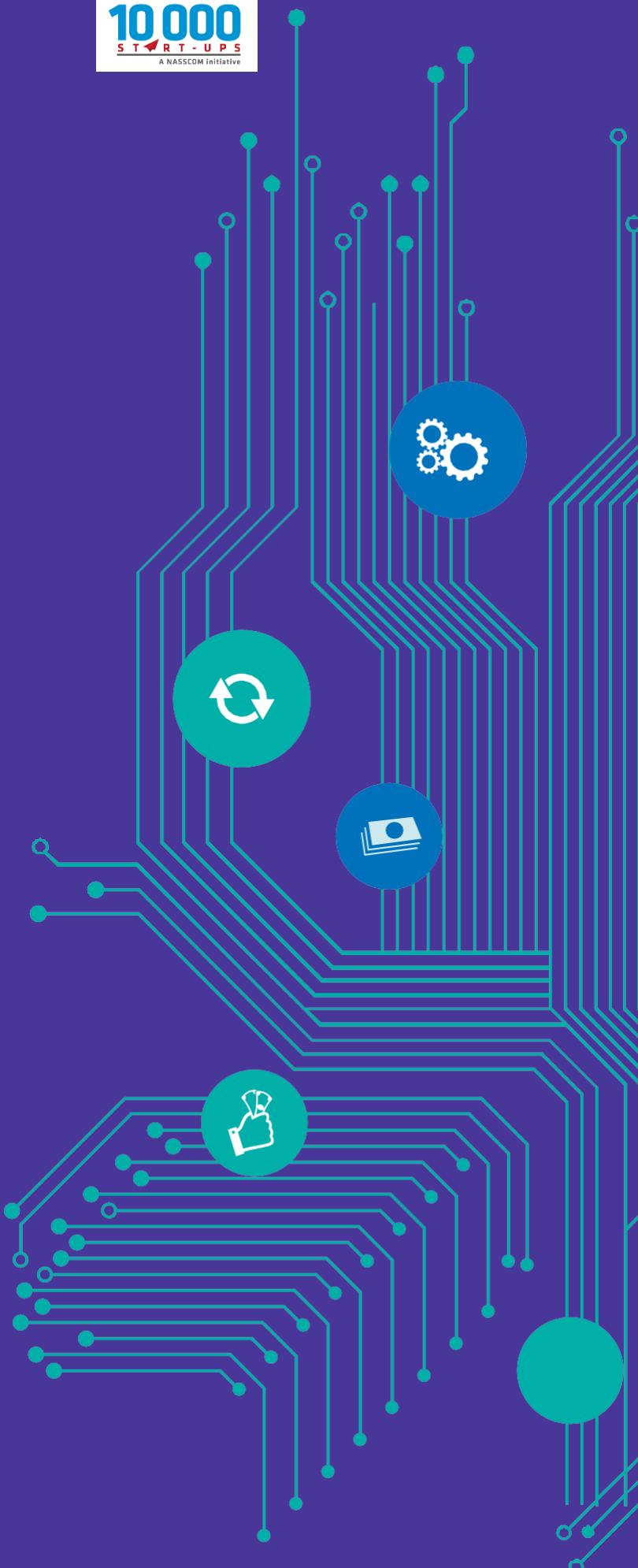




Fintech in India

A global growth story

Joint publication by KPMG in India and
NASSCOM 10,000 Startups



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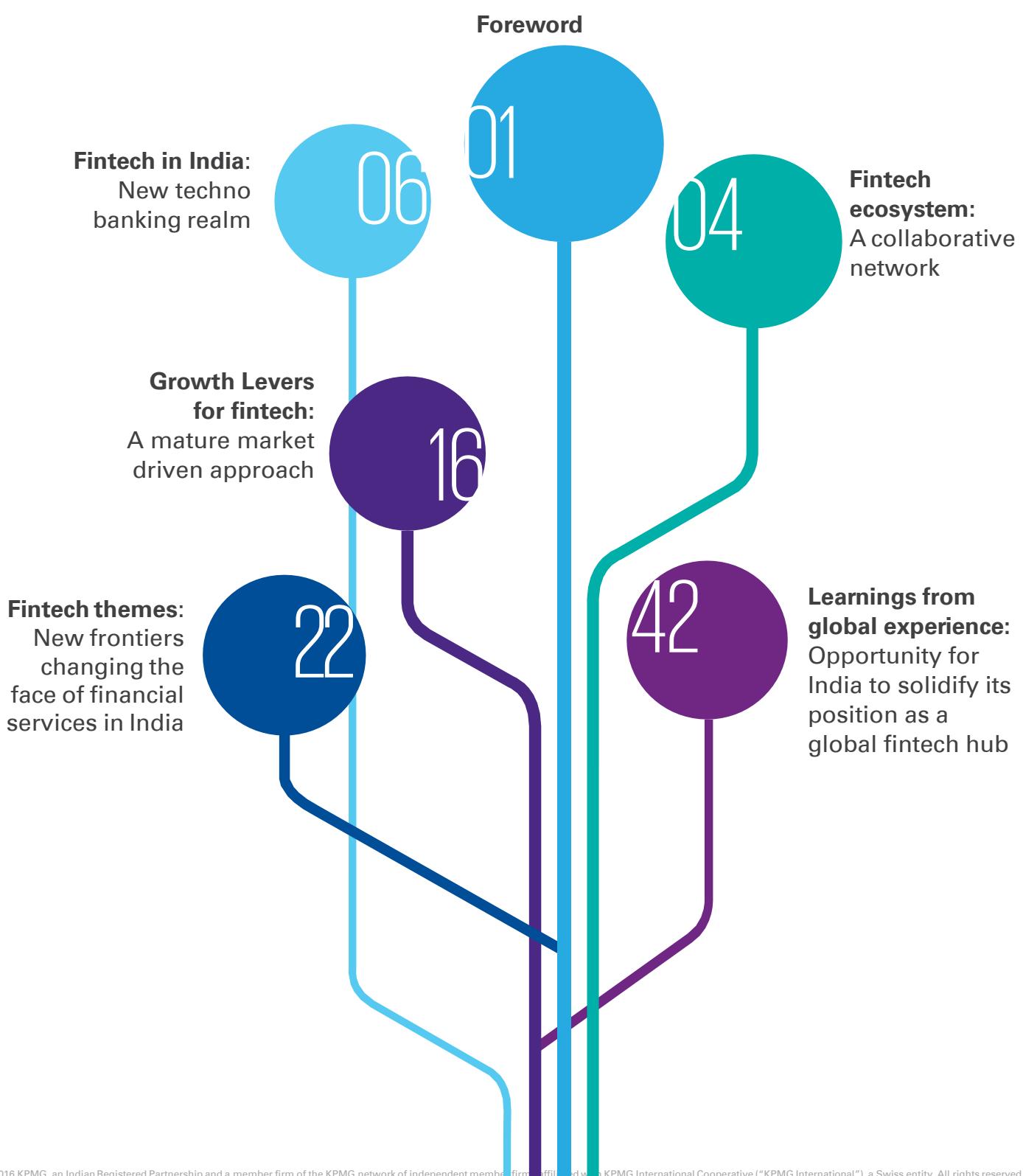
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Table of contents



Foreword

The buzz around fintech has gained substantial attention of traditional financial institutions, startups, venture capitalists and regulators. Banks and regulators are hard-pressed to revisit their operating model and policies respectively to create a conducive environment of collaboration and dynamism amidst the participants in the fintech ecosystem.

The year 2015 was a formative year for the Indian fintech sector, which saw the emergence of numerous fintech start-ups, incubators and investments from public and private investors. It was clearly reflected that a right mix of technical skills, capital investments, government policies, regulatory framework and entrepreneurial and innovative mind-set could be the driving force to establish fintech as a key enabler for financial services in India. Building a robust fintech ecosystem where start-up firms engage in external partnerships with financial institutions, universities and research institutions, technology experts and government agencies is expected to be a key enabler for growth and innovation in the fintech sector.

With KPMG and NASSCOM's 10000 Startups experience and proficiency in the sector, the report offers a thorough view of global fintech hubs and themes, thereby drawing key learnings, addressing opportunities and challenges for India to propel the much needed growth of the fintech sector.

Our focus through this report is on the seven key themes, which are creating transformational waves across the financial ecosystem in India. These fintech themes serve a dual purpose. While they help financial institutions renovate their back-end processes and provide a competitive edge, they also offer customers a smooth user experience, unexplored value added services and an interactive marketplace. Some of these themes such as next-generation payments and financial inclusion are quite mature in India in terms of fintech start-up ecosystems, government regulations and steps taken by the incumbent market participants. While P2P lending, robo advisory, Bank in a Box, security and biometrics are striding fast towards mass market implementation, blockchain has just marked its entry with a promising future in the financial services arena. This is in line with the excitement about the extensive usage of fintech across the value chain of financial services institutions, which has increased in recent times.

A wide gamut of fintech sub-sectors have emerged and have been adopted by key players of the financial sector globally. The Indian financial services sector has embarked upon its digital journey and is catching up fast with its global peers in terms of adoption. Multiple fintech hubs have evolved across the globe — the U.S., the U.K., Israel, Singapore, Hong Kong and Sydney to name a few — which may well serve as a yardstick of fintech evolution for the emerging markets.

Finally, this report from KPMG in India and NASSCOM 10000 Startups intends to highlight leading practices and serve as a guide to strengthen India'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.

Neha Punater

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Fintech
KPMG in India

Vidhya Shankar

Head
Partnerships
NASSCOM 10,000 Startups



Introduction

This report assesses the rise of fintech (financial services technology) as a new chapter in the Indian 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 India. Alongside, we have aimed to capture a glimpse of the fintech evolution in India and its adoption of the “fourth industrial revolution” by India’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 (U.K.), the United States (U.S.), 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 research report, by KPMG in India in collaboration with NASSCOM 10,000 start-ups and Matchi, is developed with a vision to help and guide India to become a key fintech hub through cross-industry collaboration and global benchmarking. Our research has focused its base objective towards assessing the Fintech landscape in India, analysing the various stakeholders, identifying key growth drivers. Thereafter, we have recommend action points that could enable India to establish itself as a mature fintech ecosystem by global standards.

Content

This report’s content is structured to address the following key questions:

- What are the key growth drivers and benchmarks set by key global fintech ecosystems, and where does India 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 India?
- 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 Indian fintech market:

- Studying the India market’s key stakeholders: Leverages KPMG and NASSCOM’s wide client-base and sector expertise to study the Indian fintech ecosystem’s different stakeholders for their current state of maturity.
- Assessing the Indian landscape from the global perspective: Leverages KPMG’s extensive research capabilities and global network to extract insights from global fintech hubs, and structure them to guide the Indian ecosystem through detailed recommendations for each stakeholder.
- Key theme identification: Identifies key fintech themes which are shaping up the industry and investigates each one to understand leading practices that can be replicated in India.



Fintech ecosystem: A collaborative network



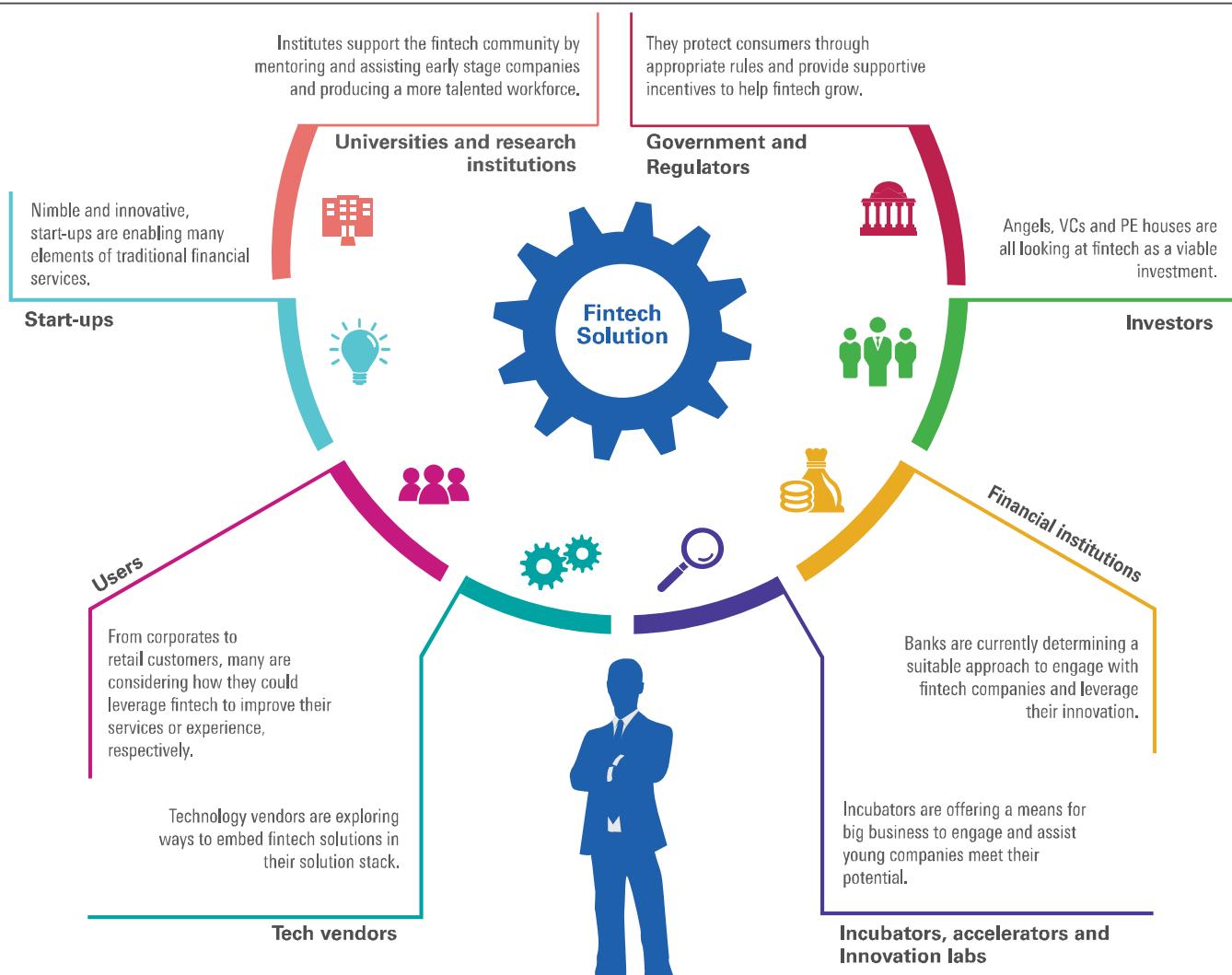
Innovation and technology have brought about a radical change in traditional financial services. The world has seen the emergence of more than 12,000 start-ups and massive global investment of USD 19 billion in 2015⁰¹ in the fintech space. These innovators are utilising tech tools to bring in seamless 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 billion⁰² opportunity by 2020, growing at a compounded annual growth rate of 7.1 per cent as per NASSCOM.

