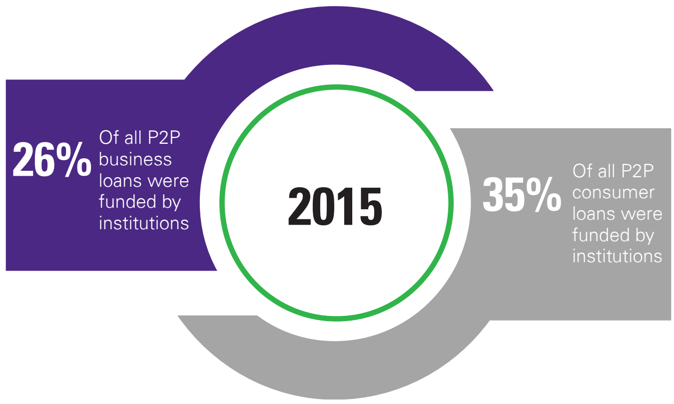
Top countries



The UK alternative lending market is growing by many folds each year. In 2015, the UK's alternative finance sector grew by 84 per cent and generated USD 4.7 billion[3] worth of business. The small and medium enterprises segment were the most significant users of the platform.

Growing institutionalization of the sector is one of the key success factors of the market in the UK This is because, as the market is increasingly going mainstream compared to the previous 'alternative finance' stand-point, the need for institutional money is also becoming paramount. Example:

- In 2015, 26 per cent[3] of the amount of business loans lent through P2P was funded by institutions which included banks and hedge funds.



Source: The Pulse of Fintech 2015 in Review, KPMG, March 2016

1. Value of global peer to peer lending from 2012 to 2025, Statista, website accessed 20 May 2016.
2. SoFi Raised USD1 Billion to Challenge Banks and Other Fintech Firms for Lending Supremacy, Finance Magnet, 30 September 2016, website accessed 20 May 2016.
3. Pushing Boundaries – The 2015 UK Alternative Finance Industry Report, Nesta, February 2016.

The key driving force for banks will be to leverage the expertise of the P2P lenders and create a win-win model for both. Traditional banks need to harness expertise of P2P lenders in areas including - credit risk assessment, customer experience, operational efficiencies, shorter disbursements cycles and achieving low cost models. Example:

- JP Morgan has partnered with OnDeck Capital to outsource business loans under USD 250,000[1]
- BBVA, USAA and SunTrust are working with Prosper to offer co-branded loans[2]
- Union Bank (US) and other community banks that are a part of the BancAlliance have formed a co-branded relationship with Lending Club[3]
- Santander Bank refers businesses that require small loans to the Funding Circle[4].

Global regulatory overview

- In the UK, the Financial Conduct Authority (FCA) is responsible for regulating peer-to-peer lending. Regulations require peer-to-peer lenders to have minimum operating capital requirements, meet client money requirements and adhere to a disclosure based regime[5].
- In Australia, the P2P lending model falls under the existing managed investment regulatory structure. P2P lenders need to hold Australian Financial Services (AFS) and Australian credit licenses[6].
- In the US, there are two levels of securities regulations for P2P lending — the SEC and the state. While some states like Texas have banned the practice of P2P lending, other states like California have placed limits on the type of investors granted access to the lending platform. US federal law deems platforms or entities created to hold loans or pool investors "investment companies" and are therefore subject to the Investment Company Act of 1940[7].
- In China, the market is currently in its early stages of regulatory maturity, though initiatives are underway. The China Banking Regulatory Commission (CBRC) has issued draft rules for online lending in December 2015.

Massive opportunities exist in the global P2P market, which is increasingly favoured over traditional lending models while revenues of the few players in the space are growing annually. There is therefore an opportunity for banks to leverage this trend and create product propositions in collaboration with FinTech companies.

P2P Lending in Nigeria

Significant opportunities exist for banks as well as FinTechs in the P2P lending space, with estimated mobile phone penetration expected to rise to over 96million by 2020. Findings from a study conducted by Efina (2014)[8] revealed that about 70 percent of Nigerian traders surveyed own a mobile phone. 74 percent of them are prepared to learn a new technology while over 30 percent of them have been denied access to credit from a financial institution. The study further revealed that 56 percent of the traders surveyed source funds from family, friends and unions and over 60 percent require funds less than N30,000[8].

The P2P lending market in Nigeria is laced with each player offering unique solutions. Some examples include:

- Surecredit that provides voucher financing at select retailer outlets for individuals to purchase assets or services and pay later over time directly from their salaries.
- Aella Credit acts as a personal loan lender that helps individuals to borrow money instantly (by integrating metrics using an Application Programming Interface) without the hassles of collateral tendering and request for referees.
- Social Lender is Sterling Bank's response to the competition in this area. The platform grants existing customer of the Bank access to small cash requests over social media based on the individuals social media profile and reputation score (proprietary algorithm and software to rank available social profile according to several predefined parameters).

However, regulatory bodies in the country have shown disapproval of crowdfunding (a form of P2P lending) largely due to lack of clarity around applicable legislations and policies such as Banks and Other Financial Institutions Act (BOFIA), Investment and Securities Act and other applicable Central Bank of Nigeria (CBN) regulations/guidelines.

Besides regulation, other critical challenges that the peer to peer market in Nigeria might face will include trust, inadequate understanding of the relatively new concept, budding national identity system, obsolete legislation and time consuming court processes.

All P2P lending players listed above depend on the Bank Verification Number (BVN) in addition to other information for operating their lending models. The BVN which captures detailed customer information across all Nigerian banks including biometrics provides a means to surmount some of the earlier listed challenges especially identity verification.

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1. JP Morgan working with OnDeck to speed small-business loans, Bloomberg, 02 December 2015, link accessed on 18 May 2016.
2. Prosper Marketplace Announces USD165 Million Series D Financing Led by Credit Suisse NEXT Investors, Business Wire, 08 April 2015, http://www.businesswire.com/news/home/20150408006710/en/Prosper-Marketplace- Announces-165-Million-Series-Financing accessed on 30 May 2016.
3. Lending Club Partners With BancAlliance, a National Consortium of 200 Community Banks, PR Newswire, 09 February 2015, http://www.prnewswire.com/news-releases/lending-club- partners-with-bancalliance-a-national-consortium-of-200-community-banks-300032620.html accessed on 30 May 2016.
4. Santander in peer-to-peer pact as alternative finance makes gains, The Financial Times, 17 June 2014, http://www.ft.com/intl/cms/s/0/b8890a26-f62a-11e3-a038- 00144feabdc0.html#axzz4A6WXcWFg accessed on 30 May 2016.
5. https://www.fca.org.uk/about/the-fca accessed: 26 October 2016
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7. http://www.crowdfundinsider.com/2014/05/38461-uk-us-peer-peer-regulation-enlightened-touch-vs-square-peg-round-hole/
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Blockchain

Blockchain in financial services: A threat or an opportunity, a fervent debate

Overview

Although, blockchain has been in existence since 2009, it garnered mixed reviews from the industry in its early years. It has now been taken up as a new innovative model globally. Blockchain can be defined as a way of initiating and verifying transactions in a distributed environment. The decentralized record keeping and reporting functionalities promise opportunities in reducing cost, fraud and increasing speed of transactions. With initiatives such as R3CEV, leading banks are battling their way for developing blockchain applications, thereby enabling a change in the traditional financial systems.

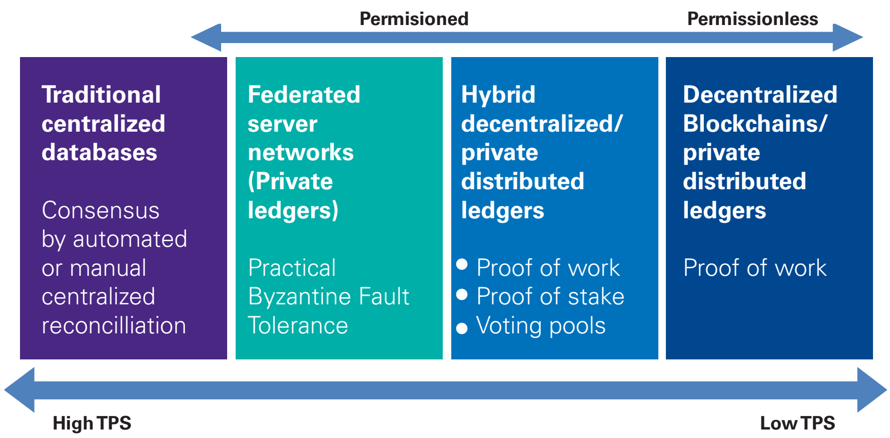
Overall, the global investment in blockchain has exceeded USD 1 billion[1] in over a thousand start-ups and is expected to increase four-fold by 2019, growing at a CAGR of 250 per cent. A notable example is the funding received by Coinbase and Circle exceeding USD 240 million[2] in 2015. Seeing the pace and magnitude of venture funding flowing into blockchain FinTech companies, it is quite certain that changes may be reflected in the economic scenarios and mainstream very soon.

A major factor for innovation in this space is the emergence of permission-less platforms enabled by public blockchain e.g. bitcoin. These have laid down the road for replacement of traditional centralized systems by Internet of Money. Such has been the emergence of blockchain that over 700 alternate currencies have tried to establish themselves on the model of Bitcoin[3].

Till now there was wide acceptance of public blockchain, but of late disagreements have begun to crop up on this technology being 'enterprise friendly'. Global bankers are looking for more agile, cheaper and faster distributed consensus mechanism enabled with requisite permissions. This has led to the emergence of new types of blockchain, extensions on existing blockchain and the introduction of other Distributed Ledger Technologies (DLT). Some of the areas where the use of DLT have been practised are trading of shares of private companies (NASDAQ in collaboration with Chain), solution for streamlining the process for loan syndication (digital assets holding) and many more.

Globally, significant investments have been seen in FinTech companies involved in transaction processing, exchange and transmission of digital assets. We expect the next wave of funding coming in the way of companies focused on building commercial APIs and tackling clearing and settlement cases. Enhancement of international payments systems and digital identity are other areas where the technology offering is being adopted by several banks.

Graphical representations for Distributed Consensus



Source: Needham, Coindesk

[1] USD1 Billion Invested So Far in Bitcoin and Blockchain Infrastructure, Coin Telegraph, 11 August 2015.
[2] The Blockchain Report: Welcome to the Internet of Value, Needham, October 2015.
[3] Digital Currencies, Quick Read, 24 November 2015, http://quickreadbuzz.com/2015/11/24/digital-currencies/ accessed on 30 May 2016

Financial institutions are rapidly developing prototypes to gain the first mover advantage in the application of the technology. According to a leading European bank, blockchain has the potential to reduce the banking industry's operational and infrastructure costs by USD 15–20 billion per annum[1]. In developing countries, start-ups such as BitPesa in East Africa and Rebit in the Philippines are leveraging blockchain to facilitate remittances at a cost that is lesser than the traditional transfer method by 3 per cent[2].

Globally, financial institutions are collaborating with FinTech firms and setting up their own in-house labs for testing blockchain technology.

Notable examples include the following

- R3CEV, a consortium of 42 global financial institutions remodelling the trade and transfer process of commercial paper with the use of blockchain.
- In the UK, five leading fund houses have joined hands with FinTech companies, start-up technology businesses and consulting firms to evaluate applications such as trading of illiquid securities. The aim is to reduce costs and remove intermediaries through the adoption of blockchain.
- NASDAQ has announced the successful application of blockchain in the record and settlement of private securities.

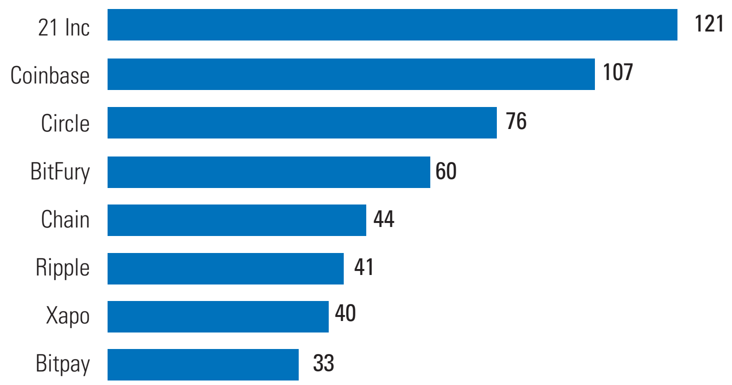
Global Blockchain regulations

Regulatory approval is one of the key success factors of technology adoption in the next few years. Though many regulatory boards have expressed interest, the formal policing of the technology is still awaited.

- In the US, the SEC (Securities Exchange Commission) is approaching companies that are seeking to use blockchain for transfer of securities. Recently, the SEC has approved Overstock to issue stocks with the use of blockchain.
- Australian Securities Exchange announced that it is building a private blockchain for clearing and settling of trades.
- In the UK, the Financial Conduct Authority is continuously monitoring the development of the technology[3].

Despite such massive acknowledgement of the technology, there is another school of thought that questions if blockchain would sustain the hysteria created around it globally. The kind of expectations that have been created around it are huge and achieving short-term benefits might not be possible. A more pragmatic approach is required to realise the true potential and benefits of blockchain. Some of the issues that might come in the path to success are scalability, operational efficiency, integration with legacy applications and gaining a global regulatory acceptance. Nevertheless, this is the time for experimentation and corporates involved in it are expected to benefit in the longer term and sustain the adoption of widespread implementation.

Global data for the most capitalized blockchain companies (USD million)



Source: The Blockchain Report: Welcome to the Internet of Value, Needham and Company, https://needham.bluematrix.com/sellside/EmailDocViewer?encrypt=4aaafaf1-d76e-4ee3-9406-

1. Santander: Blockchain Tech Can Save Banks USD20 Billion a Year, CoinDesk, 16 June 2015, link accessed on 20 May 2016.
2. The Blockchain and Mobile Money for Agriculture in Developing Countries?, Digital Currency Council, 13 February 2015, link accessed on 20 May 2016.
3. UK Financial Regulator Vows to Give Blockchain 'Space' to Grow, http://www.coindesk.com/uk-financial-regulator-blockchain-space-grow/ accessed on 30 May 2016.

Blockchain in Nigeria

Whilst blockchain is in its early stages of adoption in Nigeria, bitcoin and digital currencies have been in use since the late 2000s. The Bitcoin Market Potential Index by the London School of Economics (a composite of 39 variables such as technology penetration, remittances, financial crises etc.) ranked Nigeria 7th out of 178 countries likely to adopt the Bitcoin cryptocurrency (a digital asset and payment system that relies on the blockchain technology)[1].

Three other African countries are also ranked amongst the top ten countries likely to adopt cryptocurrencies. Low access to banking services and high costs of cross border remittance are potential drivers for the increased adoption of cryptocurrencies in Africa[2].

With the size of annual diaspora remittances to Nigeria estimated at $21 billion in 2015[3], this is one area prone to disruption from digital currencies given the speed, efficiency and cost benefits of the latter. For instance, Bitcoin remittance firms charge fees in the range of 3% compared to 7-10% by traditional players[4].

With recent foreign exchange shortages in Nigeria, corporate organisations are also beginning to explore the adoption of digital currencies and blockchain technology in the country. Examples of early adoption of blockchain technology in Nigeria include:

- Stellar, the stripe-backed open source payment network, and Oradian, a cloud based software provider for microfinance institutions in developing countries, have recently partnered to launch a blockchain based instant payment transfer network for the financially excluded community in Nigeria[3].
- In 2015, BitX, an international bitcoin company expanded its operations to Nigeria which provides users with access to a bitcoin wallet that enables transactions over the blockchain network exchange and API services. Earlier in the same year, the South African bitcoin exchange ICE3X also launched bitcoin trading in Nigeria.
- BitPesa and NairaEx are other prominent bitcoin exchanges operating in Nigeria.

The challenges to the adoption of blockchain technology all over the world are consistent with what we see as preventing its growth in the Nigerian market. These challenges include uncertainty around regulatory acceptance, cyber security concerns and high capital outlay required at the initial stages.

1. Garrick Hileman, Bitcoin Market Potential Index, London School of Economics 2015
2. http://techcabal.com/2015/09/01/nigerias-cbn-is-trying-to-regulate-bitcoin/
3. http://www.financialnigeria.com/nigerian-diaspora-remittances-reach-20-77-billion-in-2015-sustainable-photovideo-details-275.html
4. http://fintechranking.com/2015/04/13/how-bitcoin-could-revolutionize-remittance-in-africa/
5. https://techcrunch.com/2016/02/02/stellar-partners-with-oradian-to-bring-instant-money-transfer-to-nigeria/

Financial Inclusion

Potential of engaging the underserved section is likely to unleash the next level of growth in banking

> **"The utmost challenge before Financial Institutions is to address the constraints of poor connectivity, non-existence of credit history, diverse profile of consumers and to scale up operations in unbanked sectors."**

Overview

Globally, the banking sector is grappling with the dearth of financial inclusion in rural areas. At the global level, 38 per cent of adults do not utilise any formal financial service provider and 73 per cent of poor people are unbanked[1].

This is attributed primarily to the burdensome requirements involved in opening a financial account and lack of awareness about the product or channels to leverage for banking products.

The utmost challenge before Financial Institutions is to address the constraints of poor connectivity, non-existence of credit history, diverse profile of consumers and to scale up operations in unbanked sectors.

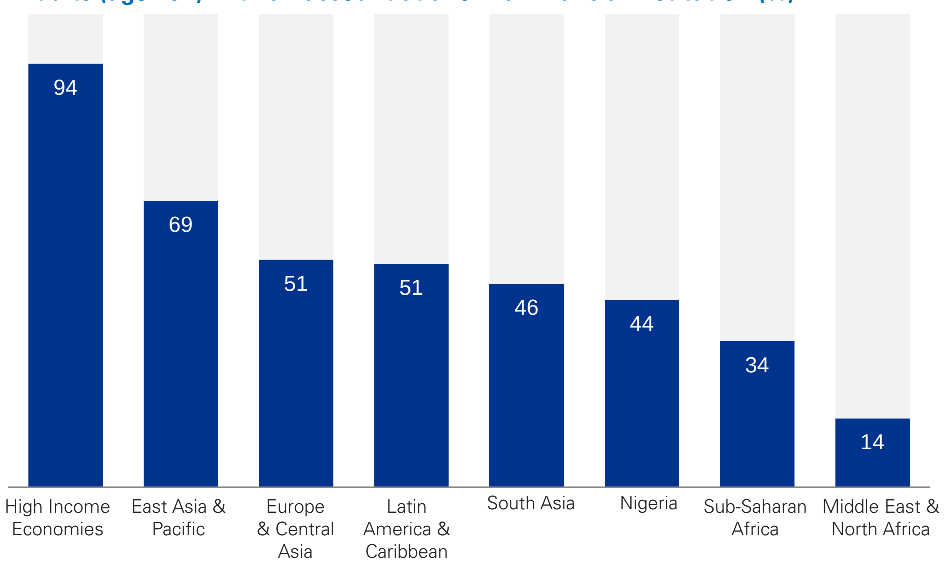
To address these challenges, a conceptual framework is being developed in some countries across the globe. Even the United Nations along with the World Bank has come up with a commitment for creating "Universal Financial Access" by 2020. This will cover 25 countries and target 75 per cent of the financially excluded[2] population.

Mobile has been revolutionary in creating a new paradigm for spread of financial services in unbanked areas. An additional 1.4 billion mobile subscriptions are predicted by 2020 and an additional 3 billion will have access to smartphones[3]. This will lead to increased accessibility and connectivity across geographies.

Though technology is seen as the biggest enabler in boosting financial inclusion, it is the collaboration and alliances between FinTech and traditional financial institutions that will define its future.

The most significant example of achieving true financial inclusion is M-PESA in Kenya, which is used by over two-thirds of the Kenyan population, 50 per cent of the unbanked population and accounts for over 25 per cent of the country's gross national product flows[4]. This has led to a revolution worldwide and the model has been adopted in Tanzania, South Africa, Afghanistan and India.

Adults (age 15+) with an account at a formal financial institution (%)



Source: World Bank Global Findex

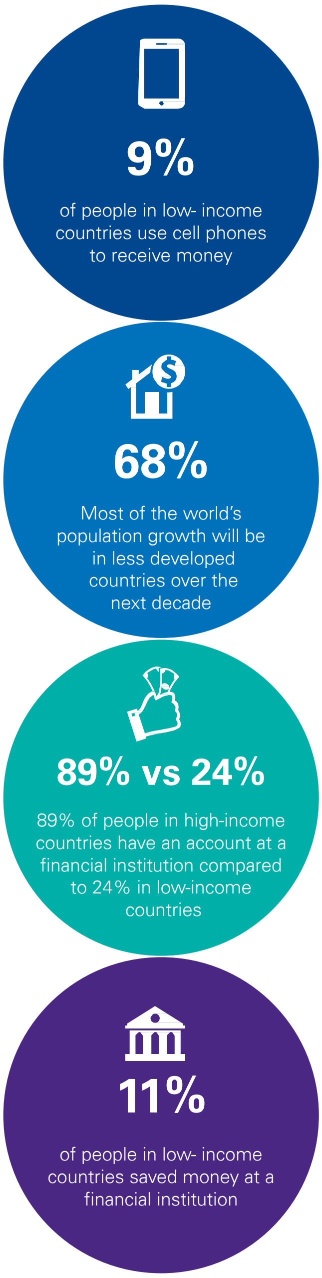
1. Universal Financial Access by 2020, The World Bank, 07 March 2016, http://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial- access-by-2020 accessed on 30 May 2016.
2. UFA2020 Overview: Universal Financial Access by 2020, World Bank website, http://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial- access- by-2020, accessed on 10 May 2016.
3. Ericsson Mobility Report, 2015,http://www.ericsson.com/news/150616-india-to-have-1-point- 4-billion-mobile-subscriptions_244069646_c, accessed on 10 May 2016.
4. Why does Kenya lead the world in mobile money?, The Economist website, http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18, accessed on 10 May 2016.