Fintech may be defined as technology-based businesses that compete against, enable and/or collaborate with financial institutions⁰³. 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



01 The Pulse of Fintech, KPMG, 2016.

02 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.

03 KPMG website, <http://portal.ema.kworld.kpmg.com/Adv/GM/Pages/MarketIssue/Fintech.aspx>, accessed on 17 May 2016.



Fintech in India: New techno banking realm



India is transitioning into a dynamic ecosystem offering fintech start-ups a platform to potentially grow into billion-dollar unicorns. From tapping new segments to exploring foreign markets, fintech start-ups in India are pursuing multiple aspirations.

The Indian fintech software market is forecasted to touch USD 2.4 billion by 2020 from a current USD 1.2 billion⁰¹, as per NASSCOM.

The traditionally cash-driven Indian economy has responded well to the fintech opportunity, primarily triggered by a surge in e-commerce, and smartphone penetration.

The transaction value for the Indian fintech sector is estimated to be approximately USD 33 billion in 2016 and is forecasted to reach USD 73 billion⁰² in 2020 growing at a five-year CAGR of 22 per cent.

The investor attention has been concentrated towards hi-tech cities in 2015, with Bengaluru witnessing eleven VC-backed investment deals of USD 57 million⁰³, followed by Mumbai and Gurgaon with nine and six deals, respectively. Bengaluru, the start-up capital of India has benefitted from the same, and is ranked 15 among the world's major start-up cities.

India's growth wave may still not be of the scale when viewed against its global counterparts, but it is stacked well, largely due to a strong talent pipeline of easy-to-hire and inexpensive tech workforce.

From wallets to lending to insurance, the services of fintech have redefined the way in which businesses and consumers carry out routine transactions. The increasing adoption of these trends is positioning India as an attractive market worldwide.

"
Fintech in India has the potential to catch up with its global counterparts as the various ecosystem players come together to orchestrate a much-needed change in the industry. We have the talent and the funding to support this change. The key for success will be the ready adoption by the big banks.
"

- Neha Punater, Partner,
Fintech, KPMG in India

The following sections elaborate key constituents of the Indian fintech ecosystem, with due credence to key growth drivers, emerging strengths and challenges.

Ecosystem coverage of the Indian fintech sector

Government



The government is naturally the *prima facie* catalyst for the success or failure of fintech in a heavily regulated financial industry. The Government of India along with regulators such as SEBI and RBI are aggressively supporting the ambition of the Indian economy to become a cashless digital economy and emerge as a strong fintech ecosystem via both funding and promotional initiatives.

The following multi-pronged approach has been taken to enable penetration of the digitally enabled financial platforms to the institutional and public communities:

Funding Support

- The Start-Up India initiative launched by the Government of India in January 2016 includes USD 1.5 billion fund for start-ups⁰⁴.

Financial inclusion and enablement

- Jan Dhan Yojana: added over 200 million⁰⁵ unbanked individuals into the banking sector
- Aadhar has been extended for pension, provident fund and the Jan Dhan Yojana.

Tax and surcharge relief

A few notable initiatives on this front are:

- Tax rebates for merchants accepting more than 50 percent⁰⁶ of their transactions digitally.
- 80 percent⁰⁶ rebates on the patent costs for start-ups.
- Income tax exemption for start-ups for first three years.
- Exemption on capital gains tax for investments in unlisted companies for longer than 24 months (from 36 months needed earlier).
- Surcharge on online and card payments for availing of government services proposed to be withdrawn by the Ministry of Finance.

01 India emerging a hub for fintech start-ups, Business Standard website, http://www.business-standard.com/article/companies/india-emerging-a-hub-for-fintech-start-ups-116051700397_1.html, accessed on 25 May 2016.

02 Statista website, <https://www.statista.com/outlook/295/119/fintech/india>, accessed on 25 May 2016, 17 May 2016.

03 The Pulse of fintech survey, KPMG, February 2016.

04 Solve India's problems': Modi launches Rs 100 billion fund, generous tax breaks for Indian start-ups, First Post, 17 January 2016, <http://www.firstpost.com/business/prm-modis-grand-initiative-for-indian-start-ups-a-rs-10000-cr-fund-3-year-tax-rebate-2587272.html> accessed on 25 May 2016.

05 Pradhan Mantri Jan Dhan Yojana – Jan Dhan Yojana Account, Master Plans India, 04 February 2016, <http://www.masterplansindia.com/welfare-schemes/pradhan-mantri-jan-dhan-yojana> accessed on 25 May 2016.

06 Budget 2016: Start-ups get 100 per cent tax exemption for 3 years on profits, 29 February 2016, DNA India, <http://www.dnaindia.com/money/report-budget-2016-start-ups-get-100-tax-exemption-for-3-years-on-profits-2183981> accessed on 25 May 2016.

Infrastructure support

- The Digital India and Smart Cities initiatives have been launched to promote digital infrastructure development in the country as well as attract foreign investments.
- The government recently launched a dedicated portal to provide ease in registration to start-ups.

IP facilitation support

- Startups will get support from the government in expenses of facilitators for their patents filing, trademark and other design work.

Regulators

In India, RBI has been instrumental in enabling the development of fintech sector and espousing a cautious approach in addressing concerns around consumer protection and law enforcement. The key objective of the regulator has been around creating an environment for unhindered innovations by fintech, expanding the reach of banking services for unbanked population, regulating an efficient electronic payment and providing alternative options to the consumers.

Fintech enablement in India has been seen primarily across payments, lending, security/biometrics and wealth management. These have been the prime focus areas for RBI and we have seen significant approaches published for encouraging fintech participations. Examples:

- Introduction of “Unified Payment Interface” with NPCI, which holds the potential to revolutionize digital payments and take India closer to objective of “Less-Cash” society, Approval to 11 entities for setting up Payments Bank and approval to 10 entities for setting up Small Finance Banks that can significantly run in favour of cause for Financial Inclusion.
- Release of a consultation paper on regulating P2P lending market in India and putting emphasis for fintech firms and financial institutions to understand the potential of blockchain.

One of the areas with a huge scope is around managing P2P remittances in India. In India, the smaller the remittance size, the higher is the transaction cost percentage, which makes it extremely expensive for beneficiaries involved in transactions. This massive problem is a big opportunity for any fintech firm committed to address it well, as has been guided in the mature markets. Example:

- Some of the fintech firms such as TransferWise in UK, have come up with a remittance platform; and with the rising acceptability of the same, the firm has touched a valuation of USD 1.1 billion.

In summary, the Indian regulators have played a laudable role to support the fintech sector growth in India, and such momentum is required for even more radical and well-timed policy initiatives going forward. Indian regulators may be at a stretch balancing the complex regulatory framework building activity and monitoring the fast-moving Indian fintech market. To address this, they can work towards adopting some of the regulatory practices in line with those established across the globe. Examples:

- In the UK, Financial Conduct Authority (FCA) launched an initiative in name of “Project Innovate” for helping start-ups work with British financial regulators to launch innovative products in the market.
- In the U.S, adoption of “BitLicense” regulation by the New York State Department of Financial Services in 2015 is proving to be instrumental in enabling innovation.



Investors

Fintech investment in India increased mani-fold from USD 247 million in 2014 to more than USD 1.5 billion in 2015⁰⁷.

India has a far lesser number of angel investors (about 1,800 angel investors in 2016) as compared to 3, 00,000 in the U.S. However, India is witnessing increasing interest levels in start-up funding, which is evident by increasing number of angel deals from 370 in 2014 to 691 in 2015⁰⁸.

With the latest trend in commoditization of the financial services offerings and VCs dictating terms to numerous start-ups, the investment focus has tended towards the higher margin, consumer focused, product start-ups than low-margin service start-ups. Bengaluru has the highest number of start-ups and accelerators in the country, while Delhi is home to big-ticket players.

Investors are coming to terms that fintech is more than just payments technology and investor interest is beginning to manifest itself in a variety of sub-segments such as investing, lending, wealth management, credit reporting among others.

Traditionally and going forward, while Venture Capital firms have been early stage investors in fintech businesses, the global trend of banks and other financial institutions acquiring or investing in fintech start-ups is being witnessed in India as well. Additionally, they are developing platforms themselves for such start-ups to thrive, or are beginning to invest in such platforms.

⁰⁶ The Pulse of Fintech, KPMG, 2016; More good news for Indian Fintech start-ups as Goldman Sachs arm enters the fray, Yourstory, 14 April 2016, <http://yourstory.com/2016/04/goldman-sachs-india-fintech/> accessed on 25 May 2016.

⁰⁷ Mumbai's home to highest number of angel investors, The Times of India, 25 May 2016, <http://timesofindia.indiatimes.com/tech/tech-news/Mumbais-home-to-highest-number-of-angel-investors/articleshow/52432826.cms> website accessed on 29 May 2016.

Examples of large Fintech fundings in India

Players	Business category	Investment Period	Deal value	Funding Rounds
Paytm	M-Wallet/Gateway	Feb, 2015	USD 890 Mn	Undisclosed Amount/Series A
Billdesk	Payment Aggregator	Mar, 2016 2012, 2006	USD 157.5 Mn (Total) USD 120 Mn USD 30 Mn USD 7.5 Mn	Undisclosed Amount
Freecharge	M-Wallet/Gateway	Feb, 2015 Sep, 2014	USD 113 Mn (total) USD 80 Mn USD 33 Mn	Series C Series B
Mobikwik	M-Wallet	May, 2016 Dec, 2015 Apr, 2015 2013 Sep, 2012	USD 86.85 Mn (total) USD 50 Mn USD 6.6M USD 25M USD 5M USD 250k	Series C Series B Series B Series A Seed
A leading Indian fintech portal	Marketplace for loans and insurance products	Jul, 2016 Jan, 2014 Mar, 2011	USD 79 Mn (total) USD 60 Mn USD 13 Mn USD 6 Mn	Series C Series B Series A
Policybazaar	Insurance	Apr, 2015 May, 2014 Apr, 2013 Mar, 2013 May, 2011	USD 69.6 Mn (total) USD 40 Mn USD 20 Mn USD 5 Mn USD 4.6 Mn Undisclosed	Series D Series C Series B Series A
Financial Software and Systems Pvt. Ltd.	Financial Planning	Oct, 2014	USD 57 Mn	Series D

Source: Crunchbase Database and News articles and research reports.



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 our regulatory bodies that they can benefit the society, by putting forth ample evidence to public, institutions and the regulators that they can be regulated and monitored sustainably.



Technology vendors



Support from tech vendors is required for the development of 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 involved in developing financial technology propositions in the following focus areas

Innovation focus

The innovation-heavy firms are setting their financial technologies and solutions development for fintech. Example:

- IBM is working with the Hyperledger programme in association with Linux Foundation to develop blockchain-based solutions⁰⁸.

Funding and incubation focus

Many Indian service firms have shown a growing focus on investment and incubation in the last year. This is strategically synchronized with the 'Start-up India' campaign, and the global investment inflow. Example:

- Wipro set-aside USD 100⁰⁹ million VC fund in 2014 to invest in start-ups to join the league of tech vendor-investors such as Tech Mahindra and Persistent Systems.
- A leading IT company has committed USD 250 million 'Innovate in India Fund' to support & incubate Indian start-ups.
- Microsoft Ventures enables many early stage fintech start-ups in scaling up fast through their bespoke ScaleUP and HiPO programs as part of their umbrella accelerate initiatives¹¹.

Collaboration

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

- Cognizant has launched engagement programs with start-ups, with special focus on fintech firms¹².
- TCS has partnered with fintech accelerator Startup bootcamp for an engagement platform, Pitchdays¹³.

Capability Development and inclusion

Some incumbent financial solution provider are addressing the smaller BFSI client needs with bespoke solutions. Example:

- A leading Indian technology vendor launched Payments Bank and Small Finance Bank solutions to assist new banking organisations with mobile wallet, micro ATMs and agency banking solutions¹⁴.

⁸ Wipro Ventures picks up minority stake in Silicon Valley-based cybersecurity startup Vectra Networks, 28 April 2016, The Economic times, http://articles.economictimes.indiatimes.com/2016-04-28/news/72674709_1_minority-stake-silicon-khosla-ventures accessed on 25 May 2016.

⁹ Innovate in India Fund from Infosys to boost Indian start-ups, Infosys, <https://www.infosys.com/newsroom/features/Pages/innovate-india-fund.aspx> accessed on 25 May 2016

Financial institutions



The BFSI community (including banks, NBFCs and other institutions) is witnessing significant impact with the advent of the fintech sector. However, now the incumbents are viewing fintech as an enabler rather than a disrupter. Large banks are tapping into the start-up ecosystem to incubate and create alliances on a variety of platforms such as wallets, investment intermediation, online client acquisition etc. They are not only developing platforms for such start-ups to thrive, but are also beginning to invest in such platforms.

To address the multi-faced impact of this growing disruption, the BFSI incumbents in India are adopting a four-pronged strategy:

Investment driven

The BFSI sector is gearing for both acquisitions and funding-based routes to increase its presence in the emerging fintech space. For example Citi Bank, Barclays and Goldman Sachs have launched fintech-focused accelerator programmes.

Partnership driven

Partnerships by fintech product firms (in point-of-sale hardware, credit deals and social lending) with banks with a synchronized go-to-market strategy are addressing the immediate demand of digital-age consumers. Example:

- SBI has teamed up with Ezetap to provide mobile POS devices across India¹⁴.
- Bank of India offers a wallet¹⁵ from Paynimo powered by TechProcess.

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. Example:

¹¹ How Microsoft Ventures is helping later stage start-ups @cceler8 and scale up, Your Story, 16 November 2015, <http://yourstory.com/2015/11/microsoft-ventures-helping-start-ups/> accessed on 29 May 2016.

¹² Mizuho Financial Group Partners with Cognizant to Develop a Blockchain Solution, Fintech Finance website, <http://www.fintechfinance.news/mizuho-financial-group-partners-with-cognizant-to-develop-a-blockchain-solution-for-secure-record-keeping-and-improved-customer-experience/>, accessed on 30 May 2016.