In Singapore, there are a number of small businesses with limited access to lending facilities due to a number of reasons. Capital Match (Singapore Based Startup) uses proprietary algorithms for meeting their needs by connecting them to suitable investors[1].

In a similar manner, a significant number of FinTech companies have adopted crowd funding as the model of financial inclusion and meeting the immediate credit needs of people. Crowd funding is the practice of raising financial contributions from a large number of individuals towards a specific objective. Few far flung areas in Philippines have adopted Bitcoin as the mode for money transfer, for benefits such as cheaper costs and speedy processing. Some of the global private equity firms have raised significant investments over the past one year across different geographies. Example, Leapfrog Investments raised USD 400 million for social impact investments in Asia and Africa, aimed at providing financial services for the low income group[2].

Globally, there have been numerous success cases for Financial Inclusion, but the major factor behind them has been support of government and regulators. Getting all the stakeholders together and creating a win-win proposition for each will be leading the way towards creating a financially inclusive society. All these initiatives will have to be well supported by international societies and if required, funded by them.

Global Snapshot 2015



Source: Aite

[1] Capital Match website, https://www.capital-match.com/, accessed on 30 May 2016.
[2] LeapFrog raises USD400 mln for social impact investments in Asia, Africa, Reuters, 09 September 2014, http:// www.reuters.com/article/funds-leapfrog-idUSL3N0RA11U20140909 accessed on 30 May 2016.

Financial Inclusion in Nigeria

Over the past few years, there has been steady progress in improving financial inclusion in Nigeria. It is estimated that about 40% of Nigerians are still financially excluded from the 53% in 2008[1] but still some distance from the Central Bank of Nigeria's 2020 target of 20%. Some of the recent progress can be attributed to:

- Strong focus on retail segment by financial services providers evidenced by bank branch expansion and proliferation of ATMs and other alternate channels
- Rapidly growing penetration of mobile and internet penetration- smartphone penetration of over 23 million and an estimated 150 million active subscriber lines in the country.

More recently there has been an upsurge in the use of USSD across the banking sector as a substitute for cash transactions. Particularly, mobile payments is at the heart of CBN's strategy to drive financial inclusion and 21 licenses have been issued to mobile payments operators. Currently run as a bank-led model, the mobile payments system is still at a nascent stage and lack of basic infrastructure and inadequate number of agents are some of the challenges affecting customer adoption.

Financial inclusion presents an enormous opportunity for FinTech companies and some FinTechs are working in different ways to contribute towards achieving deeper financial inclusion in areas such as microfinance, digital payments, credit scoring and remittances. Other examples of FinTechs promoting financial inclusion are:

- Stellar: recently partnered with Oradian, a cloud based software provider for microfinance institutions in developing countries, to launch a blockchain based instant payment transfer network in rural Nigeria.
- IroFit Payments: announced its launch in Nigeria in 2014, a system that that allows merchants to accept card payments through an all-purpose credit card reader, without requiring online connectivity.

Relevant applications of FinTechs in financial inclusion

FinTech Area	Application in financial Inclusion
Payments	eWallets, USSD Transfer
Peer to Peer Lending	Funding for individuals and micro enterprises
Microfinance	Funding for small and medium enterprise
Biometric	Credit scoring information, account opening, ATM PIN
Remittances	Transfer and payments in remote areas

Source: KPMG analysis, 2016

[1] Enhancing Financial Innovation & Access (EFInA)

Bank in a Box

Bank in a Box - New kid on the block promising cost leadership and operational efficiencies

Overview

To respond in a rapidly changing business environment, it has become imperative for banks to use technology as an enabler.

A catalyst for banks to gain technology competence is the 'Bank in a Box' model, which is a white-label solution spanning across multiple core banking modules, channels and payment solutions to meet the operational needs of a bank.

The rise of the Bank in a Box solution has led to generation of significant prospects for early adopters. Some of the leading non-bank financial corporations (NBFCs) across the globe are seeking to monetise on their existing customer base and disrupt the traditional banking models using these solutions. This has been made possible because of ready technology infrastructure e.g. Tesco and Asda, leading retail stores in the UK, have ventured into financial services using these solutions. These players are unencumbered by the burden of legacy technology infrastructure.

Recent FinTech turbulence has challenged markets and has led to the entrance of a new stream of banks called Challenger Banks. These banks are cashing in on spaces left vacant by traditional banks and are swiftly embracing Bank in a Box solutions. Example:

- Atom Bank has been riding on the rails of the FiS platform for Bank in a Box, and is offering a full repertoire of banking products.

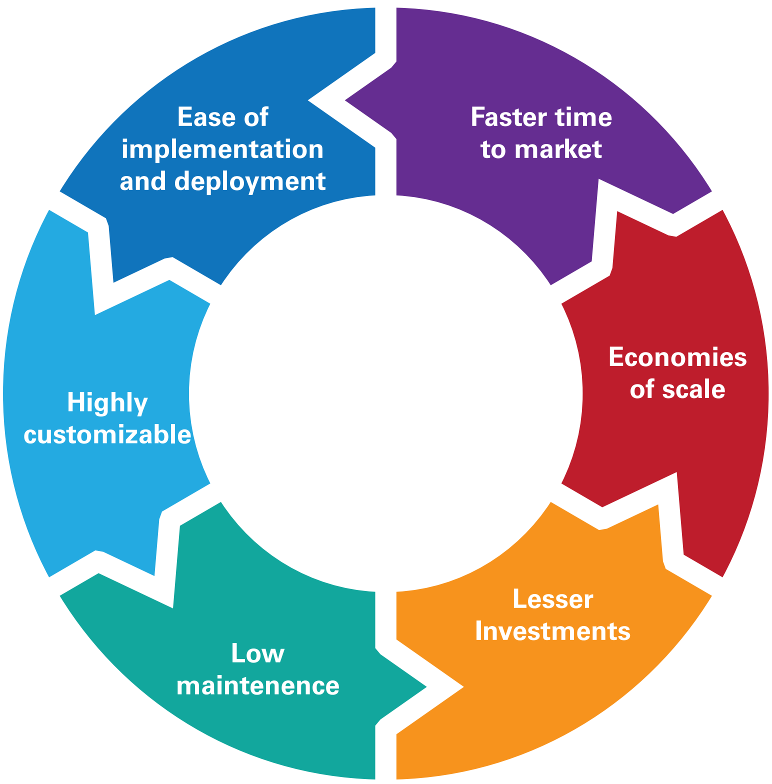
Even larger banks are finding it problematic to sustain profitablity in an environment surrounded by increasing regulatory burden and the need to maintain operational efficiency, scalability and flexibility.

Thus, it has become essential for banks to adopt leaner and agile technology models. Bank in a Box solution has been instrumental in simplifying the overall IT landscape by offering service-oriented architectures, rich integrated experience, and highly customisable interfaces to existing IT assets.

An example of a large-scale transformation is the adoption of Bank in a Box by ING Direct in Australia, where they tracked down several processes from minutes to seconds across several applications.

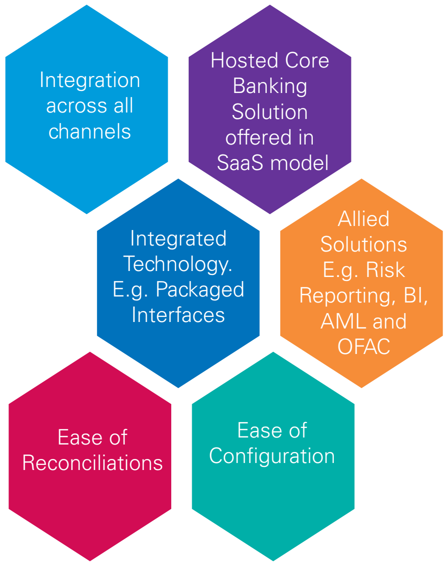
Each bank needs to come up with a clear-cut business and technology strategy in dealing with the changing financial ecosystem. Banks can choose to be first movers, followers or take a defensive stand altogether. To align with any of the strategic choices, collaborating with FinTech is seen as a revolutionising trend across the banking ecosystem.

Key benefits of adopting a 'Bank in a Box' model



Bank in a Box in Nigeria

With the emergence of new payments, and existence of small (i.e. regional and microfinance) sized banks in Nigeria, the road is set for a surge in adoption of Bank in a Box solutions. The key features of this solution are presented below.



With the adoption of these solutions, banks can be more nimble in tapping the unbanked segments and increasing their top line. Bank in a Box solutions are yet to gain popularity in the Nigerian market.

There are however opportunities for lending NBFCs to adopt Bank in a Box solutions for rapid market penetration and ease of introducing digital lending products.

Some of these institutions may choose to adopt the SaaS model, thereby significantly reducing the capital expenditure for them. These solutions also include integration of contact centres and voice/back office support centres along with outsourcing of infrastructure maintenance. They are also expected to lead to an improvement of sales/service, control the total cost of ownership, increase speed to market and reduce regulatory overheads.

Thus, it has become imperative for banks and NBFCs to move towards boxed solutions and liaise with FinTech companies for rapid deployment and differentiated customer experience.

"The rise of the Bank in a Box solution has led to generation of significant prospects for early adopters. Some of the leading non-bank financial corporations (NBFCs) across the globe are seeking to monetise on their existing customer base and disrupt the traditional banking models."

Robo advisory

Robo advisory: A momentous shift in the delivery of financial advisory services from man to machine

Overview

Globally, robo advisory is reforming the landscape of wealth advisory services. At a minuscule share at present, it is projected to grow by CAGR of 68 per cent over the next five years and manage USD 5 trillion worth of assets by 2025[1].

Robo advisors are the next level in the evolution of asset management and financial advice, primarily driven by millennials. Digital advice is becoming a prerequisite for wealth management firms serving mass market as well as prominent clients.

The growth of robo advisory services can be attributed to its ability to offer low-cost services, scalability, cognitive advice and next-generation user experience. On an average, a robo advisor charges 0.25 per cent of asset under management as against 1 per cent for human advisory[2].

Asset management firms are increasingly venturing into this space via tie-ups, acquisitions and independent efforts, leading to record high valuation of robo advisory start-ups.

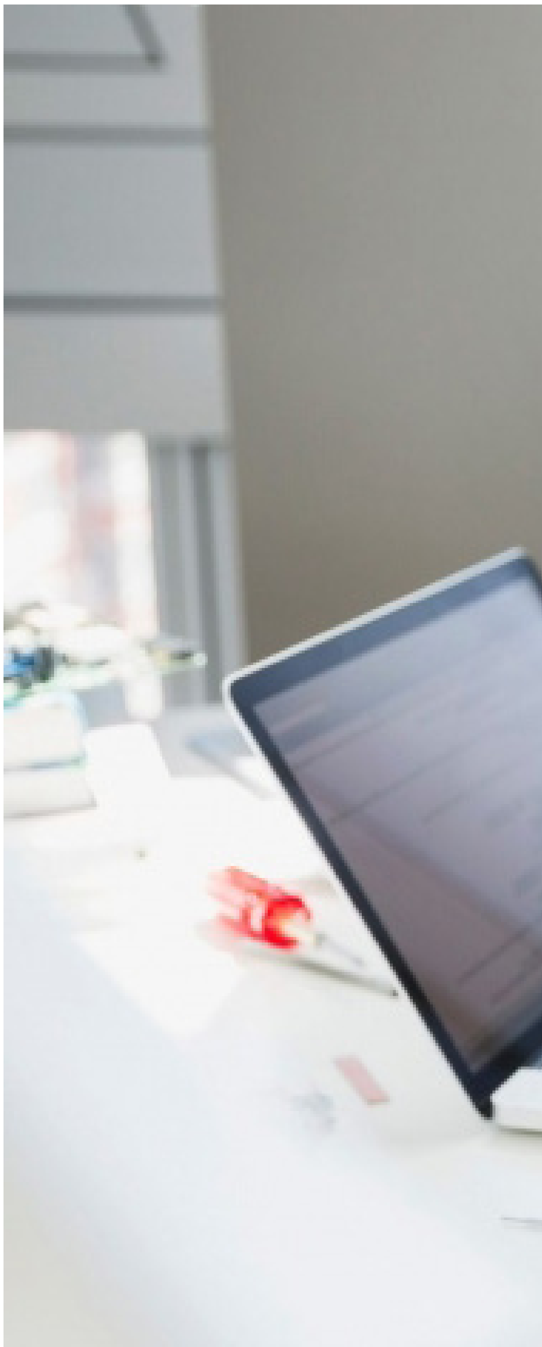
Digital entrants in robo advisory have sustained a double digit growth rate as a result of acquisition and/or partnerships driven strategies. Recently, Betterment, a leading robo advisor in the US with assets under management of over USD 3 billion, was valued at USD 700 million[3].

Significant activities are being noticed in the Asia market. Examples:

- Introduction of DBS wealth advisors in March 2015, based on artificial intelligence.
- In China, online sales of investment products has significantly gained momentum over past few years leading to wider acceptability of robo advice.

Worldwide, regulators are supporting the automated advice model to streamline the financial advisory industry. Examples:

- FCA is venturing into discussion to understand how robo advisory can be used more effectively for



Prominent examples of robo advisory start-ups

Company Name	Business Initiative	Start-up Name
Fidelity	Tie-ups	Betterment
BlackRock	Acquisition	Future Advisors
Vanguard	Special service	Face-to-face sales channel hybrid service provision
Schroders	Investment	Nutmeg
Charles Schwab	Offer free service	Robo advisor services
TD Ameritrade	Tie-ups	SigFig and Future Advisor

Source: KPMG analysis

1. Robo-Advisors AUM Could Grow To USD5 Trillion In 10 Years: Citi, ValueWalk website, http://www.valuewalk.com/2015/09/robo-advisors-aum-growth/, accessed on 10 May 2016.
2. Robo-Advisors Reduce the Cost of Investing, Cambridge Saving Bank website, https://www.cambridgesavings.com/learning/adults/investing/robo-advisors-reduce-the- cost- of-investing/, accessed on10 May 2016.
3. Robo-Adviser Betterment Sees USD700 Million Valuation After New Round of Funding, Bloomberg website,http://www.bloomberg.com/news/articles/2016-03-29/robo-adviser- betterment-sees-700-million-valuation-after-new-round-of-funding, accessed on 10 May 2016.

consumers and is establishing advisory units for helping firms develop automated advice models.

- Similarly regulatory authorities in Australia have set up a Digital Financial Advisory Committee to collaborate with start-ups on developing regulations, as various banks are planning to launch robo advisory platforms.

There is a need for traditional financial advisors to adopt a holistic approach on going digital and integrating business strategy with all constituents of their operating model ecosystem to create a remarkable customer experience.

Although robo advisors are hardly used in Nigeria at present, the future is expected to see a rise in the cases of robo advisors connecting directly with investors and more distributors in the arena.

Security and biometrics

Leading private sector banks are introducing innovative technologies to make the banking experience more secure

Overview

In the wake of growing cyber attacks against the banking industry, financial institutions are becoming even more vulnerable than any other industry globally. Hence, there is a pressing need for financial institutions to deploy biometric technologies and adopt cybersecurity solutions. This is evident by the fact that the global cybersecurity market invested about USD 75 billion in 2015, which is expected to reach USD 175 billion by 2020[1].

In the last few years, two major US banks have faced serious data breaches affecting millions of customers. This led to heightened cybersecurity investment by many other banks. For example, JP Morgan Chase doubled its cybersecurity spending to about USD 500 million in 2016[2].

Banks are working on technologies capable of using the customer's unique characteristics for identity authentication. Examples:

- Some of the prominent UK banks such as HSBC, Barclays and RBS have started offering fingerprint recognition technology for authentication.
- One of the UK's leading banks collaborated with a FinTech start-up to launch voice and touch identifications for its mobile customers.

In Europe, the European Association for Biometric in cooperation with Financial Fraud Action UK, conducts an annual seminar to promote biometrics in banking and payments involving major banks, FinTech, vendors and industry experts.

This practice has significant opportunities in the developing market to promote a safe and secure banking experience. Examples:

- ebankIT, a FinTech company based in Portugal recently introduced an innovative visual and voice recognition system which allows customers perform bank transfers and a virtual assistant that works on smart watches.
- Behavox, a Level39 participant, is working on providing market abuse and fraud detection solutions for forensics teams and compliance officers.
- Crypta Labs, UK, is set to revolutionize the mobile security market with the implementation of the Quantum Random Number Generator (QRNG). This technology works by using the mobile device's lens and light sensors in order to detect the photons beams which are counted to generate a random number.

Globally, the need to have strong authentication methods and protocols for fraud prevention has become inevitable and failure to do so might lead to a rise in security breaches and huge losses for financial institutions.

Security and Biometrics in Nigeria

As the Nigerian customer evolves, banks are leveraging new technologies to improve the banking customer experience since more and more financial transactions are now conducted through digital channels.

The Central Bank of Nigeria through the Bankers' Committee and in collaboration with all banks in Nigeria on February 14, 2014 launched a centralized biometric identification system for the banking industry tagged Bank Verification Number (BVN).

Despite banks capturing biometric details as part of the KYC process for BVN issuance, biometric authentication is yet to become prevalent in the Nigerian financial services ecosystem. However, a number of leading Nigerian banks now offer fingerprint recognition login options for their mobile banking apps.

1. Cybersecurity Market Reaches USD75 Billion In 2015; Expected To Reach USD170 Billion By 2020, Forbes website, http://www.forbes.com/sites/stevemorgan/2015/12/20/cybersecurity per centE2 per cent80 per cent8B- per centE2 per cent80 per cent8Bmarket-reaches-75- billion-in-2015 per centE2 per cent80 per cent8B per centE2 per cent80 per cent8B- per centE2 per cent80 per cent8Bexpected-to-reach-170-billion-by-2020/#499c2d4e2191, accessed on 10 May 2016.
2. J.P. Morgan to Accelerate Timeline for Cybersecurity Spending Boost, The Wall Street Journal website,http://www.wsj.com/articles/j-p-morgan- to-accelerate-timeline-for- cybersecurity-spending-boost-1438641746, accessed on 10 May 2016.
3. Central Bank of Nigeria Circular to all Banks and other Financial Institutions, 28 July 2016, https://www.cbn.gov.ng/Out/2016/BPSD/CIRCULAR%20TO%20ALL%20BANKS%20AND%20OTHER%20FINANCIAL%20 INSTITUTIONS.pdf accessed on 21 September 2016.

The Central Bank of Nigeria also released a circular on 28 July 2016, mandating banks to embed biometric data associated with customers' Bank Verification Number (BVN) in payment cards to facilitate off-line biometric-based customer authentication on payment devices such as ATMs POS terminals, Kiosks, etc[3].

The use of biometrics in banking helps ensure proof of identity, and strengthens the fraud detection mechanism. It also improves transparency by facilitating an audit trail and reduces the processing time significantly. Overall, it helps in increasing the customer's confidence in the banking system.

Application of key biometric technologies in banking

Digitisation in banking is leading to a significant amount of data being generated. Banks need to speedily develop a strategic framework and policy mechanism to help ensure data security as well as promote the use of biometrics technologies to prepare for future cyber-attacks.

Biometrics Type	Applications Covered
Dynamic Signature	Internet Banking, branch banking, document processing, workflow automation
Facial	Branch banking, fraud recognition, access control
Finger Prints	ATM, POS, ePayment, branch banking, mobile banking
Voice	Telephone banking, branch banking, password/PIN reset, high-risk transactions, mobile banking
Iris	Branch banking, ATM, internet banking, access control

Source: KPMG analysis

Learnings from global experience:

Opportunity for Nigeria to establish itself as a global FinTech hub

The rendering of financial services is changing at an accelerated pace, as FinTech start-ups emerge as enablers for the business of extremely large traditional financial institutions. While start-ups seem to be in the spotlight for the most part, government bodies and market players across the mature markets have been robustly playing their part to establish an environment for the growth of innovation and technological advancement in the financial services sector. A continued strong commitment from the government, the industry and the FinTech firms is critical to allow the FinTech revolution plant its roots deeply in any financial system.

Firstly, it is important to study the potential impact of all the market participants in the burgeoning Nigerian ecosystem to harvest the FinTech opportunity. In our earlier approach of studying mature markets where we draw out the most impactful growth drivers, the standalone impact potential was assessed. We aim to inculcate these learnings in our recommendations.

Secondly, the complex interplay of these factors is important to understand and plan for, to enable holistic growth of the ecosystem. Two approaches are notable in this regard:

- Market-driven approach: In many key markets around the world, including the UK and the US, incumbent Financial Institutions (FIs) have sought to emulate the best features of FinTech innovations within their existing business lines. This approach clearly benefits consumers overall, as they get improved offerings from their existing institutions, spurred into action by the competitive threat from FinTechs. However, for FIs to do this successfully, it is important to have very strong IT leadership and build capabilities that are not readily available within FIs.
- Collaboration-driven approach: For the emerging FinTech markets, strategies focused on collaboration may offer a sustainable change in the market, and may be easier to implement. However, it will need a deeper commitment from the stakeholders to allow a suitable gestation period for collaboration to come about between stakeholders across the spectrum.

Thirdly, it is important to identify and plan for the inflection points - those key checkpoints in the evolution journey where the risk of failure for the nascent FinTech firms are the most prevalent.

We found that top the inflection point in this market is when a FinTech firm is seeking to collaborate with FIs, and thus is crossing the chasm from being a small, successful business into potentially scaling its solution for a very large customer base within an FI.