¹³ TCS ties up with Startupbootcamp Fintech, Business Standard, 19 February 2016, http://www.business-standard.com/article/companies/tcs-ties-up-with-start-upbootcamp-fintech-115021800343_1.html accessed on 30 May 2016.

¹⁴ SBI ties up with Ezetap to launch 'Chota ATM' for INR 499, Your Story, 03 October 2014, <http://yourstory.com/2014/10/sbi-ties-up-with-ezetap-chota-atm/> accessed 30 May 2016.

¹⁵ Revolutionising electronic payments, the mobile way, Business Line, 01 June 2015, <http://www.thehindubusinessline.com/news/variety/revolutionising-electronic-payments-the-mobile-way/article7271733.ece> accessed 30 May 2016.

- Yes Bank is collaborating with T-Hub and three academic institutes to set up a centre of excellence and app store for the fintech start-ups¹⁷.

Fintech in India holds a particularly critical promise as a potential solver of Indian 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, Indian BFSI sector is set for a grand evolution riding on the growth wave.

Users



Indian 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 and customized advice and service irrespective of location, language and grade classifications. The change is coming from different fronts, such as:

Mobile and Internet coverage

India has seen significant growth in both the number of smartphone users and internet users over the past few years. Example:

- India is ranked third in terms of the number of smartphone users and this deep penetration into the Indian population base offers fintech firms an opportunity to address the legacy issues of low banking penetration (53 per cent) and dormancy (43 per cent) in the Indian Banking sector¹⁸.

Digital payment processing in public services

The Indian population has been directed to unprecedented levels of inclusion in the current governmental regime. With time, larger services like remittances, pensions disbursal and direct to user subsidy is expected to see openness to the data-heavy, transparent processing of fintech. Example:

- Railway booking (IRCTC) tie-up with Paytm Wallet may bring 1+ crore fintech user base annually.

Maturity of e-commerce to handle larger ticket-sizes

E-commerce in India has been established, and is now trusted to deliver large-ticket products in Tier I, II cities without the protective clause of Cash-on-Delivery. This evolution of the Indian mind-set will bolster the adoption of payment processing of fintech firms. Example:

- Paytm crossed a user base of 100 million¹⁹ in 2015. Competitor, MobiKwik's user base grew by 300 per cent²⁰ within 2014-15.

Universities and research institutions



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

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

- IIT Roorkee has launched Global Entrepreneur Conclave to build entrepreneurial skills along with academic competence of technology in students²¹.
- IIT Delhi is organizing Open house 2016 to promote innovative research and product development projects²².
- BITS Pilani launched SPARK initiative to enable angel funding²³.

While some Indian 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 India's subsidized higher educational model.

¹⁷ YES Bank to set centre of excellence at T-Hub, Times of India, 04 April 2016, <http://timesofindia.indiatimes.com/business/industry-news/YES-Bank-to-set-centre-of-excellence-at-T-Hub/articleshow/51687550.cms> accessed 30 May 2016.

¹⁸ In India bank account penetration surges, but 43 per cent dormant, Indian Express, 10 November 2015, <http://indianexpress.com/article/india/india-news-india/in-india-bank-account-penetration-surges-but-43-dormant/#sthash.AvdZunr.dpuf> accessed 30 May 2016.

¹⁹ Paytm Claims To Be India's First 100 Million User Product, 13 August 2015, Gadgets, <http://gadgets.ndtv.com/internet/news/paytm-claims-to-be-indias-first-100-million-user-product-727380> accessed 24 May 2016.

²⁰ With 17 M wallet users, MobiKwik plans to raise USD100 M and double its headcount this year, Yourstory, 22 May 2016, <http://yourstory.com/2015/05/mobikwik-growth-story-funding-plans/> accessed on 24 May 2016.

²¹ Global Entrepreneurs' Conclave, All Events, <http://allevents.in/roorkee/global-entrepreneurs-conclave/1681896412073030> accessed on 30 May 2016.

²² IIT' open house' to showcase 500 projects, The Indian Express, 23 April 2016, <http://indianexpress.com/article/cities/delhi/delhi-iit-open-house-to-showcase-500-projects-2766330/> accessed on 30 May 2016.

²³ At BITS Pilani, start-up spark is now a flame, Your Story, 04 July 2015, <http://timesofindia.indiatimes.com/tech/jobs/At-BITS-Pilani-start-up-spark-is-now-a-flame/articleshow/47935194.cms> accessed on 30 May 2016.

Incubators, accelerators and innovation labs



Indian fintech has recently seen a strong upsurge in support and mentorship in 2014-15. The sector is driven by young, first generation entrepreneurs who are now competing with the largest financial institutions in an extremely tough, cost-conscious Indian market. Therefore in India, the role of incubators, accelerators and sponsored innovation labs is critical for not just funding, mentorship and peer connections but also financial industry exposure and soft skills. Some of the notable initiatives on this front are 91 Springboard, Innov8, K-start and Zone Startups India. The prime stakeholders are categorized as given below:

Financial institutions

Financial institutions are the strategically closest partners to fintech that are discovering core sector talent and co-developing platforms, products and solutions, along with providing funding and industry exposure. Example:

- Societe Generale Global Solution Centre (SG GSC) in collaboration with NASSCOM 10,000 Startups has announced its Accelerator Program CATALYST, a 10-week programme to focus on advanced technologies relevant to the BFSI sector²⁵.
- Kotak fintech mobility hackathon has partnered with NASSCOM 10,000 Startups to identify founders developing apps around banking innovation²⁶.
- PayPal's StarTank at Chennai provides mentorship and fintech infrastructure support²⁷.

Non-financial institutions

With a comparatively lesser focus on core-sector fitment of fintech, these institutions are focused on incubation more than acceleration or lab setup. Example:

- Tata Group launched an incubator in 2012 to support product and services start-ups, especially, early-stage ventures, E27 in Bengaluru²⁸.

Industry associations

Associations, driven by sector-level development and readiness goals are playing a critical part in bringing in technology and industry experts, and addressing the requirements from a long-term vision.

NASSCOM is playing a particularly vital role in the expansion of start-ups in India with its 10,000 start-up program. Some of the notable initiatives in fintech are given below²⁹:

- NASSCOM is facilitating a three-month acceleration programme for Indian start-ups in Zurich organized by UBS.
- NASSCOM 10,000 Startups is a programme partner for Axis Bank's soon-to-be-launched fintech accelerator programme, Barclay's RISE acceleration programme and Accenture's Open Innovation programme and Accelerator programme in Hong Kong.
- NASSCOM 10,000 Startups co-organized a virtual Appathon with ICICI Bank in February 2016 and is assisting Kotak Mahindra Bank to reach out to Women in Tech through curated programs.

²⁵ SG GSC accelerator program, Soceite Generale, <http://www.socgensolutions.com/gscaccelerator2016/> accessed on 30 May 2016.

²⁶ Kotak Fintech Mobility Hackathon, Hackerearth, <https://www.hackerearth.com/sprints/kotak-fintech-mobility-hackathon/> accessed on 30 May 2016.

²⁷ India emerging a hub for fintech start-ups, Smart Investor, 18 May 2016, http://smartinvestor.business-standard.com/market/Marketnews-384373-Marketnewsdet-India_becoming_the_hub_for_fin_tech_start_ups.htm#.V0tU9DV97IU accessed on 30 May 2016.

²⁸ Tata Elxsi launches start-up initiative, Smart Investor website, http://smartinvestor.business-standard.com/market/story-144907-storydet-Tata_Elxsi_launches_start_up_initiative.htm#.V0vdPv97IU, accessed on 30 May 2016.

²⁹ 10,000 Startups Program, 10000 Startups, <http://10000start-ups.com/10k-program/> accessed on 30 May 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 U.S. and the U.K. 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 mind-set are the driving forces to establish fintech as an enabler.

KPMG in India proposed to formulate an approach towards planning the growth strategy for the Indian 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 Indian fintech market's roadmap is designed.

For the present market conditions, KPMG in India 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 BFSI, 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 U.S., the U.K., Hong Kong, Singapore, Israel and Australia.

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.

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 attribute's components, a total of 30 data points collated from IMD, World Bank and the World Economic Forum are taken for each market.

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, per centage 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.



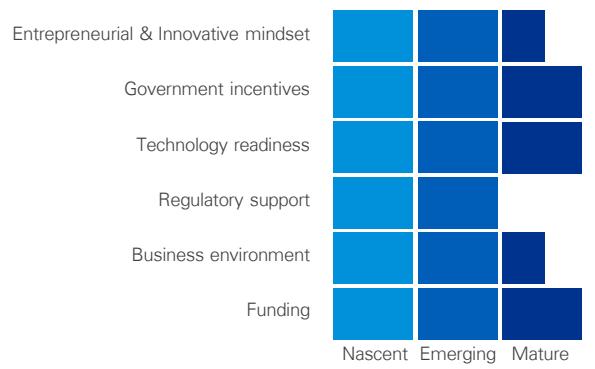
Source: KPMG in India analysis.

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 were found for each mature fintech market, as detailed in this stage below.

The United States

The U.S. 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^{01,02,03}.



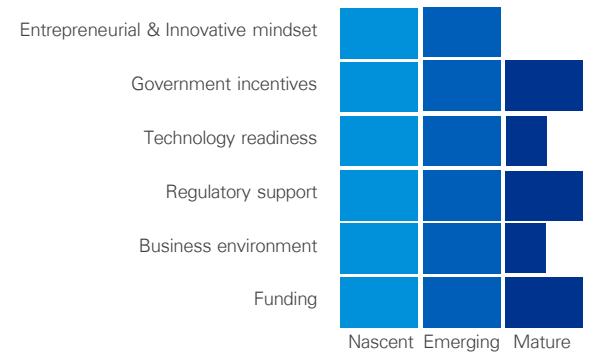
Source: Internal KPMG Analysis, 2016

The U.S. 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 U.S. has more than 25 unicorn fintech start-ups with value worth USD 1 billion^{04, 05}. 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 U.K. has established itself as one of the most attractive locations in fintech with high digital connectivity, an indigenous financial services workforce and solid funding landscape⁰⁶.



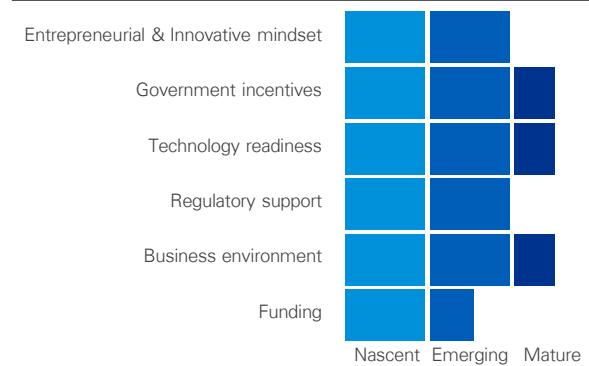
Source: Internal KPMG Analysis, 2016

- 01 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.
- 02 Frontier Finance, <http://www.Fintech.finance/news/the-state-of-Fintech-industry-as-we-know-it-infographic/> accessed on 14 may 2016.
- 03 The Pulse of Fintech, KPMG, March 2016.

Apart from getting more consolidated as a global financial hub post the financial crisis of 2008, the U.K. 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 government⁰⁷.

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^{08, 09}.



Source: Internal KPMG Analysis, 2016

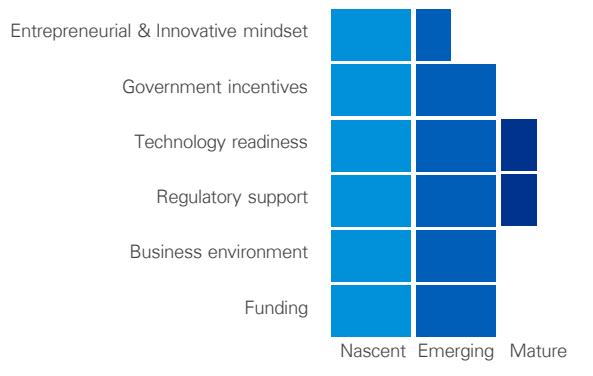
Hong Kong has emerged as a major financial centre, employing a population base in excess of 235,000⁰⁹. Its affluent and well educated population, entrepreneurial history and the proximity to funds provide start-ups a promising platform to establish their roots and grow their businesses. The country ranks 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 more¹⁰ that will further bolster growth of this key fintech ecosystem of Asia.

- 04 The 25 fintech 'unicorns' worth over USD1 billion ranked by value, Business Insider website, <http://www.businessinsider.in/The-25-fintech-unicorns-worth-over-1-billion-ranked-by-value/articleshow/48577057.cms>, accessed on 30 May 2016
- 05 The Global Start-up ecosystem ranking 2015, Compass, August 2015.
- 06 UK's world-leading Fintech industry to be given new government boost, Government UK, 11 April 2016, <https://www.gov.uk/government/news/uk-s-world-leading-Fintech-industry-to-be-given-new-government-boost> accessed on 25 May 2016.
- 07 UK takes Silicon Valley's crown as world's Fintech capital, ICAS, <https://www.icas.com/cata-today-news/uk-is-worlds-financial-technology-fintech-capital> accessed on 30 May 2016.
- 08 Hong Kong Monthly Digest of Statistics, April 2016.
- 09 The global start-up ecosystem rank 2015, Compass, August 2015.
- 10 Strengthening Hong Kong as a Leading Global International Financial Centre, [http://www.fsd.org.hk/sites/default/files/\(REV\) per cent20Strengthening per cent20Hong per cent20Kong per cent20As per cent20Leading\(English\).pdf](http://www.fsd.org.hk/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 capitalists¹¹.

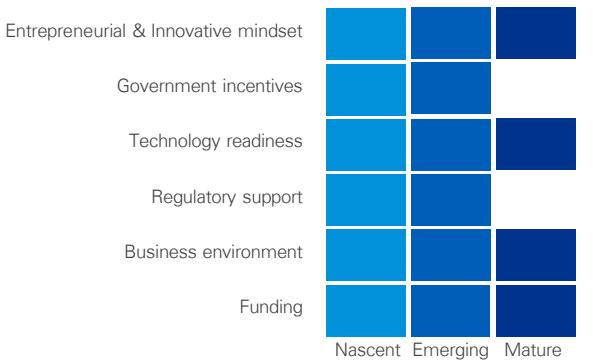


Source: Internal KPMG Analysis, 2016

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 innovations¹².