A common (and critical) approach taken by FIs when seeking to integrate and test new FinTech solutions is to run a Proof of Concept (POC) project. Successfully running a POC requires very skilful leadership and a robust approach, and this is often the point at which FinTech / FI collaborations break down. FIs need to build or outsource the capability to run robust POCs which is where real business value is tested. If well managed, they create the foundation for a business case and eventual roll-out. If not done correctly, they bring about delay and missed opportunities.

Nigerian FinTech firms need to play their part in the POC process, by being willing to subject their innovations to the kind of testing and reporting that is required by many large FIs, but they need support (often from professional services firms) to do this.

Successful POC projects will have another measurable benefit for Nigerian FinTech firms. Every successful POC creates proof points and metrics that will make it much easier to offer FinTech innovation to FIs in overseas markets, e.g. the UK and the US.

Another inflection point for the FinTech firms is the transformation of a successful POC into a large rollout to the FI customer segments. This massive up-scaling exercise is a challenge faced by FIs working with FinTech firms around the world as the enormity of an FI customer base often puts the FinTech solution viability to the ultimate test, leading to a point of no return.

To prepare for this crucial stage, there is a golden opportunity to leverage the traditional IT strengths of big tech firms to help smaller FinTech firms make their solutions robust enough for the FI market. FinTech industry players in Nigeria should seek to use the existing IT ecosystem to create a few examples of successfully scaled innovation for FIs. These use cases could potentially open the door to global sales for both Nigerian IT firms and FinTechs.

Finally, we have summed up learnings and insights from the global market to present our recommendations in the tables below, across the following categories:

- Recommendation to Government
- Recommendation to Regulators
- Recommendation to Financial Institutions
- Recommendation to FinTech firms

Recommendations to the Government

1	**Establish FinTech parks** Federal and/or State Governments should consider establishing FinTech parks with the primary objective of promoting the growth of FinTechs and attracting investments. These parks should be created by design, provided adequate infrastructure (broadband etc.), incentives to encourage start-ups & investors and nurtured so they achieve the stated objectives.
2	**Develop a dynamic digital infrastructure** For the success of the FinTech ecosystem, it is imperative that the digital infrastructure of the country be supportive. Nigeria should work towards higher penetration of mobile, high speed broadband and IoT infrastructure to facilitate smooth connectivity across all channels. Incentives should also be provided to companies that invest in cloud infrastructure which is the backbone of the digital sector. For instance, hardware imported for use in cloud infrastructure can be exempt from duties and other import charges. This will increase the sector's ability to provide infrastructure as a service for start-ups and reduce overall costs for the sector.
3	**Facilitate development of a strong entrepreneurial talent pool** Mature FinTech markets such as the UK and the US have taken leaps in terms of FinTech development in the last few years. Many of their successful start-ups were given incentives such as tax breaks and reduced property prices to deliberately set up around universities and research institutions. The proximity of tech start-ups and young entrepreneurs to such institutions attracted high quality skills to the tech industry. Federal and State Governments in Nigeria should consider similar incentives to facilitate interaction between FinTechs and universities/ research institutions. University curriculum should be revised to place emphasis on entrepreneurship, management, leadership and modern information technology. There should also be provisions for students who demonstrate excellence in these fields to gain overseas exposure in the FinTech sector.
4	**Offer attractive incentives and funding support to start-ups and investors focused on start-ups** All mature FinTech markets analysed in this publication demonstrated strong government support in terms of tax incentives for start-ups. Some markets such as the US, UK and Singapore have specific tax incentives for technology start-ups. Funding support also exists for start-ups and investors via co-funding structures, public-private sector partnerships etc. The Nigerian government should explore selection of specific investors or financial institutions to partner with and prioritize the type of FinTechs that the government is desirous of supporting.
5	**Promote internationally and infuse a strong culture of knowledge-sharing by organizing a series of events inside and outside the country** In order to position itself as a global FinTech and technological hub, Nigeria can leverage the success stories of other expanding hubs worldwide by organizing international events and inviting leaders of start-up companies. This can lead to promotion of the digital capabilities of Nigeria, thereby attracting investments.
6	**Focus on provision of subsidized real estate** High real estate costs in Lagos, the heart of Nigeria's emerging FinTech sector, increases funding requirements for FinTech start-ups. Addressing this issue through subsidies on real estate costs will significantly lower the entry barrier and attract talent from other parts of the country. Later stage FinTechs will also benefit from such subsidies as their businesses will show profits earlier if freed of high real estate costs.

Recommendations to the Regulators

1	**Develop regulatory models that will enable the FinTech industry to thrive** It is important that regulators tread with caution and restraint to understand the complex interplay of FinTechs and Nigeria's heavily regulated financial services market. In considering regulatory initiatives to be adopted from mature FinTech markets, it is also important that regulators gain an understanding of the strategic intent and context within which such regulations were made. Special groups should be established by financial regulators with a clear mandate to monitor risks and regulatory implications of developments in FinTech while drafting FinTech specific regulations. The Payment Services Directive (PSD) for instance, is a key legislation impacting payments in Europe. The EU parliament recently revised the PSD and adopted PSD2 which has significant impact on banks and third party players including FinTechs. The thrust of PSD2 is that it mandates Banks to open up their systems to third parties i.e. Account Information Service Providers (AISPs) and Payment Initiation Service Providers (PISPs) to enable them provide financial services. However, it must be noted that new and stricter security requirements for electronic payments have also been introduced with this regulation. Considerations of such a legislation for Nigeria must entail robust engagement and contemplate all possible implications for stakeholders.

2	**Establish start-up focused regulations and support desks** Regulators of the financial services industry (CBN, NAICOM, SEC, etc.) should develop start-up focused regulations in terms of set-up, licensing requirements, regulatory supervision and ongoing compliance/ legal requirements. FinTech start-ups with limited legal and compliance resources need help to navigate multiple regulatory and compliance requirements and to build a compliance structure that is appropriate for their size. FinTech start-ups can therefore benefit from desks dedicated to help them in this regard at the various regulators.

Recommendations to Financial Institutions

1	**Provide incubation support to FinTechs** A framework needs to be developed for incubating innovative minds and giving them a direction for succeeding with their business plans. The following points highlight some of the recommendations. a. Supporting government and regulators in setting up compliance, risk and regulatory frameworks. b. Providing FinTechs assistance in go-to-market and growth strategies. c. Helping FinTech firms test and refine their products via robust POC projects with Nigerian financial institutions. This builds confidence among global FIs to adopt FinTech solutions developed in Nigeria. d. Helping FinTechs with infrastructural facilities such as office space, hardware and other logistical arrangements. e. Conversion of Company-owned unused spaces into incubation centres, thereby creating an environment for start-up communities.
2	**Mobilise both domestic and foreign venture capital funds** In order to sustain and increase investments from local and foreign players, it is important to build an ecosystem of maximum returns and most innovative offerings. This can be done by: a. Creating a marketplace platform where FinTechs can demonstrate and provide briefs about their offerings to potential investors. b. Creating awareness amongst investors and showcasing the potential available in the FinTech space. c. Enhancing capital access at the seed stage for the FinTech start-ups, so that they have funds once their business plans are approved. d. Setting aside funds for investment in FinTech companies and launching innovation challenges for them. e. Organizing more fundraising initiatives by teaming with private players and financial institutions.

Recommendation to FinTech firms

1	**Leverage incubation support** a. Work with players in the ecosystem that provide expertise in development of product/ services and go-to-market strategies. This will take FinTech solutions beyond the prototype stage and effectively market same to global players. b. Develop relationships with technology development/ implementation firms that will act as systems integration partners during product implementation.
2	**Leverage both domestic and foreign venture capital funds** a. Explore fundraising initiatives by partnering with private players and financial institutions. b. Create awareness amongst investors and showcase potential by participating in industry events and driving collaborations with established players.
3	**Identify and participate in accelerator programs** Accelerators support early-stage, growth driven companies through education, mentorship and financing. Start-ups gain the benefit of compressing years' worth of hands-on learning into a few months of intense learning. Nigerian FinTechs will have better chances of succeeding by identifying and participating in credible accelerator programs.
4	**Partner with credible sourcing platforms** FinTech Sourcing platforms specialize in connecting financial institutions to FinTech solutions that are vetted and relevant to their respective businesses. Nigerian FinTechs with solutions that successfully go through the vetting process of these sourcing platforms gain assurance that their solutions meet international standards and can be implemented by any financial institution irrespective of its location.

Appendix A: Mature market analysis

The United States

Banking has permanently shifted: ATM cards, teller windows and cash are increasingly less relevant. Now, every major bank has a digital solutions strategy to take their products and services (wealth management, lending, payments) mobile.

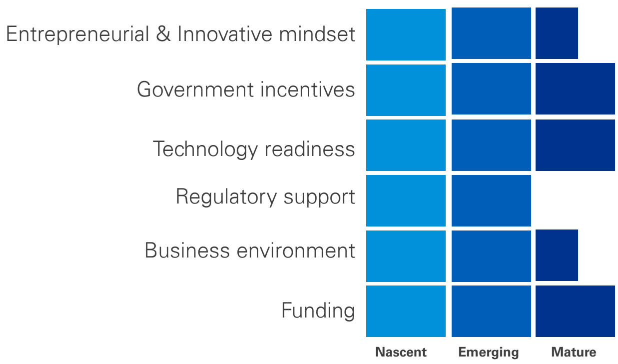
Fiona Grandi, Financial Services FinTech Leader, KPMG in the US

The US is the gravitation centre of entrepreneurs as well as hi-tech talent, which has attracted the highest FinTech investment and built the largest network of start-up firms.

The US dominates FinTech industry with major hubs such as Silicon Valley and New York. It has access to the highest FinTech investment from the government, corporate, large banks and venture capitalists along with significant support from universities and research institutes to set up innovation labs, develop FinTech courses and launch accelerator programmes to build innovative and creative products, services and companies.

The US has more than 25 unicorn FinTech start-ups with value worth USD 1 billion. The Silicon Valley has more than 15,000 start-up firms[1], about two million hi-tech workers and the most experienced start-up employees[2].

Assessment of FinTech environment in the US



Source: Internal KPMG Analysis, 2016

Key growth levers

Government incentives

The US has been consistently moving towards easing of regulatory barriers, widening its benefit coverage and qualification definitions to include more budding start-ups than any other FinTech ecosystem in the world[3]. This offers a strong pull to the US as a hub for entrepreneurs seeking support and investors seeking investment protection. Example:

- Start-ups in New York offers 100 per cent tax benefit for the first 10 years to start-up companies in New York. This more than covers the gestation period of the two years it takes to establish itself[4].

Funding ecosystem

The US has been an undisputed market leader in terms of deal and market size in the FinTech space. The market has seen all-round participation from VC funds, large banks and crowdsourcing platforms. Some notable statistics are:

- FinTech companies in the US raised a total funding of USD 7.3 billion across 378 deals in 2015, up from USD 4.3[5] billion in 2014 across 355 deals.
- Total deal value grew at a five-year CAGR of 31 per cent in New York and 13 per cent in the Silicon Valley by 2014[6].

Large banks have also set-up FinTech venture funds. BBVA bank allocated a USD 150 million fund and Santander allocated a USD 100 million fund to invest in FinTech start-ups[7].

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Emerging strength areas

Regulatory support

Regulatory framework introduction to the retail funding pool: The US government has been consistently moving towards easing of the regulatory barriers to retail investments into the FinTech landscape, with sufficient care and safeguards.

This strategic move is expected to bolster not just the funding backbone of the market but also have implications on indirect brand-building through digital channels and social media. Example:

- In October 2015, the SEC adopted regulations to allow crowd funding firms to sell securities, thus driving fund infusion from a huge additional investor base.

Regulatory focus on investor interest
The US's highest Federal and state offices are coupling their declared agenda with on-the-ground initiatives to revive the consumer confidence as well as the economy. A strategic innovation focus in forums coupled with impactful initiatives are key to the sector's growth. Example:

- White House launched the 'Startup America' initiative in 2011 to promote entrepreneurship[1], set to offer a robust coverage of FinTech.

Business Environment

All round growth in accelerators from corporates and academia, to bolster the seed and growth stage infrastructure and mentorship to complement its funding backbone.

- FinTech Innovation Lab and Barclays Accelerator were launched in New York City in 2015[2].
- Fund for New York City has establish a New York FinTech innovation Lab in 2010[3].
- Stanford University developed university-affiliated accelerator programme, StartX with a grant of US 3.6 million in 2013[4].

Next stage focus areas

Talent acquisition and retention

- Given the surge in demand, a standard tech- compensation range of approx. USD 12000[5], and this premium is straining the funding pressure of FinTech start-ups. Wider sourcing channels, non-monetary benefits and other exemption-based instruments will help unlock the potential of the region further through better talent retention.

Focus on workforce migration, real estate

Pro-talent immigration laws
The ecosystem depends on non-American talent (US school pass-outs, hires). Non-Americans face stringent visa policies, which has led to the formation of remote teams or second offices in other cities around the world[6]. The introduction of more pro-talent immigration system can help identify, grow and retain talent for the FinTech industry.

Non-subsidized real-estate at the hubs
High real-estate costs at the Silicon Valley and NYC (two biggest start-up hubs) are making start-ups dependent on larger late-stage funding. This issue, if addressed by enabling direct to user real-estate subsidies, can provide respite to many bootstrapped FinTech start-ups or those aspiring to get late-stage funding by showing profitability.

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The United Kingdom

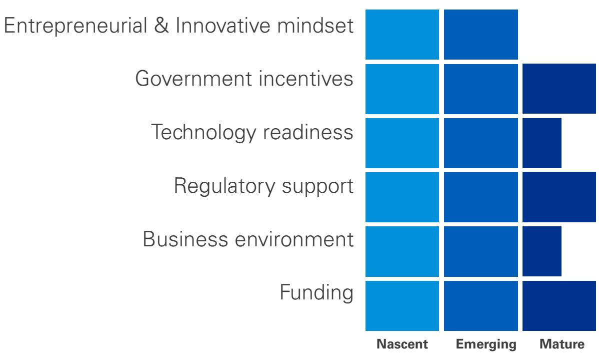
The UK is clearly a leading center for FinTech but with the rise of Chinese firms, that position is not guaranteed. The good news is the UK is currently home to more emerging FinTech companies on the list than anywhere else.

- Warren Mead, Global Co-Lead of KPMG's FinTech practice

The UK has established itself as one of the most attractive locations in FinTech with high digital connectivity, an indigenous financial services workforce and solid funding landscape

Apart from getting more consolidated as a global financial hub post the financial crisis of 2008, the UK has also emerged as a strong FinTech ecosystem, with USD 1.07 billion of investment activity in 2015[1]. This development was imminent due to the upsurge of banking technology in a strained traditional financial sector, and experienced managerial and financial workforce in the US (approximately 60,000 FinTech employees), and a mature and visionary policy regime. The capital demand has been addressed by an abundant investor and customer community, and an affluent customer base with regulatory protection by the government.

Assessment of FinTech environment in the UK



Source: Internal KPMG Analysis, 2016

Key growth levers

Regulatory support

The UK has maintained its focus on providing the strongest regulatory support to its FinTech sector through taxation, disclosure mandates, consumer protection regulations and risk management. Given the EU's local economic scenario, it provides the UK a distinct head-start in leveraging the global FinTech growth wave at the right time. Example:

Tax incentives for FinTech (Small Business Rate Relief), which will be doubled from 50 per cent to 100 per cent from April 2017[1].

Virtual currencies, such as bitcoins have been promoted with tax holidays while many other countries banned their usage[2].

The UK appointed a brand ambassador for the FinTech sector in July 2015 and established advisory units for FinTech growth[3].

Collaboration

The UK is focusing on collaboration with global FinTech ecosystems to counter its strained availability of technology talent and mentorship. This is key to the UK given its comparative positioning of technology talent compared to global FinTech hotspots like New York and Singapore which have an equally strong financial institutional presence. Example:

- A UK-Israel tech hub has been set-up to share leading technology practices[4].
- The UK-Singapore cooperation focuses on leveraging inherent strengths of each other for technology and operational matters[5].

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Government incentives

There are aggressive programmes in the UK to address entry barriers and mobilise fair competition and go-to- market ease. Example:

In October 2015, the government of UK launched research initiatives with USD 14.64 funding for crypto currency and distributed ledger technology[1].

Emerging strength areas

Business environment

Despite the traditional disconnect at regulatory and business fronts within the EU, the UK's business environment for FinTech is given a strong boost by policy alignment, digital infrastructure, demand generation and expanded outreach. Example:

Initiatives like the Single Euro Payment Area and Payment Services Directive 2 of a single digital market are helping to create a stronger environment for FinTech companies[2].

Funding

Since 2014, there has been a strong growth in the financial institutions openness to participate as both investors and early clients of FinTech firms. This coupled with Government's funding schemes is poised to take the UK FinTech market to valuations growth and reduced dependence on late-stage funding.

- Venture capital (VC) funding increased manifold in the country from USD 162 million in 2011 to USD 962 million in 2015. The number of VC-backed deals increased from 16 to 61, of which 50 deals were in London, amounting to USD 747 million[8]. The UK accounts for more than half of the overall FinTech funding in Europe.

- Government funding schemes: UK Angel Co-fund, Start- up Loan Scheme, Enterprise Capital Fund Programme, UK Innovation Investment Fund, Business Finance Partnership and Future Fifty programme.

Technology readiness

To counter the absence of a traditional technology hub of the stature of a Silicon Valley in the US, UK's chosen strategic focus areas include global technology partnerships and development of strong digital asset and knowledge base. Example: Open University and Innovate Finance in the UK have launched FinTech courses to up skill students and build strong skilled workforce. The Department of Education has also launched a technical baccalaureate for college students[3]

Next stage focus areas

Uniform policy development

The EU's cultural and regulatory diversity has been a traditional concern to the region's flexibility in responding to FinTech's latest enablement or disruption. A long-standing pan-Europe agreement on various policy matters is expected to unlock the next level of opportunities for UK and EU's FinTech opportunities.

Participation of corporations

The next levels of growth can come through the FinTech firms' better accessibility of corporations, which currently contribute to less than 15 per cent in funding and incubation support to the UK's FinTech firms. A strong impetus is required to bring the country's largest corporate stakeholders to match the government's efforts.

Late-stage funding and exits

With the emergence of other FinTech hubs, such as Israel and Singapore, the UK has to incentivize its investors to keep a steady flow of investment within the geography.

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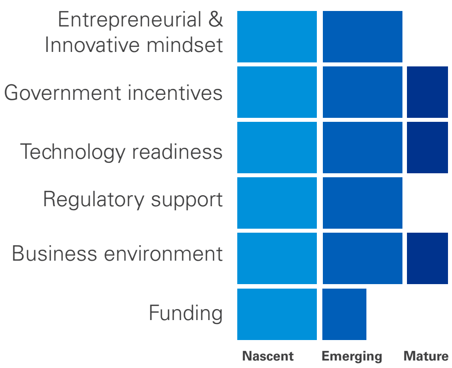
Hong Kong

Hong Kong is shaping up as a strong FinTech hub in Asia, backed by robust investment support from the government and venture capitalists to nurture entrepreneurship.

Hong Kong has emerged as a major financial centre, employing a population base in excess of 235,000[1]. Its affluent and well-educated population, entrepreneurial history and the proximity to funds provide start-ups a promising platform to establish their roots and grow their businesses. The country ranks among top five nations on entrepreneurship and global financial centre index.

The government of Hong Kong has introduced several initiatives, incentives and incubator programs like InvestHK, Startmeup. HK, Cyberport and many more[2] that will further bolster growth of this key FinTech ecosystem of Asia which serves as a gateway to the China market.

Assessment of FinTech environment in Hong Kong



Source: Internal KPMG Analysis, 2016

Key growth levers

Government incentives and collaboration

The government's intent for the growth of the FinTech sector in the region is reflected in its wide-covering policy propositions for financial, talent, exposure and infrastructural maturity needs[3]:

- In March 2015, the government established a FinTech steering group to advise how Hong Kong could become a FinTech hub. Chaired by the Secretary for Financial Services and the Treasury, the steering group comprises government and regulatory officials and ten figures from business and research and development institutions[4].
- Apart from allocating HKD17 billion for the FinTech sector, certain measures for early implementation of the programme were announced by the Financial Secretary for 2016–17 budget, with incubation programme for 150 FinTech start-ups by 2021[5].
- In November 2015, the government passed the Payments System and Stored Value Facilities (SVF) ordinance, through which the Hong Kong Monetary Authority regulates all multi-purpose SVF[6]. Under the new regime, the HKMA is empowered to implement a mandatory licensing system for multi-purpose stored value facilities and perform relevant supervision and enforcement functions.
- In the Finance Minister's budget speech in March 2016, he made reference to the HKMA, SFC and the Office of the Commissioner of Insurance setting up FinTech dedicated platforms to liaise with the industry to ensure that the market will balance between market demand and investors' understanding and tolerance of risk when introducing innovative financial products and services. Both the SFC and HKMA have established such platforms in March 2016.
- There is an incentivising programme for foreign start- ups to re-locate to Hong Kong and collaborate with Israel for FinTech development[7].
- InvestHK - Incubator programme through HK Science & Technology Parks guarantees loans and marketing grants for SMEs in the country[8].
- Startupmeup.HK program has released an online portal for the HK start-up community with resources and event updates.
- Cyberport is a newly launched government-backed smart space and ICT hub in the region.

Business environment

Hong Kong's long history as a banking and finance hub, its affluent and increasingly well-educated population and tradition of entrepreneurship provide a secure foundation and environment for FinTech development.

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Emerging strength areas

Funding

The funding in R&D, seed capital and broad sector growth is seeing growth.

- Set-up an enterprise support that provides funding of up to HKD10 million for R&D activities[1].
- Established Innovation and Technology Fund in September 2015, allocating HKD5 million in funding for the development of the sector[1].
- Hong Kong FinTech start-ups got USD160million in funding in January 2016.
- Corporate venture fund amounting to HKD50 million was allocated for co-investment opportunities by the Hong Kong Science and Technology Park, established to assist in investment and financial needs of start-ups[2].