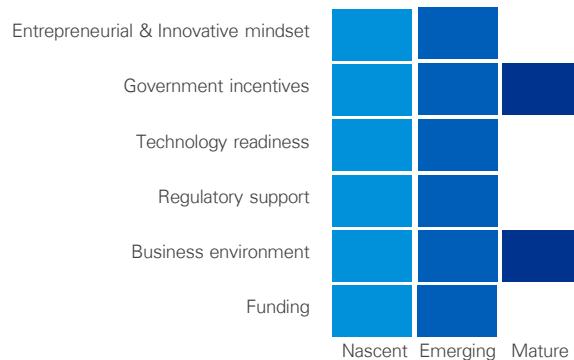


Source: Internal KPMG Analysis, 2016

Israel has emerged with 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 leader¹³.



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 business¹³.

11 Unlocking the potential:opportunities for Sydney, KPMG, 2014.

12 Geektime website, <http://www.geektime.com/2016/01/11/annual-report-2015-start-ups-and-venture-capital-in-israel/> accessed on 26 May 2016.

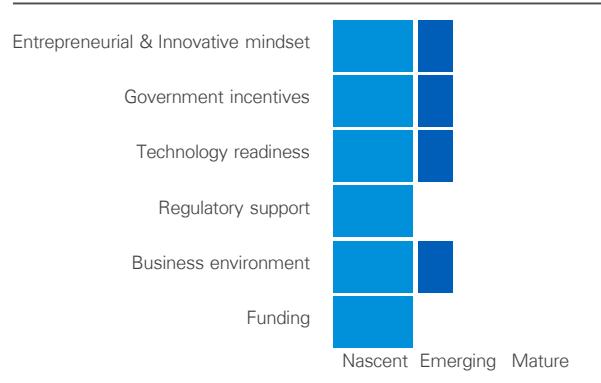
13 Global Start-up ecosystem Ranking 2015, Compass, August 2015.

Stage 3: Focussed 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 India market are identified to mark the prioritised and segment-specific areas that need to be focused upon to grow the Indian fintech market.

India

India is gaining ground on the growth of the fintech ecosystem with fair supply of proficient and inexpensive talent, a potential to capture a large portion of the unbanked population and a steady inflow of funds.



Source: Internal KPMG Analysis, 2016

India is slowly moving up the fintech growth ladder, primarily driven by its robust 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 an inexpensive and easy-to-hire tech workforce is one of the most advantageous factors of the country.

Some roadblocks in the widespread adoption in India are the lack of authentic consumer information on digital media and low technological and digital infrastructure. Also, as identified from KPMG's growth driver analysis, governmental incentives, regulatory mandates and a robust business environment will be the most impactful levers in getting the Indian fintech market up to speed and enable it to better address these roadblocks.

Greater collaboration between market participants to leverage and cross-pollinate learnings and entrepreneurial experiences is an impetus for the growth of this sector. The second most impending aspect is building a cohesive fintech environment which includes 100 per cent digital infrastructure penetration, unbiased incubation support to start-ups and lucrative incentives. And since, fintech is growing without any boundaries, the final stride is to build an independent fintech focused trade body that can consolidate the effort and create a formal sector for budding entrepreneurs.



Fintech themes - New frontiers changing the face of financial services in India



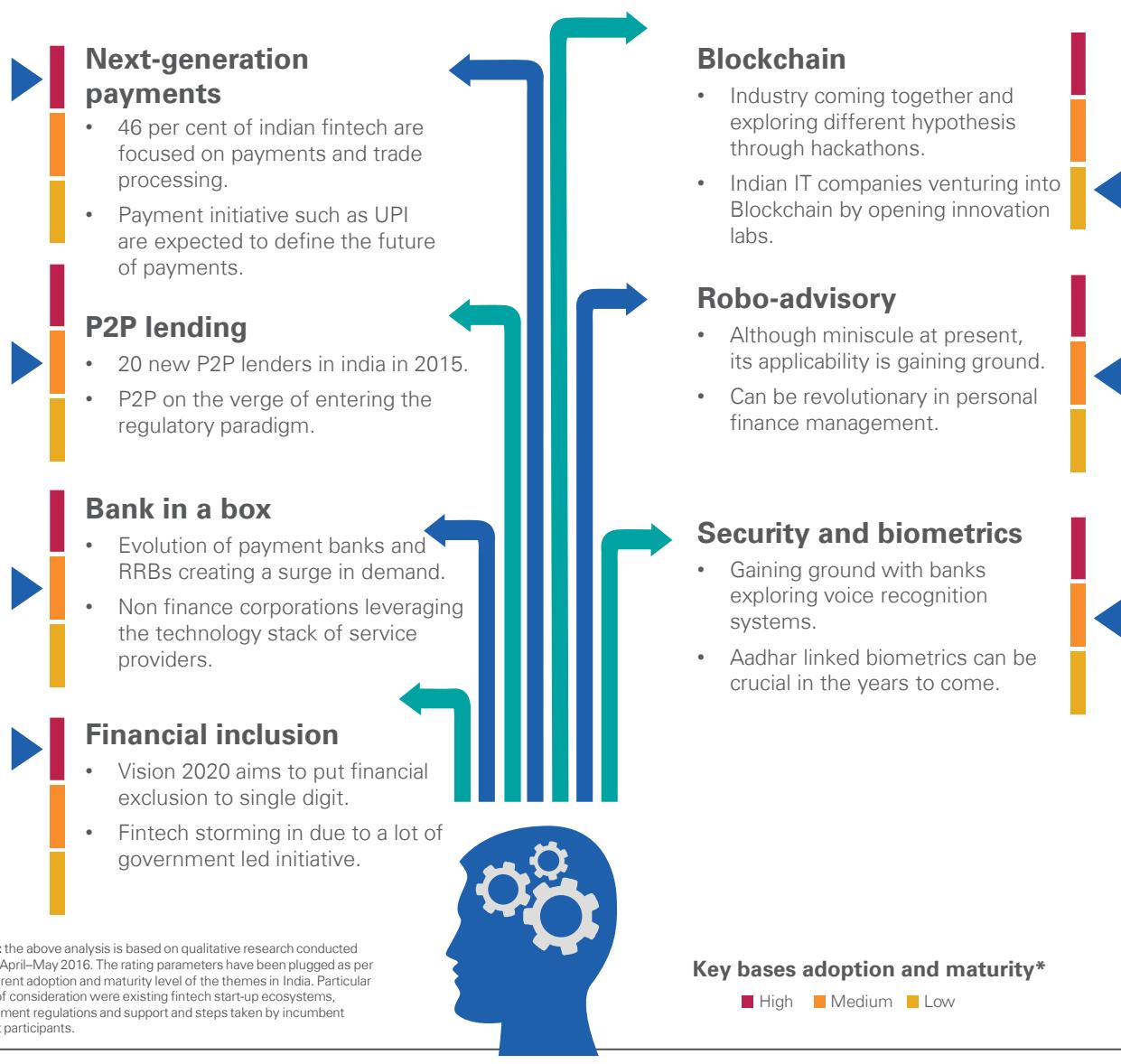
Emergence of fintech companies in India is a prelude to the transformation in payments, lending and personal finance space that has manifested in significant investor interest in the recent times. Fintech is enabling the entire value chain of the traditional financial institutions to establish better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

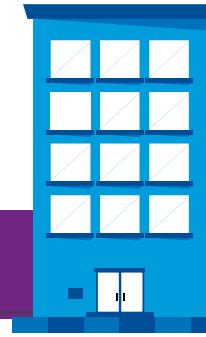
KPMG has identified seven themes that have the potential to redefine the financial services sector, and if harnessed in

a proper manner can open numerous prospects for banks. Figure 9 depicts the fintech themes along with a snapshot of key initiatives taken in each one of them from an Indian context.

Payments and financial inclusion have gained major market attention. At the same time, there is a strong case of investing in the lending and security biometrics space of Fintech. Slowly, a clutch of companies are beginning to look at 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 future.

Seven fintech themes





Blockchain

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

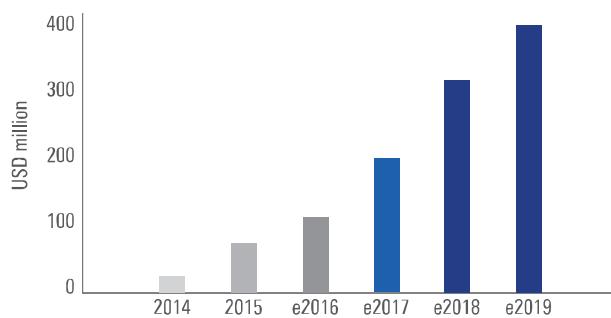
Overview

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 billion⁰¹ 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 million⁰² in 2015.

The following graph shows the expected global funding in blockchain in years to come:

Global funding in blockchain focused firms



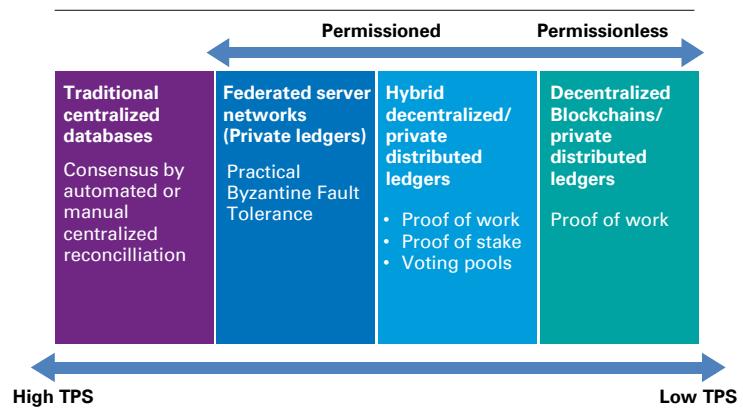
Source: Aite

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 emergence of blockchain that over 700 alternate currencies have tried to establish themselves on the model of Bitcoin⁰³.

Till now there was wide acceptance of public blockchain, but off 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 has 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.

Graphical representations for Distributed Consensus



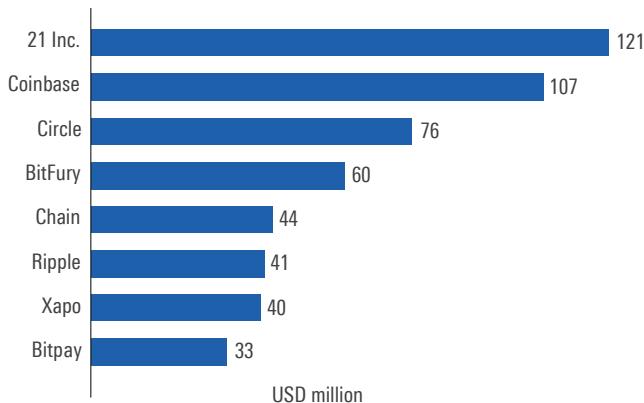
Globally, significant investments have been seen in fintech companies involved in transaction processing, exchange and transmission of digital assets. We expect the next wave of funding coming in the way of companies focused on building commercial APIs and tackling clearing and settlement cases. Enhancement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

01 USD1 Billion Invested So Far in Bitcoin and Blockchain Infrastructure, Coin Telegraph, 11 August 2015.

⁰² The Blockchain Report: Welcome to the Internet of Value, Needham, October 2015.

03 Digital Currencies, Quick Read, 24 November 2015,
<http://quickreadbuzz.com/2015/11/24/digital-currencies/> accessed on 30 May 2016.

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-4ee3-9406-7d0ad3c0d019andmime=pdf&fando=needham&id=sbogart@needhamco.com&source=mail>, accessed on 30 May 2016

Financial institutions are rapidly developing prototypes to gain the first mover advantage in the application of the technology. As per a leading European bank, blockchain has the potential to reduce the banking industries operational and infrastructure costs by USD 15–20 billion per annum⁰⁴. 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 cent⁰⁵.

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 U.K., 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 U.S., 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 U.K., the Financial Conduct Authority is continuously monitoring the development of the technology⁰⁶.

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.

⁰⁴ Santander: Blockchain Tech Can Save Banks USD20 Billion a Year, CoinDesk, 16 June 2015, link accessed on 20 May 2016.

⁰⁵ The Blockchain and Mobile Money for Agriculture in Developing Countries?, Digital Currency Council, 13 February 2015, link accessed on 20 May 2016.

⁰⁶ 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.

India overview

Blockchain is being perceived in India as a game changer that, if used to its full potential, can offer an innocuous, quick and economical way for transactions. Though it is at a very nascent stage and is yet to mature into a mainstream application, the technology is receiving encouraging reviews from market players in the country. Example:

- Zebpay in India launched a blockchain lab to develop proof of concepts and innovative services. The company has received about USD1 million in funding from equity investors to build talent and accelerate the company's blockchain-based services⁰⁷.

The recent formal acknowledgement of blockchain technology by RBI has created a stir in the right direction in India. In addition, RBI has also set-up a committee to understand the possibility of using blockchain technology and to determine appropriate regulatory policies.

In December 2015, RBI has also come out with a "Financial Stability Report" detailing the possible impact of blockchain technology. The said report covers the initial concerns over the emergence of virtual currency schemes (digital currencies like Bitcoin). It recognizes the need for the regulators and authorities to keep pace with developments, since many of the world's largest banks are said to be supporting a joint effort for setting up of 'private blockchain' and building an industry-wide platform for standardizing the use of the technology. This could have the potential to transform the functioning of the back offices of banks, increase the speed and cost efficiency in payment systems and trade finance.