Regulatory support

Specialized bodies within HKMA have been created to offer a strong regulatory framework to the FinTech ecosystem. Example:

- The Securities and Future Commission of Hong Kong has set up a FinTech Advisory Group to monitor the risks and regulatory implications of developments in FinTech.

Academic focus on FinTech

Universities are placing emphasis on the FinTech sector through talent and mindshare building for leadership, entrepreneurship and management, in a traditionally analytical workforce[3]. Example:

Courses dedicated to entrepreneurship are promoted in HK. For 2016-17, the Finance Secretary has included provisions for 300 university students, through Cyberport, to gain overseas exposure in the FinTech sector[4].

Accelerator programmes

Accelerators and incubators are gaining traction in the region, spurred by a favorable business environment in Hong Kong. Examples:

- FF16 campaign, a FinTech competition launched by NxtBnk as part of StartmeupHK Festival[5].
- SuperCharger Accelerator, a 12-week programme for FinTech companies and RISE, a conglomeration of world's biggest companies[6] and HK's most exciting start-ups has attracted global FinTech community attention.
- Nest is a programme investing in early stage start- ups and high growth businesses by running a corporate-backed accelerator[7].

Next stage focus areas

Regulations specific to FinTech companies

The financial regulators in Hong Kong need to make provisions that cater specifically to the FinTech sector in terms of set-up, licensing requirements, regulatory supervision and ongoing compliance and legal requirements. FinTech start-ups with limited legal and compliance resources need help to navigate the regulatory maze, gain a full understanding of the legal requirements applicable to them and then to build a compliance model appropriate for their size and operational model.

High property costs and difficulty in opening bank accounts, makes it a challenge for start-ups to gain traction in the sector. The ease and cost optimization of these logistic infrastructure elements will unlock the possibilities for many other FinTech firms to sustainably grow in the region.

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Singapore

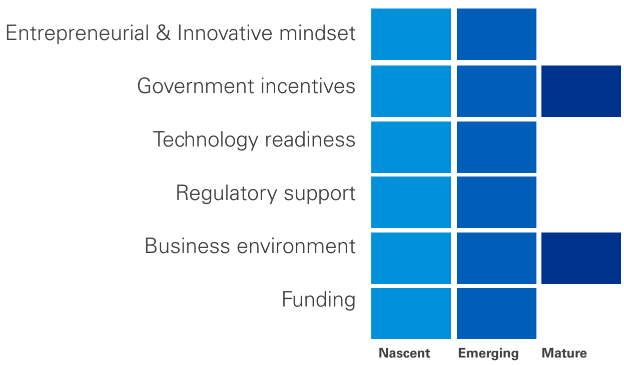
> **Singapore has been a global leader in improving its financial inclusion statistics with the use of financial technologies. Its FinTech sector is set for accelerated growth of more than 50 per cent in the global average adoption rate by 2026.**

Singapore is attracting investors and foreign industry players along with extensive government support and expertise of corporate mentors to position itself as an international leader.

Singapore has framed a cohesive regulatory structure specific toFinTech. The country has a strong standing in the major sectors forming the backbone of FinTech, i.e. financial services, technology and telecom and, contributing to strong digital infrastructure. International entrepreneurs and banks have set up their local Asian units in Singapore, bringing in global expertise and experience. Singapore ranks one on the ease of doing business[1].

FinTech innovation is flourishing in Singapore primarily driven by the global talent attracted to live and base themselves there. Singapore is gradually morphing into a major Asian start-up hub of immigrant talent building regional/global business ventures.

Assessment of FinTech environment in Singapore



Source: Internal KPMG Analysis, 2016

Key growth levers

Government incentives and collaboration

The Monetary Authority of Singapore (MAS) is strongly committed towards developing the FinTech sector in the country, making it one of the most competent FinTech ecosystems in Asia, and thus is a prime example of the state policies attracting investments for the entire community. Example:

- The new Financial Sector Technology and Innovation (FSTI) scheme, which was introduced in June 2015, brings together stakeholders from the government and the industry to identify issues and develop solutions that increase productivity.
- The UK and Singapore entered into a deal to share and use information on financial services innovation by the UK's Financial Conduct Authority (FCA) and Singapore's MAS. A "regulatory cooperation agreement" was designed to help companies win authorization rights for new financial technology products, services and business models in both jurisdictions[2].

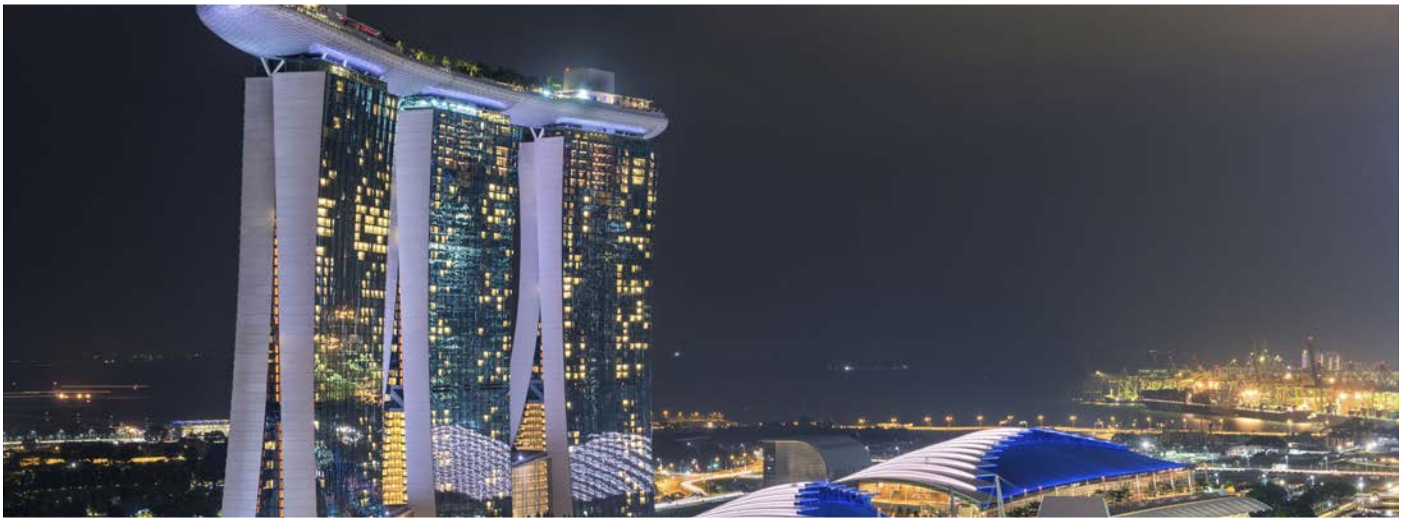
Business Environment

Singapore's incumbent importance as a financial hub provides a diverse support backbone, talent pool, infrastructure and interest of global giants in the proximity.

This serves a steady source of funds, mentorship, innovation and incubation support. Examples:

- International banks such as Citi[3] and global consultants such as KPMG[4] have set up innovation labs, driving tech innovation in financial services.

1. The global start-up ecosystem ranking2015, compass, August 2015
2. Lessons banks can learn from Singapore FinTech ecosystem
3. Citi launches innovation lab in Singapore
4. KPMG launches matchmaking initiative for start-ups



- Singaporean bank DBS has allocated a SGD 10 million investment into the development of the Singapore start-up ecosystem[1].

Financial inclusion

Singapore has been a global leader in improving its financial inclusion statistics with the use of financial technologies. It leveraged smartphone usage with strong offers and policies to drive this change, which sets its FinTech sector towards accelerated growth of more than 50 per cent in the global average adoption rate by 2026.

Emerging strength areas

Entrepreneurial mindset

The Singaporean populace has been well-educated in technology and management and is well-placed financially. With a growing skill focus and entrepreneurial temperament by the universities and public institutions, an accelerated growth in FinTech innovation is in plans.

Example:

- SkillsFuture, a national programme to up-skill Singaporeans was recently launched[2].

- The Singapore Management University launched a student community FinTech SMU[3] focused on fostering innovation in the sector.

Tech readiness

Singapore scores the highest amongst the world in smartphone and internet usage. Alongside, it has the leading holder of top talent in science, technology and engineering in Asia. This lends a strong background to garner quick adoption, and pivots the business to the digital consumers' needs.

Regulatory and policy alignment with vision

Further to the policies oriented towards current FinTech growth, there is an increasing focus from the Government on the broader strategy to solve core financial sector issues, which may offer the right platform to develop the next-stage FinTech market faster. Example:

The FinTech and Innovation Group (FTIG) was set up in 2015 to regulate policies and prepare action plan to enable technology deployment for risk management and improve efficiency in the financial services sector[4].

Next stage focus areas

Growth funding

Start-ups in Singapore can gain from a growth in late-stage funding from venture capitalists. VCs so far have shown a tendency to switch focus between different global markets, and this needs to be addressed with regulations and a strong corporate client base to enable a start-up's growth with more than early-stage incentives.

Talent acquisition and retention

Talent acquisition in the region is a challenge, as it takes approximately 50 days to hire an engineer, and salaries are more as compared to other Asian countries. With agility and dynamism being the hallmark of FinTech, talent management and attrition issues can be addressed to achieve the next level of sustained FinTech growth in the region.

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2. USD500 in skillsFuture credits 6 long weekends more what you can look forward to
3. The Singapore Management university launched a student community
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Australia

> **Australia has an emerging FinTech start-up ecosystem, and has recently started gaining substantial attention from government and venture capitalists.**

Australia has an emerging FinTech start-up ecosystem, and has recently started gaining substantial attention from government and venture capitalists.

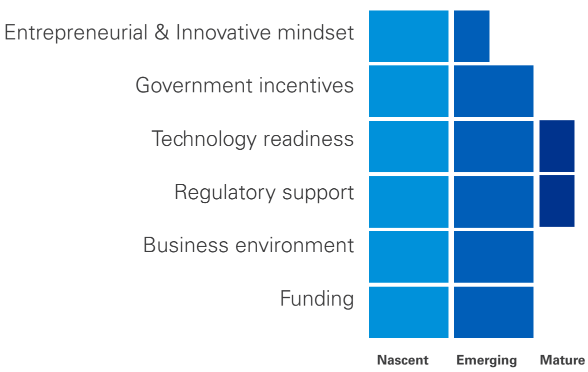
The Australian FinTech start-up community is quietly growing into a major player in the global FinTech ecosystem, with 14 per cent of the global funding raised flowing into Australia. With a robust financial sector (third largest in fund management globally) that is larger than many Asian and European counterparts in size, it has a strong breeding ground for domestic consumption of emerging FinTech capability. The quality and availability of young, diverse tech-savvy talent along with sophisticated financial services expertise makes the country a favourable location for setting-up FinTech start-ups.