A number of major IT players in India are piloting projects that implement blockchain in financial processes, such as:

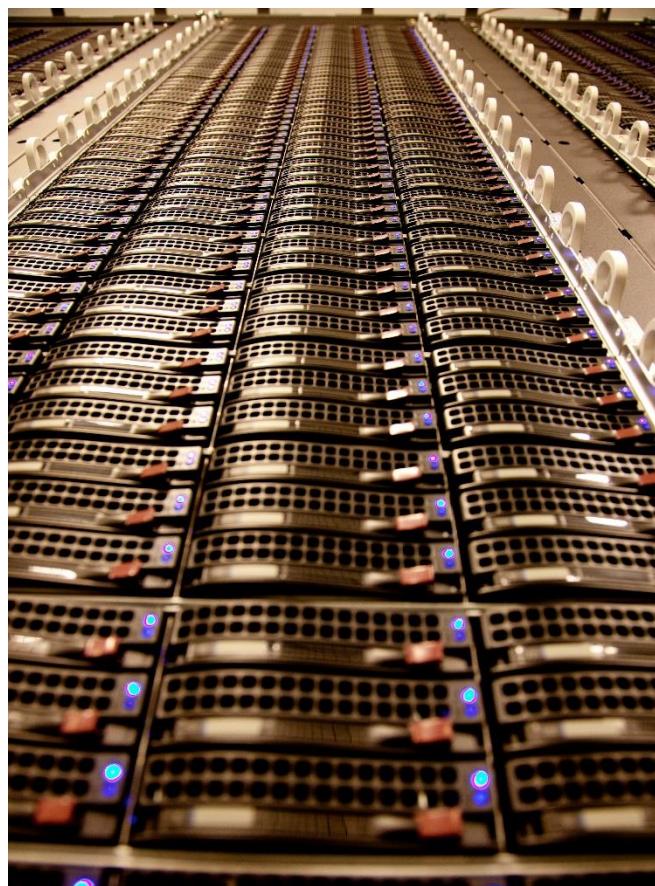
- An Indian IT major has launched a blockchain framework for financial services that can be applied to a network of banks for functions such as trade settlement⁰⁸.
- IBM has announced adoption of Ethereum for its IoT projects. The company has also launched an open source blockchain initiative in collaboration with a number of partners such as London Stock Exchange, Cisco and Intel⁰⁹.

In order to promote the application and development of the blockchain technology, a number of hackathons are being held in India by leading industry bodies in IT, financial services and start-ups. Examples:

- Zone Startups, BitStreet and Block Chain University hosted a hackathon at the Bombay Stock Exchange called 'HackCoin Mumbai' to build blockchain-based application for payments, big data and other digital-based services. This was sponsored by Microsoft, IBM and Citruspay¹⁰.

- IIT Kharagpur, BTCXIndia and Blockconomics have held a hackathon to showcase blockchain-based innovations¹¹.

In India, blockchain adoption is still very premature, but the impact is significant enough to guarantee assessment, experimentation and implementation by enterprises. Fintech enablement could be seen as a vital area in the Indian market and the next few years are likely to see increase in accelerators, incubation programmes and VC funding with fintech incumbents, for achieving scale sophistication and establishing a wider reach for the applications of blockchain. As a probable list of use cases - remittances, micro transactions, financial inclusion, gold trading and record of asset ownership - are a few key near-term applications of blockchain that could be expected in India.



07 Zebpay raises USD 1 million to develop bitcoin technology, The Economic Times, 06 January 2016, http://articles.economictimes.indiatimes.com/2016-01-06/news/69564289_1_bitcoin-transactions-virtual-currency-blockchain accessed 30 May 2016.

08 EdgeVerve Launches Blockchain Framework for Financial Services, accessed on 30 May 2016.

09 IBM Reveals Proof of Concept for Blockchain-Powered Internet of Things, Coindesk, 17 January 2016, <http://www.coindesk.com/ibm-reveals-proof-concept-blockchain-powered-internet-things/> accessed on 30 May 2016.

10 Hackathon to explore uses of bitcoin tech to build apps in payments, big data, digital experience, The Economic Times, 30 July 2016, http://articles.economictimes.indiatimes.com/2015-07-30/news/65036630_1_bitcoin-payments-blockchain-coinsecure accessed on 30 May 2016.

11 Prestigious Indian University Hosts Nationwide Blockchain Hackathon, BTC Manager, 08 January 2016, <https://btcmanager.com/news/tech/prestigious-indian-university-hosts-nationwide-blockchain-hackathon/> accessed on 30 May 2016.

Next generation payments



Innovative digital technologies disrupting the traditional payments value chain

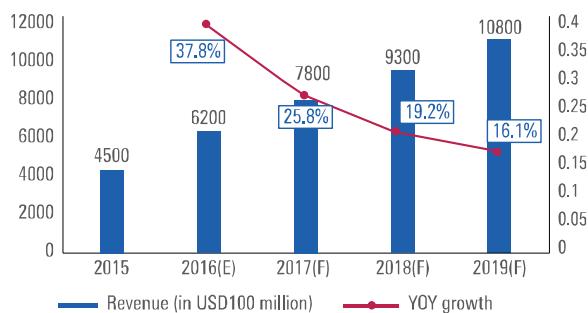
Overview

Globally, banks are moving from their traditional conservative mindsets, to align their strategies and better collaborate with fintech players in the payments space. They have realized that failure to do so might leave them with a risk of being swayed away by nimble competitors. To achieve this, banks are collaborating with fintech 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. The following graph shows some of the mobile payment revenue numbers globally.

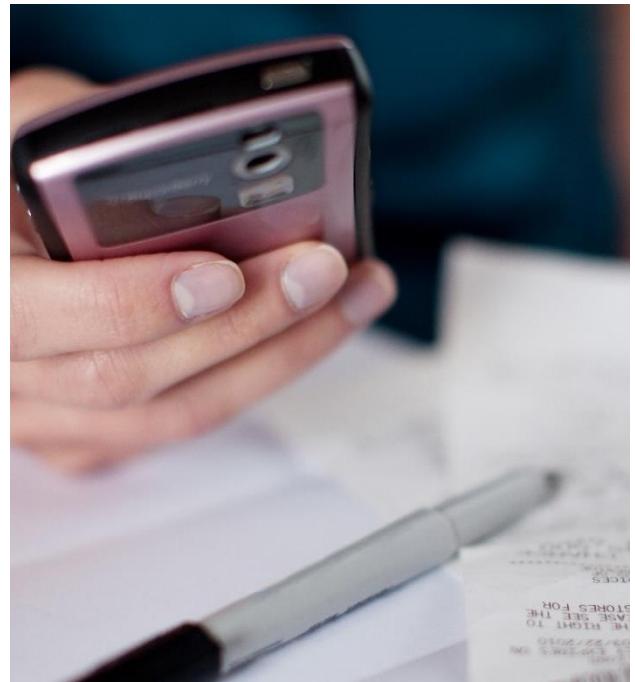
Total revenue of global mobile payments market, 2015-2019



Source: Trendforce, Feb, 2016

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 2019⁰¹.



- 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.
- Move towards Cashless Societies - Few of the countries in the Scandinavian region including Sweden, Norway and Denmark are on course of becoming cashless societies and are adopting no cash models. This has been possible because of banks in these countries adopting the fintech revolution and responding in a positive way to innovations.
- Real Time payments – This is revolutionising the retail funds transfer by providing electronic cash to anyone in the span of a few minutes. Peer to Peer money transfers has been an area which has witnessed high growth and attention in the last few years.

Almost 35 countries⁰² have implemented or put the framework in place for real time payments. Recently, Australia has implemented its New Payments Platform⁰³; Single Euro payments in Europe⁰⁴ is envisaged to be a level breaker and the U.S. is on the brink for adoption of real time payments.

⁰¹ 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.

⁰² Seamless Partners With Dwolla to Provide P2P Service to US Customers, LetsTalk Payments, 30 November 2015, <https://letstalkpayments.com/seamless-partners-with-dwolla-to-provide-p2p-service-to-us-customers/> accessed on 30 May 2016.

⁰³ 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.

⁰⁴ SEPA - Vision and Goals, European Payments Council, <http://www.europeanpaymentscouncil.eu/index.cfm/about-sepa/sepa-vision-and-goals/> accessed on 30 May 2016

- Increased penetration of virtual currency: Built on the blockchain infrastructure, virtual currency is enabling better speed and efficiency of transaction. With more than 90 per cent share, Bitcoin is the leading virtual currency in an approximate USD 7 billion market⁰⁵.
- Omni channel offerings: The framework of digital payments provides a seamless customer experience across channels leading to better transaction experience.
- 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.
- 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 U.S. and Europe. These are leading to a modular approach for implementations.
- 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 scale⁰⁶.
- Fintech companies digitizing the international remittance process: The U.K. 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 remittances⁰⁷.

India overview

The Indian payments sector is in the midst of rapid innovation, propelled by changing consumer patterns and initiatives taken by regulatory and banking institutions. This has been supplemented by large scale adoption of mobile payments.

The mobile payment industry in India is valued at about USD 1.15 billion in 2016, growing from USD 86 million in 2011, clocking at CAGR of 68 per cent⁰⁸. Additionally, the mobile wallet industry is poised to reach USD 183 million by 2019⁰⁹.

Over the past few years fintech providers have been really instrumental in paving the way for adoption of next generation payments in India. This has been enabled by the rising adoption of smartphones specifically in rural areas. Thus, resulting in a substantial jump in the growth of mobile payments in India.

Furthermore, start-ups are coming up with innovative technologies to provide a smooth experience across channels such as, Paynimo payment platform, which is capable of transacting across platform, channels and devices allowing merchants to transact through smartphones.

Many start-ups have entered the space to simplify mobile money transfer, such as Chillr application, which provides peer-to-peer money transfer without using bank account details. Few of the leading Indian Banks are leveraging the Chillr platform for P2P payments¹⁰.

Several leading banks are launching their own digital wallets leveraging NPCI's Immediate Payment Service (IMPS) platform. These digital wallets are integrated with social media features. Few examples are Buddy by SBI and LIME by Axis.

Similarly, few banks are going for payment solutions enabling money transfer, P2P transfer, etc. for smartphone users, such as PingPay and PayZapp.

Even the Indian government is keen on adapting to the Cashless Bharat vision and has taken noteworthy steps to achieve the goal:

- Launched UPI (Unified Payment interface), a digital payment system for mobile-to-mobile money transfer. It enables customers to transact through an app linked with their bank accounts. The vision behind this as shared by RBI was to migrate India towards a less cash and more digital society.
- Granted licences to 11 payment banks last year for achieving the objective of financial inclusion by making best use of reach and technology prowess of fintech providers in remote areas¹¹.
- The Reserve Bank of India ('RBI') has given in-principle approval to 33 entities, which had applied for operating as a Bharat Bill Payment Operating Unit ('BBPOU') under the Bharat Bill Payment System ('BBPS'). BBPS is an integrated bill payment system which would offer interoperable bill payment service to customers online as well as through a network of agents on the ground.

05 Bitcoin Market Cap Above USD7 Billion as Price Crosses USD450, Finance Magnates website, <http://www.financemagnates.com/cryptocurrency/trading/bitcoin-market-cap-7-billion-price-crosses-450/>, accessed on 10 May 2016

06 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.

07 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.

08 Slings and arrows, The Economist website, http://www.economist.com/sites/default/files/20150509_intl_banking.pdf, accessed on 10 May 2016.

09 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.

10 Bank of Baroda first PSU bank to join Chillr platform, The Times of India, 19 October 2015, <http://timesofindia.indiatimes.com/tech/tech-news/Bank-of-Baroda-first-PSU-bank-to-join-Chillr-platform/articleshow/49456039.cms> accessed on 30 May 2016.

11 It's like PayPal but pays interest, and India's banks are afraid, Live Mint, 10 September 2015, <http://www.livemint.com/Companies/rG7pEGePldtAaTyEMxcL/Its-like-PayPal-but-pays-interest-and-Indias-banks-are-af.html> accessed on 30 May 2016.

The future of payment is undergoing a transformation, as new entrants are enabling the market with new technologies such as contactless payment, NFC enabled smartphones, cloud-based PoS and digital wallets. Existing players should opt for strategic collaboration across sectors to increase customer acceptance, penetration of digital payments and create a lucrative model for each participant.





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 2025⁰¹.

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 could be attributed to its ability to offer low cost services, scalability, cognitive advice and a 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 advisory⁰².

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. Some of the prominent examples are as follows:

Company Name	Business Initiatives	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 in India analysis, 2016.

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 U.S. with an AUM (Assets under management) of over USD 3 billion, was valued at USD 700 million⁰³.

01 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.

02 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 on 10 May 2016.

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

- Introduction of DBS wealth advisors in March 2015, based upon artificial intelligence.
- In China market, online sales of investment products has significantly gained momentum over past few years leading to a 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 for understanding how robo advisory can be used more effectively for consumers and is establishing advisory units for helping firms develop automated advice models.
- Similarly regulatory authorities in Australia have set up Digital Financial Advisory Committee to collaborate with start-ups on developing regulations, as various banks are planning to launch robo advisory platforms.

India overview

Robo advisors in India are sprouting across the retail investing space. Many new entrants and traditional broking firms have launched robo advisor services in India such as Aditya Birla Money's MyUniverse, BigDecision, ScripBox, Arthayantra, FundsIndia and 5nance.

Demographic swing and technology enablement in India have been the prime enablers unleashing new opportunities and taking the business model of financial advisory to the next level.

In India, robo advisors are distinguishing themselves as the responders to the digital trend and crafting a model resonating with early adopters. The services offered range from mutual funds, portfolio allocation, insurance plan selection to pension fund selection. Below are few examples:

- FundsIndia, an online automated advisory service, is able to garner 80,000 customers with an AUM of INR 1500 crore⁰⁴.
- Robo advisory firm ArthaYantra, using analytics tool for customized advice, is serving 75,000 users with targeting one million users over the next 24 months⁰⁴.