Key growth levers

Government incentives

The Australian government is keen to address the long- standing needs with immediate benefits in taxes and protecting employee stakes in start-ups. It has announced a formal set of FinTech priorities, with FinTech included in recent Federal Budget measures.

Assessment of FinTech environment in Australia



Example:

- Employee share schemes: From 1st July 2015, tax concessions under employee share schemes were increased to help early-stage start-ups retain right talent[1].
- Immediate cash-flow benefits: The government allowed start-ups to deduct expenses incurred while starting the business[2].
- Tax saving: The corporate tax rate reduced from 30 per cent to 28.5 per cent for companies with revenue less than USD 2 million[3].
- Significant Investor Visa (SIV) programme was launched on 1st July 2015 by the government to enable venture capital fund managers in assisting new high growth technology businesses[4].

Launch of incubators, innovation hubs

The Australian business environment and governmental support has led to an abundant inflow of institutional support through incubation and innovation hubs. Example:

- In May 2015, collaboration between the private and public sector helped to establish a FinTech hub, Stone and Chalk that provides subsidized office space, promotes cross-sector collaboration and helps to attract international talent and capital to Australia. The hub offers event spaces and accommodates up to 240 entrepreneurs through fixed and hot desks.
- Ever since Innovate Australia was launched, it has been connecting technology SMEs and businesses to develop globally competitive B2B solutions that address compelling needs.
-

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- The Entrepreneurs Infrastructure Programme, started in July 2014, offers advice and mentorship on assessment and commercialization of business ideas.
- AWI Ventures Accelerator Programme was launched in March 2014 and brings AUD 1 million for FinTech start- ups operating in the wealth management space.

Emerging strength areas

High tech readiness and skill development focus

With Australia's technology immigrant population reaching an inflection point, there is a sudden rise in the available technology workforce in popular areas of FinTech (such as mobility, analytics, Big Data), to ease the pressure on the talent needs of the sector.

Additionally, the Australian government has initiated a strong technology drive for the sector to counter the market forces of outsourcing and emigration of the best talent. Example:

- The government aims to invest about USD 33.3 million in solutions that bring together private and public identity providers, such as a voice biometric systems and by introducing a secure way for people to authorize others to act on their behalf with the government.
- The government is planning to roll-out the national broadband network, to expand its digital infrastructure. In addition, it announced the creation of a Digital Transformation Office (DTO) with an aim to enhance digital identity and security processes.

Next stage focus areas

Government plans to introduce multiple regulations to facilitate the growth of FinTech in Australia[1]

- Australian Securities and Investments Commission will release a consultation paper on a regulatory sandbox exemption to enable FinTech entrepreneurs to test ideas for up to six months with a limited number of retail clients and up to prescribed investment thresholds.
- Australian Securities and Investments Commission has released a consultation paper on treatment of digital currency under GST to avoid double taxation.
- The Government is exploring the use of electronic invoicing by agencies to improve efficiency.
- Mandatory programme of comprehensive credit reporting (CCR) is in process for big ticket lenders by year-end and for smaller players by 2017.
- Productivity commission enquiry has been appointed for enhancing data aggregation, sharing and usage and regulating open data API.
- In March 2016, ASIC published draft regulatory guide for robo advisors to help them understand the regulatory requirements.
- A bill was introduced to facilitate the crowdsourced- equity considering an option to increase asset and turnover limit to USD 18.1 million.

Funding sync with global standards, opportunities

Venture capital funding in dollars and volumes as a proportion of GDP is significantly lower in Australia than its global peers such as the UK and Canada. Especially, venture capital for mature start-ups is a challenge, attributed to the risk-averse nature of Australian investors. If this mindset is changed by a more conducive support system, the next level growth is imminent.

Talent acquisition costs

The cost of setting up an office and hiring skilled hi-tech workforce is high, and is likely to cause long-term talent retention issues. Example:

- The cost of hiring software engineers in Sydney is at least 50-60 per cent higher than the rates in emerging markets like Asia and Israel. An intervention to address this talent premium will help in FinTech workforce growth.

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Israel

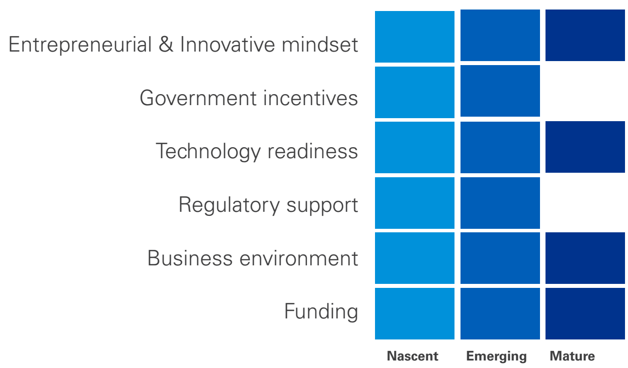
Over the past year, there has been a shift as banks have moved from seeing FinTech companies as disruptors to co-creators. Banks are increasingly collaborating with FinTechs to embed new services and technologies that improve customer experience and drive efficiency.

Dorel Blitz, Head of FinTech, KPMG in Israel

Israel uses indigenous technology skills and a strong network of foreign investors, providing favourable environment to foster FinTech innovations.

Israel has emerged as a strong FinTech ecosystem, with more than 500 active FinTech start-ups registered in 2015. This is primarily driven by their legacy of innovation and technology. This has been coupled with strong overseas investor interest, presence of more than fourteen global innovation centres, three global FinTech hubs, an organized financial sector and steady policy support. Tel Aviv has launched multiple international events to provide a global platform to Israeli start-ups, which are presided by celebrity Israeli serial entrepreneurs to keep engaging the right audience in the world forum.

Assessment of FinTech environment in Israel



Source: Internal KPMG Analysis, 2016

Key growth levers

Tech readiness and focus on cybersecurity

Technical skilled workforce combined with a high concentration of tech firms are the biggest strengths of Israel. The country has other critical demographic ingredients - extremely tech savvy and research oriented populace – a critical need for finding quick acceptance of highest quality products in the local market. Example:

- Israel has a large number of active tech start-ups, with about 8500 in Tel Aviv itself making it the seventh largest start-up hub globally[1].
- Israel has witnessed a significant number of locals returning to the country after gaining global experience on the Wall Street and in London[2].
- Hi-tech firms such as Microsoft[3], Intel[4] and Amazon[5] have their accelerators in Israel and have ongoing investment plans.

Emerging strength areas

Global funding

There is considerable commitment shown by the global investor community. Example:

- Exponential growth in the amount of capital raised by FinTech companies between 2009 and 2014, with this number set to grow higher at the end of 2016[6].
- In 2015, 373 Israeli start-ups raised USD 3.58[7] billion, with a 69 per cent year-on-year (YoY) increase.
- In 2015, Israeli FinTech raised 12 per cent of all money invested in the country[1].

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Business environment

Israel has a well-organized financial sector, which is instrumental in making steady investments to keep their systems and offerings secure, usable and cutting edge. Example:

- Major global financial institutions have set up innovation labs, such as Barclays Accelerator ISP FinTech Hub and Citigroup's accelerator.
- Local incubators by domestic players such as Bank Leumi are also laying big bets on their domestic FinTech talent.
- The Israeli Defense Forces has helped in building abundant local tech talent through R&D centers[2].

Government incentives

Israel's Ministry of Finance is keen on developing a regulatory structure for the FinTech sector and is currently considering various regulatory models from the UK, Ireland, the US and Australia.

Also, to further incentivize the fund and achieve talent inflows, short-term premiums and tax break policies have been proposed. Example:

- Israel start-up visa was introduced in October 2015, granting permission to entrepreneurs and tech workers to develop projects in Tel Aviv for up to five years[3].
- International events are regularly hosted in the region, such as FinTech Tel Aviv 2014[4], Digital-Life-Design[5], Go 4 Israel[6] and Mix Israel Innovation International[7].
- The Chief Scientist and Israel Innovation Authority have provided grants to support programmes[8].
- Tax breaks to venture capital backed accelerators. The Angel Act (2011) offers tax incentives to investors invest early-stage capital in firms[9].
- Tax benefits to investors funding start-ups which are not three years old[10].

The current state of initiatives is encouraging, but more, longer-term and domestic-focus policies need to be put in place at the earliest. A strong case of businesses to reside and not just grow in Israel is likely to help in directing not just seed capital and series A/B stages of VC money, but also till the growth stage (Series E/F), IPOs and domestic exits with the FinTech firms.

Next stage focus areas

Rigid policy on FinTech compensation

The Israel government has capped the maximum pay for financial services executives, especially those working on high-tech offering with strong revenue potential. If this is corrected, this could lead to a reduction in the brain drain of FinTech skills to more developed and higher-paying countries.

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Abbreviations

AISP	Account Information Service Provider
API	Application Programming Interface
ASIC	Australian Securities and Investments Commission
ATM	Automated Teller Machine
AUD	Australian Dollar
B2B	Business to Business
BVN	Bank Verification Number
CAGR	Compound Annual Growth Rate
CAMA	Companies and Allied Matters Act
CBN	Central Bank of Nigeria
CCR	Comprehensive Credit Reporting
DBS	(formerly) Development Bank of Singapore
DLT	Distributed Ledger Technologies
DTO	Digital Transformation Office
EU	European Union
FCA	Financial Conduct Authority
FI	Financial Institution
FinTech	Financial Technology
FSI	Financial Services Industry
FTIG	Fintech and Innovation Group (Singapore)
GDP	Gross Domestic Product
GST	Goods and Services Tax (in Australia)
HK	Hong Kong
HKD	Hong Kong Dollar
HKMA	Hong Kong Monetary Authority
IBM	International Business Machines
ICT	Information and Communication Technology
IFC	International Finance Corporation
IMD	International Institute for Management Development
IPO	Initial Public Offering
ISA	Investments and Securities Act
IT	Information Technology
KYC	Know Your Customer
LASG	Lagos State Government
MAS	Monetary Authority of Singapore
M-PESA	Mobile PESA (Money)
MPOS	Mobile Point of Sale
NAICOM	National Insurance Commission
NBFC	Non-Bank Financial Corporation
NFC	Near Field Communication
NIBSS	Nigeria Inter-Bank Settlement System
NIP	NIBSS Instant Payment
NYC	New York City
P2P	Peer to Peer
PE	Private Equity
PIN	Personal Identification Number
PISP	Payment Initiation Service Provider
POC	Proof of Concept
POS	Point of Sale
PSD	Payment Services Directive
PSV	Payments System Vision
QR	Quick Response
QRNG	Quantum Random Number Generator
R&D	Research and Development
SaaS	Software as a Service
SEC	Securities and Exchange Commission
SFC	Securities and Future Commission
SGD	Singapore Dollar
SIV	Significant Investor Visa (in Australia)
SME	Small and Medium Scale Enterprises
SMU	Singapore Management University
STN	Stanford Seed Transformation Network
SVF	Stored Value Faciliites
TPS	Transactions Per Second
UK	United Kingdom
USAA	United Services Automobile Association
USD	United States Dollar
USSD	Unstructured Supplementary Service Data
VC	Venture Capital

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