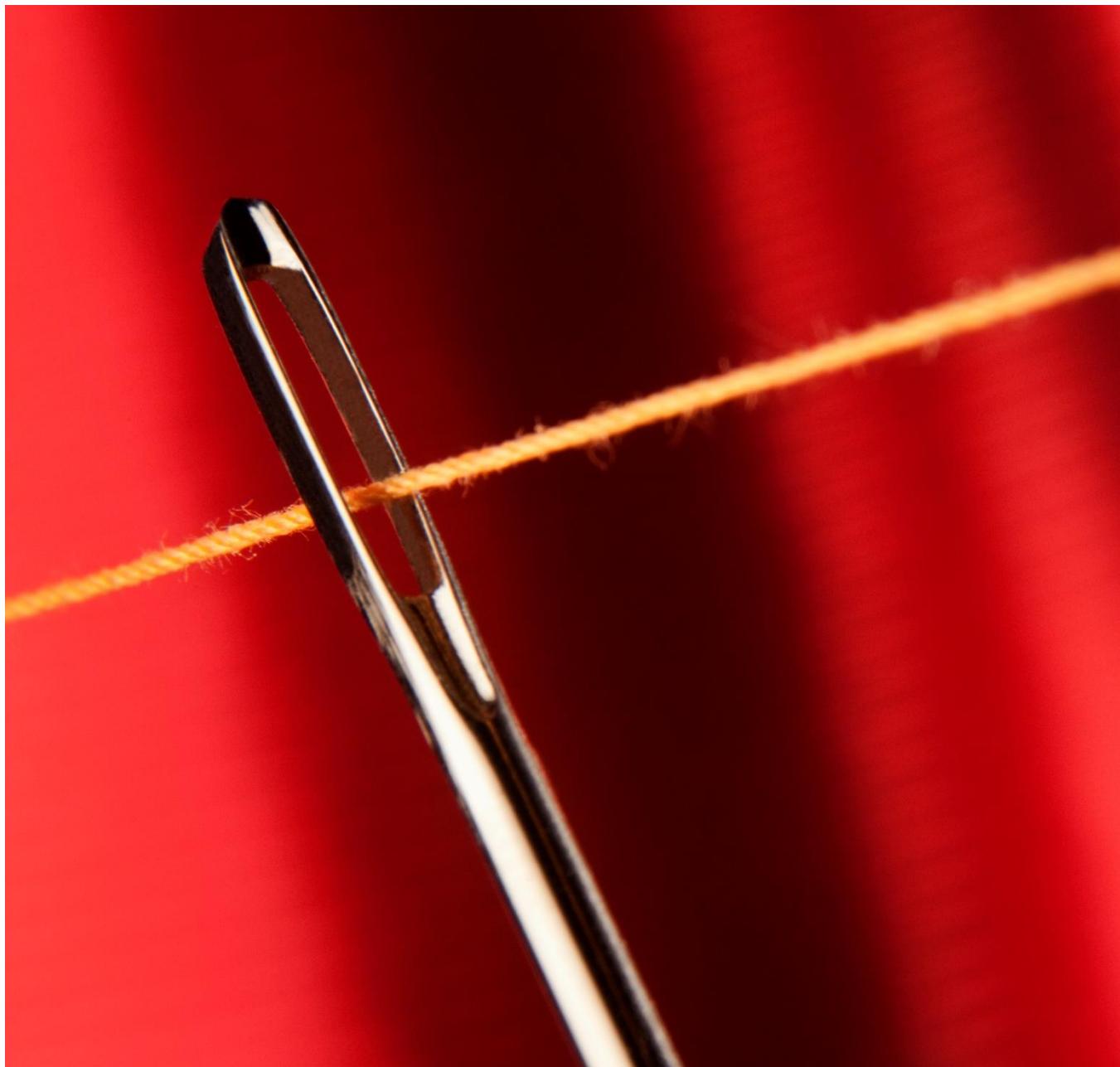
03 Robo-Adviser Betterment Sees USD700 Million Valuation After New Round of Funding, Bloomberg website, <http://www.bloomberg.com/news/articles/2016-03-29/robo-adviser-betterment-sees-700-million-valuation-after-new-round-of-funding>, accessed on 10 May 2016.

04 Five Fintech firms for DIY investors, Forbes India website, <http://forbesindia.com/article/investment-guide-2016/five-Fintech-firms-for-diy-investors/42055/>, accessed on 10 May 2016.

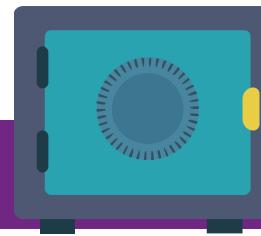
Recent fund raising of about INR 150 crore by Scripbox, Arthantra, Fundsindia and 5nuance reflect the rising interest of private equity investors in this market⁰⁵.

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 quite sparingly used in India 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.



05 Online MF distributors, robo advisors catch fancy of private equity players, The Economics Times website, <http://economictimes.indiatimes.com/wealth/mutual-funds/online-mf-distributors-robo-advisors-catch-fancy-of-private-equity-players/articleshow/51640454.cms>, accessed on 10 May 2016.



Bank in a Box

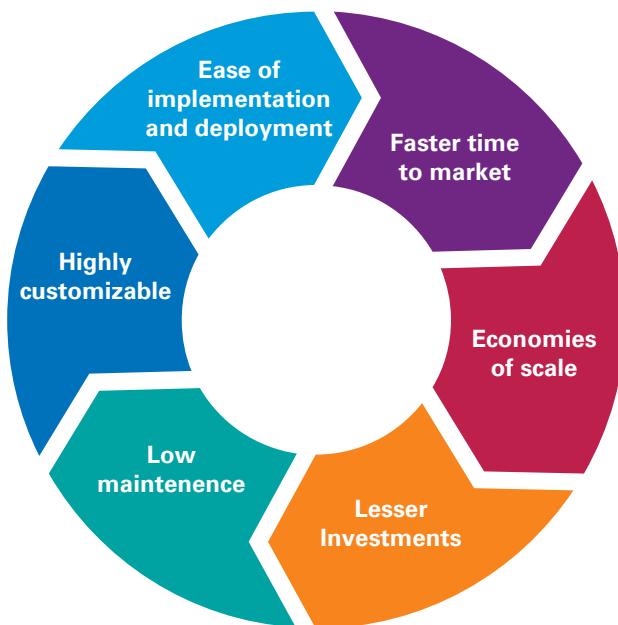
Bank in a Box - New kid on the block promising cost leadership and operational efficiencies

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 labelled 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-financial corporations across the globe are seeking to monetise on their existing customer base and disrupting 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 U.K., have ventured into financial services using these solutions. These players are unencumbered by the burden of legacy technology infrastructure.

Key benefits of adopting a Bank in a Box model are given below:



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 in an environment surrounded by increasing regulatory burdens and the need to maintain operational efficiency, scalability and flexibility.

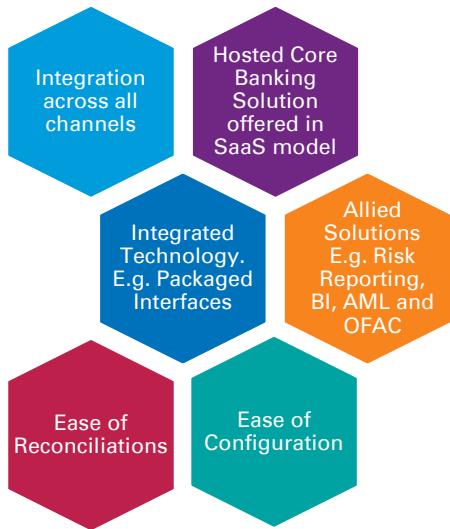
Thus, it has become essential for banks to adopt leaner and agile technology models. Bank in a Box solution has been instrumental in simplifying the overall IT landscape by offering service-oriented architectures, rich integrated experience, and highly customisable interfaces to existing IT assets.

An example of a large scale transformation can be 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. They can choose to be first movers, followers or take a defensive stand altogether. To align with either of the strategic choices, collaborating with fintech is seen as a revolutionising trend across the banking ecosystem.

India overview

With the emergence of new payments and small finance banks in India, the road is set ahead for surge in adoption of Bank in a Box solution. The key aspects 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 has received wide acceptance by small co-operative and RRBs (Regional Rural Banks) in India.

As an example, IDFC partnered with FSS solution⁰¹ for "Bank in a Box" hosted solution for the following services - payments processing, card management, reconciliation to payment gateway for e-commerce, and Aadhaar enabled Payments for financial inclusion.

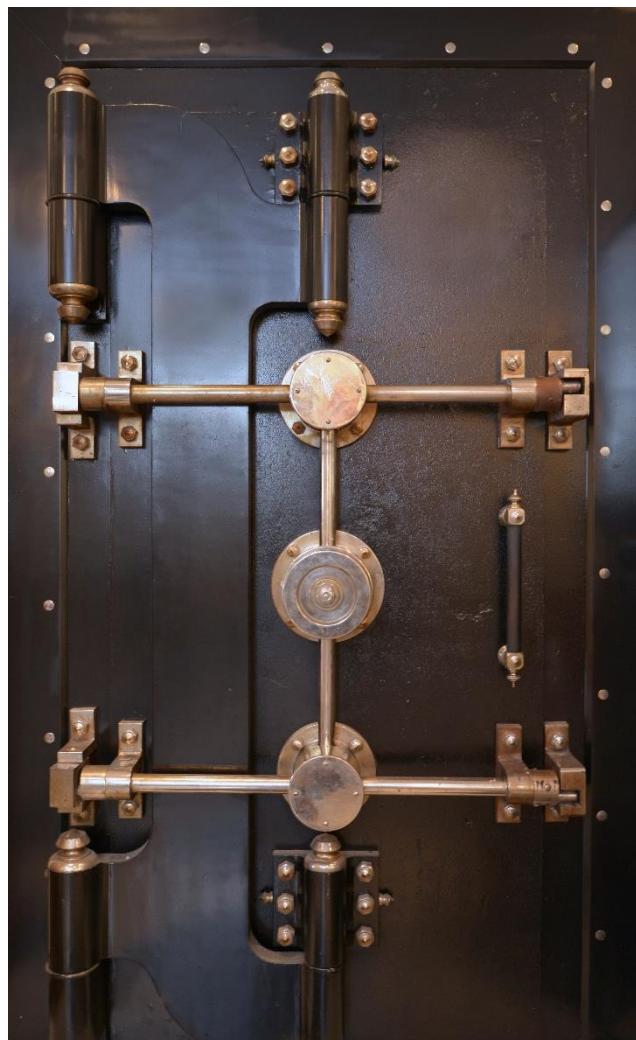
Shivalik Cooperative Bank in India has adopted the Bank in a Box solution from FiS India⁰² and the solution has been extremely effective in meeting their plans of expansion in different products and segments.

Recently, Yes Bank in India came up with distinctive service called "Bank in a Box"⁰³ which uses bunch note acceptors/recyclers for corporate clients in sectors like retail, healthcare, banking and aviation. It has helped in the automation of cash handling process in these aforesaid sectors.

Several lending NBFCs are also looking at adopting Bank in a Box solutions for rapid market penetration and ease of introducing digital lending products.

Some of these institutions are adopting 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 for banks.

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



01 'Bank-in-a-box' hosted solution streamlines launch plans for Indian FI, ATM Marketplace, 17 June 2015, <http://www.atmmarketplace.com/news/bank-in-a-box-hosted-solution-streamlines-launch-plans-for-indian-fi/> accessed on 30 May 2016.

02 Shivalik Bank-FIS Tie up makes International Headlines, 12 August 2014, <http://www.shivalikbank.com/shivalik-bank-fis-tie-makes-international-headlines> accessed on 30 May 2016.

03 YES Bank's tie up with Smartbox to help reduce delivery returns, The Hindu, 09 February 2016, <http://www.thehindubusinessline.com/money-and-banking/yes-banks-tie-up-with-smartbox-to-help-reduce-delivery-returns/article8212325.ece> accessed on 30 May 2016.

04 Five Fintech firms for DIY investors, Forbes India website, <http://forbesindia.com/article/investment-guide-2016/five-Fintech-firms-for-diy-investors/42055/1>, accessed on 10 May 2016.

P2P Lending

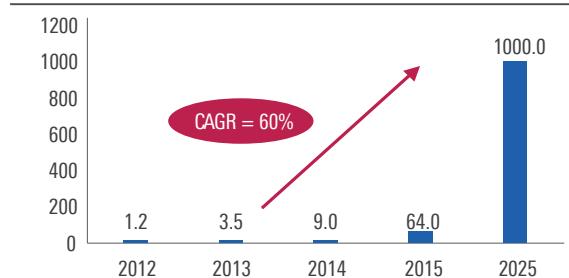
P2P lending is transforming consumer lending by redefining the standards

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 2014⁰¹, with the U.S., the U.K., Australia and China being the largest P2P lending markets.

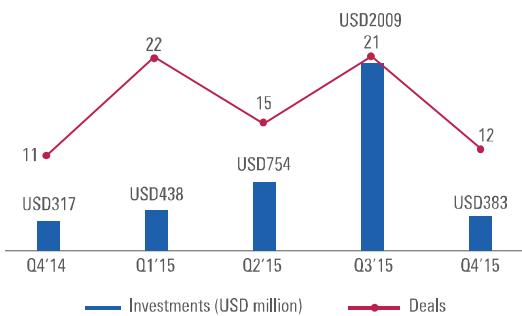
Value of global peer to peer lending (in USD billion)



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 billion⁰² in funding.

Leading tech investment activity



Top countries

The United States
36 Deals // \$2.72B

The United Kingdom
7 Deals // \$249.2M

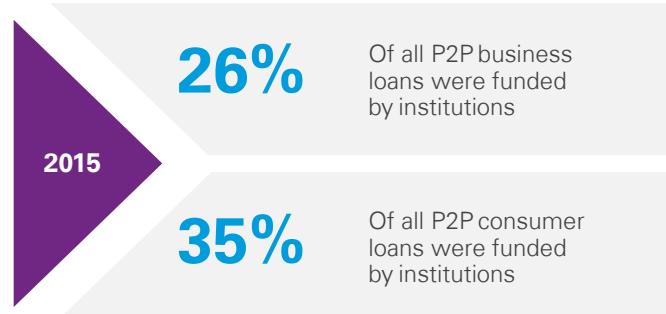
China
10 Deals // \$538M

Source: The Pulse of Fintech, KPMG, 2016

The U.K. alternative lending market is growing by many folds each year. In 2015, UK's alternative finance sector grew by 84 per cent and generated USD 4.7 billion⁰³ 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 U.K. 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 cent⁰³ 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, link accessed on 19 May 2016



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

02 SoFi Raised USD1 Billion to Challenge Banks and Other Fintech Firms for Lending Supremacy, Finance Magnet, 30 September 2016, website accessed 20 May 2016.

03 Pushing Boundaries – The 2015 UK Alternative Finance Industry Report, Nesta, February 2016.

The key driving force for the 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 250,000⁰⁴
- BBVA, USAA and SunTrust are working with Prosper to offer co-branded loans⁰⁵
- Union Bank and other community banks that are a part of the BancAlliance have formed a co-branded relationship with Lending Club⁰⁶
- Santander Bank refers businesses that require small loans to the Funding Circle⁰⁷.

Global regulatory overview

- In the U.K., Innovative Finance Individual Savings Account (IFISA) allows members to invest through P2P lending platforms tax free; additionally the country has a Peer-to-Peer Finance Association (P2PFA) with representations from major P2P players.
- 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
- In the U.S., there are two levels of securities regulations for P2P lending — the SEC and the state. While some states like Texas have banned the practise of P2P lending, other states like California have placed limits on the type of investors granted access to the lending⁰⁸ platform.
- 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.

There is a massive opportunity available in the P2P market globally, which is increasingly being favored over traditional model by users of the service and where revenues of few players are growing at an exponential rate every year. Thus, there is an imperative need for banks to leverage this opportunity and create product propositions in collaboration with fintech companies.

04 JP Morgan working with OnDeck to speed small-business loans, Bloomberg, 02 December 2015, link accessed on 18 May 2016.

05 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.

06 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.

07 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-a038-0014feabdc0.html#axzz4A6WXcWFg> accessed on 30 May 2016.

India overview

In India, the P2P lenders broadly focus their portfolio under the categories of micro finance, consumer loans and commercial loans. For example, 30 per cent⁰⁹ of Faircent's loans are taken by micro and SME sectors, boutique firms and mom and pop stores. The rest are taken by individuals for private purposes such as weddings, medical and home.

Some of the other leading P2P lenders in India are i2ifunding, Loanmeet, i-lend, Lenden Club, Milaap, MicroGraam, InstaPaisa and Vote4Cash etc.

The growth potential of the market in India is huge as there are about 57.7 million small businesses in the country¹⁰.

Currently, in the absence of a regulatory framework, Indian P2P start-ups are registered under the Companies Act and abide by The Negotiable Instruments Act. RBI recently released a consultation paper on P2P lending business model where companies need to be registered as a special category NBFC¹¹ and spoke about six prime areas including permitted activity, reporting, prudential and governance requirements, business continuity planning and customer interface, thereby providing an approach to curtail the risk in this sector. The idea is to bring the P2P lending platforms within the scope of NBFC governance.

Moving forward, we believe that technology convergence is likely to make P2P lending safer and faster. UPI and blockchain are two big technology revolutions that are projected to have a favourable impact on the expansion of P2P lending business in India. With an intent to have a robust P2P market, the government of India has to address certain key areas for P2P lenders such as on capital structure, requirement of fund for lender protection, process of transfer of money and infrastructure needs and making sure that objective of introductory regulations is to control the unruly practices rather than posing barriers for fintech adoption in the country.

08 Consultation paper on Peer to peer lending, RBI, April 2016, <https://rbidocs.rbi.org.in/docs/content/pdfs/CPERR280416.pdf> accessed on 30 May 2016.

09 SoFi Raised USD1 Billion to Challenge Banks and Other Fintech Firms for Lending Supremacy, Finance Magnet, 30 September 2016, website accessed 20 May 2016.

10 India helps small business borrow to grow, Reuters, 05 March 2015, <http://in.reuters.com/article/india-banks-microfinance-idINKBN0M10ED20150305> accessed on 30 May 2016.

11 The Pulse of Fintech 2015 in Review, KPMG, March 2016, link accessed on 19 May 2016.

P2P lending has the potential to become disruptive in nature; hence, the P2P platform guidelines should not promise extraordinary returns to lenders. Since India being the most peculiar and fast paced economy, it needs to be seen differently from other global P2P markets. The country requires a mix of good regulatory practises to balance the growth of this model and adopt fair practises.

- Naresh Makhijani, Partner and Head,
Financial Services, KPMG in India



Financial Inclusion

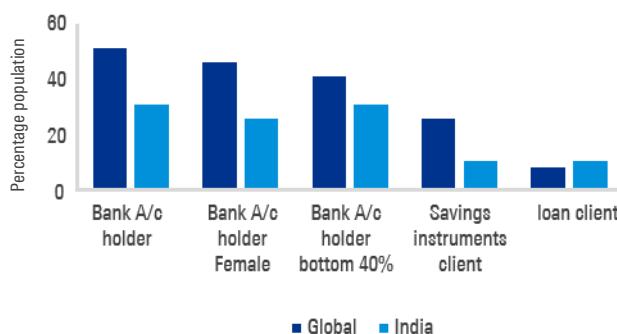


Potential of engaging the underserved section is likely to unleash the next level of growth in banking

Overview

Globally banking sector is grappling with the dearth of financial inclusion in rural areas. At the global level, 38 per cent of the adults do not use any formal financial services and 73 per cent of the poor people are unbanked⁰¹. 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 following graph shows a comparison of status of financial inclusion in India and at global level.

Financial inclusion status for population above 15 years: global comparison (in per cent)



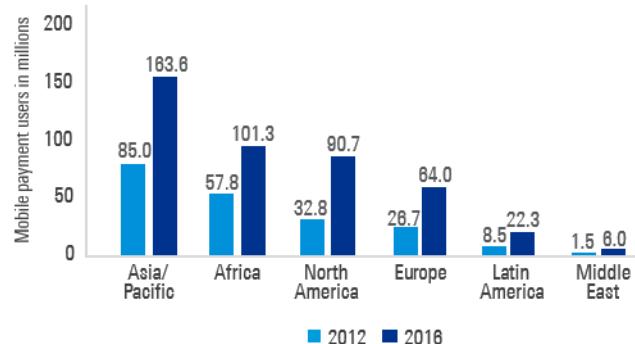
Source: ISI emerging markets, 2016

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

To address these challenges, a conceptual framework is being developed in some countries across the globe. Even United Nations along with World Bank has come up with a commitment for creating "Universal Financial Access" by 2020. This will be covering 25 countries and targeting 75 per cent of the financially excluded⁰² population.

Mobile has been revolutionary in creating a new paradigm for spread of financial services in unbanked areas. Following graph shows the growth of mobile payments across different geographies:

Africa and Asia are embracing mobile payments



Source: Gartner, 2016

As per a recent forecast shared by a leading telecom equipment major, an additional 1.4 billion mobile subscriptions are predicted by 2020 and an additional 3 billion will have access to smartphones⁰³. This will lead to increased accessibility and connectivity across geographies.

Though technology is being 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 being used by over two-thirds of the Kenyan population, 50 per cent of the unbanked population and accounting for over 25 per cent of the country's gross national product flows⁰⁴. This has led to a revolution worldwide and the model has been adopted in Tanzania, South Africa, Afghanistan and India.

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 investors⁰⁵.

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.

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 group⁰⁶.

01 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.

02 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.

03 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.

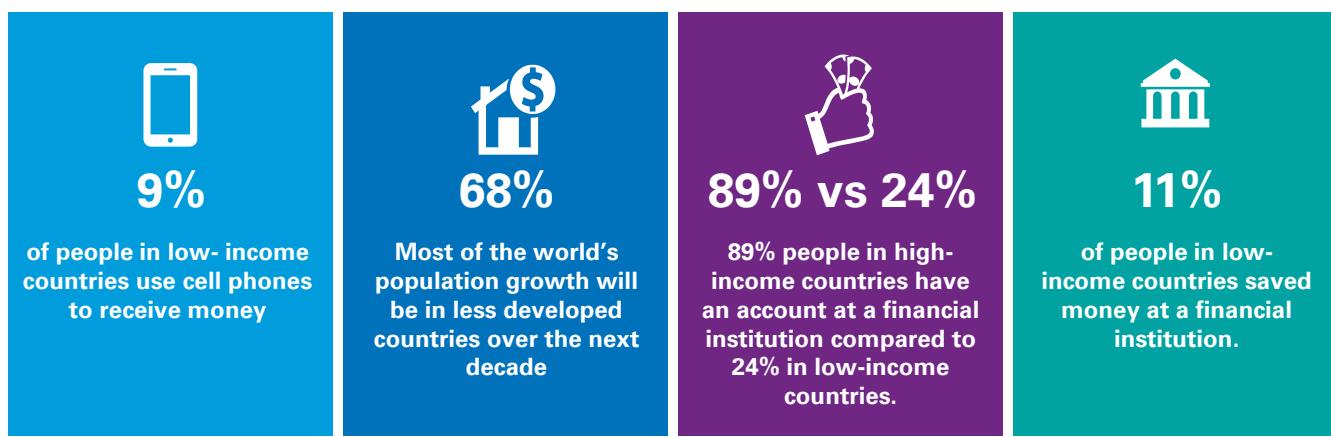
04 Why does Kenya lead the world in mobile money?, The Economist website, <http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18>, accessed on 10 May 2016.

05 Capital Match website, <https://www.capital-match.com/>, accessed on 30 May 2016.

06 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.

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 included society. All these initiatives will have to be well supported by International societies and if required funded by them.

Global Snapshot 2015



Source: Aite



India overview

In India, financial inclusion is projected to be driven largely by creation of an ecosystem where people get the opportunities to use financial instruments in their daily lives and banks make best use of the spread of fintech and non-financial firms operating in these inaccessible areas.

At present, the financial inclusion penetration in India is low, where 145 million households do not have access to banking services⁰⁷.

In India, rapidly growing penetration of smartphones and internet has led to the emergence of multiple technologies for replacing cash, providing credit information for screening, enabling online lending and purchasing of financial products through digital means. Going forward, the recent provision of payment bank licenses by RBI is likely to aid in monetizing this digital trend and making technology as the core offering.

RBI has also given licenses to 10 entities for setting up Small Finance Banks. Through this initiative, RBI aims to extend the credit facilities to micro and unorganized sectors. Alongside this, RBI has also come up with a report on Medium term path for financial inclusion, which aims to set the path for 90 percent financial inclusion by 2021.

The opportunity for fintech is enormous in the areas of government-to-person cash transfer. The Direct Benefit Transfer (DBT) scheme will enable deeper penetration of financial services and help in achieving financial inclusion goals as per RBI.

Even Government of India's financial inclusion mission is working on the same lines with an aim to provide following banking services to all households with the following steps:

- Access to bank account with an overdraft facility.
- Unique identifier to every Indian in the form of Aadhar card.
- Rupay-enabled ATM debit card.
- Accident insurance cover of INR 1 lakh.

Rapidly advancing technology is going to improve the way banks operate currently in India. Despite concerted attempts, banks have not been able to cover a significant chunk of population under the preview of financial services, which has given an opportunity to fintech companies to help banks in exploring this opportunity.

Many fintech companies are working in different ways to contribute toward achieving deeper financial inclusion in areas such as microfinance, digital payments, credit scoring and remittances. Some of the most relevant applications of fintech in financial inclusion are explained in the table below:

Fintech Area	Application in financial Inclusion
Payments	eWallets, UPI, USSD Transfer
Peer to Peer Lending	Funding for individuals and micro enterprises
Microfinance	Funding for small and medium enterprise
eKYC	Aadhar enabled KYC
Biometric	Credit scoring information, account opening, ATM pin
Digital Identify	Aadhaar linkage to account for credit information
Remittances	Transfer and payments in remote areas

Source: KPMG in India analysis, 2016

FinTech activity in India has attempted to cover a range of initiatives for financial inclusion. Example:

- Ezetap's low-cost PoS devices, helping local stores and villagers transfer funds and make payments⁰⁸.
- Instarem's offers on international money transfer with charges as low as 1 per cent transaction fee for any transactional value⁰⁹.
- Milaap's customised credit programmes for underserved sections, which leads to social lending¹⁰.
- Budipay's innovative solutions around remittances and direct benefit transfers in India¹¹.

In the near future, alternative payments are likely to have a significant share of payments and transfers, which could lead to deeper penetration of financial services, thereby, supporting the overall agenda of financial inclusion.



07 Financial Literacy and Financial Inclusion – Indian Way, The Reserve Bank of India website, https://rbis.org.in/rbiocdfc2013/Downloads/FL_per cent20and per cent20FI-Indian per cent20way.pdf, accessed on 10 May 2016.

08 SBI ties up with Ezetap to launch 'Chota ATM' for INR 499, Your Story, 03 October 2014, <http://yourstory.com/2014/10/sbi-ties-up-with-ezetap-chota-atm/> accessed on 30 May 2016.

09 Banks are bleeding you dry on your money transfers. A new startup wants to disrupt that, Tech in Asia, 20 January 2015, <https://www.techinasia.com/banks-are-bleeding-you-dry-on-money-transfers-this-startup-disrupts-that> accessed on 30 May 2016.

10 Make a New Loan, Milaap, <https://milaap.org/faq/making-a-loan> accessed on 30 May 2016.

11 Budipay, AngelList website, <https://angel.co/budipay>, accessed on 30 May 2016.



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 2020⁰¹.

In the last few years, two major U.S. 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 2016⁰².

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

- Some of the prominent U.K. banks such as HSBC, Barclays and RBS have started offering fingerprint recognition technology for authentication.
- One of U.K.'s leading bank 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 biometric in banking and payments involving major banks, fintech, vendors and industry experts. This practise has significant opportunities in the developing market to promote a safe and secure banking experience. Examples:

- ebankIT, a fintech company based out in Portugal recently came out with an innovative solution around a visual and voice recognition system, which allows to 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.

- Crypto Labs, U.K., 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 and then these beams are counted to generate a random number.

Thus globally, the necessity of having a strong authentication method and protocols for prevention of frauds has become inevitable and failure to do so might lead to rise in security breaches and huge financial losses for the financial institutions.

India overview

As the Indian customer evolves, banks are leveraging new technologies to improve the banking customer experience since more and more financial transactions are now conducted through electronic banking. As the consumer acceptance of eKYC and biometric authentication increases, fingerprint recognition has the potential of becoming the most commonly used technology for customer interactions. Examples:

- Kotak Mahindra Bank – Promoting fintech start-ups by organising "Mobility Hackathon" to develop innovative applications in the field of fintech, security and e-commerce⁰³.
- A leading bank in India started offering voice recognition service to authenticate customer identification based on their speech pattern, resulting in faster banking transactions, as the customers are not required to enter their card number in every transaction, and will use customer's Aadhar details for credit profiling. Similarly, the facility of "Smart Vault" offers automated locker facility in a secure lounge with biometric authentication⁰⁴.
- Banks in India are also leveraging biometric technology for faster loan approvals.

A leading fintech start-up is working with leading private banks in India in the area of cyber security and assisting them in protecting the information shared externally⁰⁵.

01 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-cent-e2-per-cent-80-per-cent-8B-per-cent-E2-per-cent-80-per-cent-80-per-cent-8B-market-reaches-75-billion-in-2015-per-cent-E2-per-cent-80-per-cent-8B-per-cent-E2-per-cent-80-per-cent-8B-per-cent-E2-per-cent-80-per-cent-8B/>Expected-to-reach-170-billion-by-2020/#499c2d4e2191, accessed on 10 May 2016.

02 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.

03 Look forward to more banking products, Live Mint, 21 April 2016, <http://www.livemint.com/Money/8UjE5fhSdzUhvTBl91EZL/Look-forward-to-more-banking-products.html> accessed on 30 May 2016.

04 ICICI Bank launches 'Smart Vault', a fully automated locker, The Times of India, 18 August 2015, <http://timesofindia.indiatimes.com/business/india-business/ICICI-Bank-launches-Smart-Vault-a-fully-automated-locker/articleshow/48527082.cms> accessed on 30 May 2016.

05 <http://www.vccircle.com/news/technology/2016/05/04/archives>, accessed on 30 May 2016.

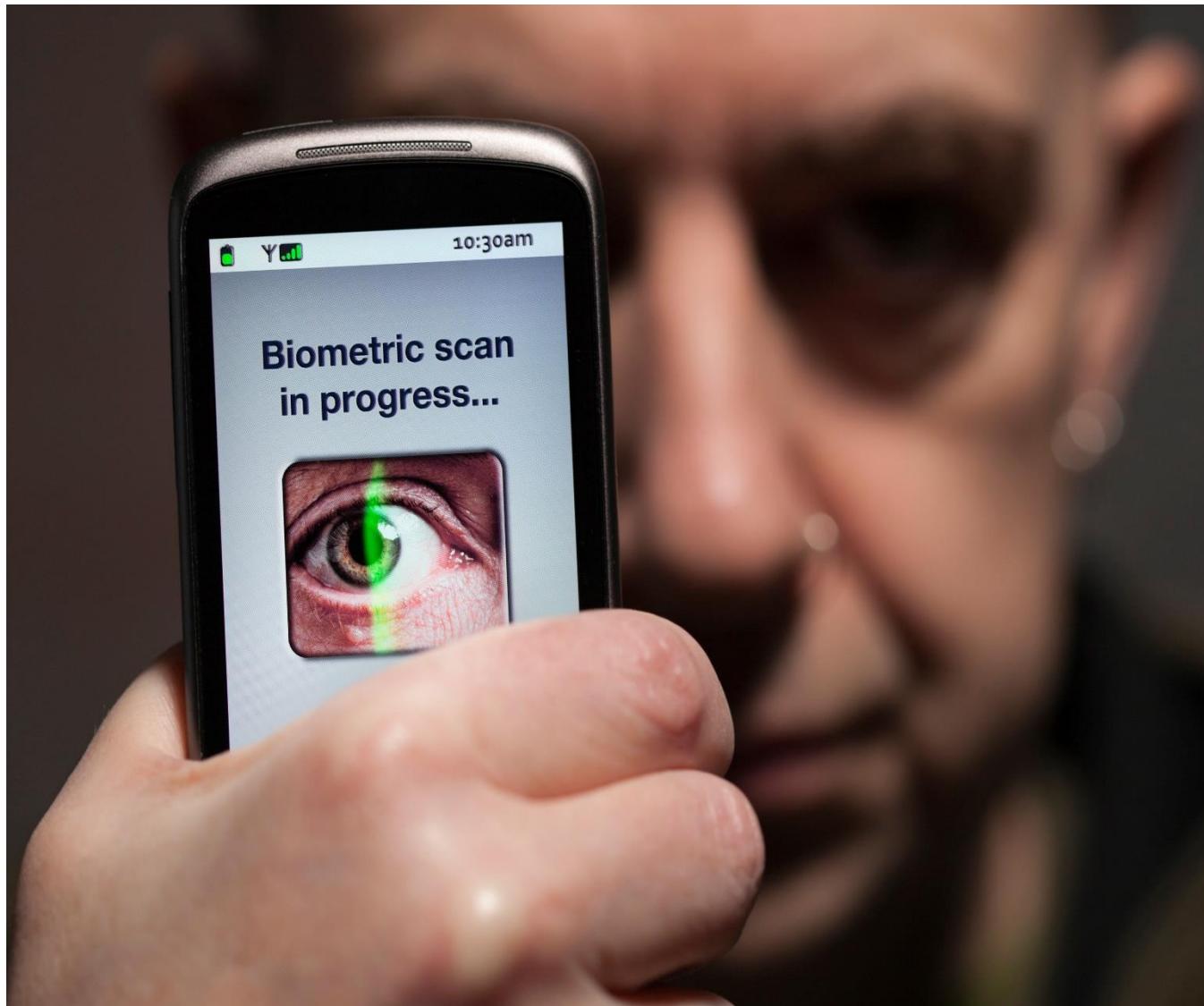
Application of key biometric technologies in banking

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.

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

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,
Voice	Telephone Banking, branch banking, password/PIN reset, high-risk transactions, Mobile banking
Iris	Branch banking, ATM, internet banking, access control

Source: KPMG in India analysis, 2016





Learnings from global experience:

Opportunity for India to solidify its position 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 serving 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 dig its roots deep in any financial system.

Firstly, it is important to study the potential impact of all the market participants in the thriving Indian 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 ahead.

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 fintech. However, for FIs to do this successfully, it is important to have very strong IT leadership and build capabilities that are not always found immediately 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 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 their 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.

Indian 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 Indian fintech firms. Every successful POC creates proof points and metrics that will make it much easier to offer their fintech innovation to FIs in overseas markets, e.g. the UK, 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 in India to help smaller fintech firms to make their solutions robust enough for the FI market. Fintech industry players in India 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 Indian IT firms and Indian fintech.

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	Develop a dynamic digital infrastructure For the success of the fintech ecosystem, it is imperative that the digital infrastructure of the country be adaptable and supportive. India should work towards higher penetration of mobile, internet and IoT infrastructure so that communication and connection is smooth across all channels.
2	Introduce special work visa for start-up entrepreneurs and technology experts to attract foreign talent Developed countries like the U.K. and the U.S. have taken leaps in terms of fintech development in the last few years. Many of their successful start-ups are expanding geographically. India needs to aid them with an effective policy so that these start-ups can build infrastructure in the country. These aids include easy business set-up processes and special work visa for foreign start-up entrepreneurs and technology experts.
3	Build a strong technological and entrepreneurial talent pool by engaging universities and institutions India needs to adopt a cautious approach towards the migration of its young and working population to foreign lands. This requires conscious effort on the part of the educational system of the country to impart adequate technical and entrepreneurial skills. Academic bodies should be encouraged to act as catalysts towards building an innovative mindset of technological advancement and proto-typing from the very beginning.
4	Offer coherent tax incentives to start-ups and venture capitalists The Indian government is working passionately towards the development of a robust fintech ecosystem in the country through the 'Digital India' and 'Start-up India' initiatives. The state governments should also provide additional benefits, especially in areas where literacy, educational institutions and innovative entrepreneurs are high in penetration.
	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, India 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 India, thereby attracting investments.

Recommendations to the Regulators

1	Adopt the best of breed regulatory initiatives from the global markets While it is natural to tread with caution and restraint to decipher the complex interplay of fintech in a well-regulated Indian financial services market, it is important to inculcate the strategy and vision of the regulatory initiatives from the mature markets which can help in the development of the fintech sector.
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Recommendation to Financial Institutions

	Form an independent fintech focused industry association to give the sector an identity and a platform to voice opinion With a number of innovative start-ups cropping up across the country, it is important to have a fintech focused trade body that can consolidate the efforts and create a formal sector for budding entrepreneurs. This is expected to streamline processes, facilitate cross-pollination of knowledge and information and also give a strong voice to the sector.
1	<ul style="list-style-type: none"> a. The governing body should be comprised of representations from RBI, PSU banks, private banks, NPCI and other economic bodies in India. b. Tasks should be to relook and revamp the existing traditional banking models in India. E.g. Initiatives around setting up alternate financing reforms in India. c. Propagating initiatives such as e-KYC, Aadhaar linked payments, account switching and creating digital passports.
2	<p>Providing incubation support to fintech 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.</p> <ul style="list-style-type: none"> a. Supporting government and regulators in setting up compliance, risk and regulatory frameworks b. Providing expertise in development of product and services beyond the prototype and marketing it effectively to the global players. c. Helping fintech firms to test and refine their products via robust POC projects with Indian financial institutions. This builds confidence among global FIs to adopt fintech solutions developed in India. d. Helping fintech with infrastructural facilities such as office space, hardware and other logistical arrangements. e. Conversion of public / private unused space into incubation centres, thereby creating an environment for start-up community e.g. Shoreditch in London
3	<p>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 done by:</p> <ul style="list-style-type: none"> a. Creating a marketplace platform where fintech can demonstrate and provide a brief about its offerings to the potential investors. b. Creating awareness amongst investors and showcasing the potential encompassed in the fintech space. c. Enhancing capital access at the seed stage for the fintech start-ups, so that they have funds once the business plan is 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

	Leverage incubation support a. Work with players in the ecosystem that provide expertise in development of product and services beyond the prototype and marketing it effectively to the global players. b. Develop relationships with technology development/ implementation firms that will act as SI partners during product implementation
2	<p>Mobilise both domestic and foreign venture capital funds</p> <ul style="list-style-type: none"> a. Explore fundraising initiatives by partnering with private players and financial institutions. b. Create awareness amongst investors and showcase the potential by participating in industry events and driving collaborations with the established players

Appendix A: List of fintech start-ups

Marketplace lending/analytics

Company	Country	Year founded	Description
SMEcorner	Mumbai, India	2014	SMEcorner is an online platform that enables SMEs to avail loans from banks and NBFCs.
Faircent	Gurgaon, India	2013	Faircent offers a P2P lending platform that serves as a marketplace for borrowers and lenders.
Biz2Credit	Noida, India	2007	Biz2Credit is a popular online credit resource for start-ups and small business loans.
Vote4Cash.in	India	2014	Vote4Cash.in is a P2P online market place where borrowers can access cash loans 24/7, without the hassles of document gathering, guarantor, collateral, verification, etc., based on their social status
Nanobi Analytics	Bengaluru, India	2012	Nanobi analytics platform lets you build analytic applications with uses in fintech customer experience, product & service positioning and profitability.
Lending Club	San Francisco, CA, USA	2006	Offers online platform enabling investors to lend directly to individuals
Kreditech	Hamburg, Germany	2012	Consumer platform, Kredito24 and Zaimo helps individuals to apply for loan online, mobile or via SMS and receive fund within 15 minutes
Funding Circle	London, UK	2010	First site to introduce process of peer to peer lending

Next generation payments

Company	Country	Year founded	Description
Simpel	Mumbai, India	2014	Simpel has a smartphone application that allows paying a merchant from a mobile phone using credit/debit cards or net-banking by just typing the merchant's mobile number.
FTcash	Mumbai, India	2014	FTcash is a mobile payments platform which allows offline retailers to accept mobile payments, advertise and engage customers.
CitrusPay	Mumbai, India	2011	Citrus acts as a payment gateway allowing users to pay for train tickets, utility bills etc. online. Launched Citrus cash in 2013, a mobile wallet app for P2P money exchange.
Kyash	Bengaluru, India	2012	Kyash is a fully automated system for collecting cash payments via a country wide network of neighbourhood shops and offices.
Klarna	Stockholm, Sweden	2005	Klarna is one of Europe's leading providers of payment solutions for e-commerce
Square	San Francisco, CA, USA	2009	Square Reader (app) allows to accept credit card anywhere using a free credit card reader on the iOS and Android
Adyen	Amsterdam, Netherlands	2006	Adyen is a global provider of online, mobile and point-of-sale payment solutions including best in class global acquiring and processing services

Source: Crunchbase Database and News articles and research reports.

Wealth management (robo-advisory/pfm)

Company	Country	Year founded	Description
Finbox	Mumbai, India	2015	Finbox is a smartphone app enabling consumers to track their spending, automated categorization of transactions and offers interactive visuals on the spend of the consumer.
Moneyfrog	Mumbai, India	2013	Moneyfrog is an online platform for personal financial planning.
Taurowealth	Bengaluru, India	2015	Taurowealth provides a powerful technology –driven platform for generating investment advice.
Credit Seva	Hyderabad, India	2011	CreditSeva™ enables customers to take better financial decisions and manages the credits in a better way.
Money Smart	Mumbai, India	2011	MoneySmart is a mobile based personal finance management application which helps the users to organize finances instantly.
Advise Sure	Mumbai, India	2015	AdviseSure is a multi-product robo financial advisor that helps find the best possible, financial and investing decisions.
Clear Tax	Delhi, India	2011	ClearTax, a product of ClearSharp Technology, is a free e-filing platform for filing Income Tax returns in India. ClearTax provides free e-filing services for salaried individuals with Form-16s.
Motif Investing	San Mateo, CA, USA	2012	Empowers investors with a low cost solution that assists in turning specialized niche investment ideas into legitimate investments.
Personal Capital	Redwood City, CA, USA	2009	Provides online investment advisory services that specializes in investors who have traditionally been underserviced.
Wealthfront	Palo Alto, CA, USA	2011	Offers online automated investment services that readjust the investor's portfolio asset weights in different classes.

Security / biometrics

Company	Country	Year founded	Description
Customer XPS	Bengaluru, India	2006	Help banks analyze & interpret every transaction in real- time, thus configuring their entire business around individual account/customer
SayPay	Bengaluru, India	2015	SayPay Technologies provides a Voice Biometric Payment solution where users can authorize e-Commerce purchases, P2P, Bill Pay, etc. by speaking the unique one-time crypto-token generated at run-time into the mobile app.
Appknox	Bengaluru, India	2014	Provides a platform that scans mobile apps in an automated manner to find security flaws such as leaked payment, banking and other sensitive data of the users
FixNix	Vellore, India	2012	Provides a SaaS based GRC solution for SMBs and enterprises for automating IT security workflow & actions.
SecureKey	North York, Canada	2008	SecureKey is the identity and authentication provider for organizations that deliver online consumer services
BioCatch	Boston, USA	2011	BioCatch is a leading provider of behavioral authentication and malware detection solutions for web and mobile applications

Blockchain

Company	Country	Year founded	Description
Zebpay	Ahmedabad, India	2011	Zebpay provides an online platform for buy/sell of bitcoins. Recently Zebpay is leveraging its expertise in areas involving Blockchain.
Unocoin	Bengaluru, India	2013	Enables users to buy bitcoins by paying INR from any online bank, or through NEFT/RTGS. Users can buy/sell a maximum of 2 bitcoins per day. It also holds bitcoin campaigns which connect large buyers and sellers of bitcoin in India.
Chain	San Francisco, US	2014	Chain partners with leading financial institutions to build Blockchain networks that transform markets.
Eris Industries	Berlin, Germany	2014	Eris empowers developers to leverage its platform to develop solutions around block chain.

Financial Inclusion

Company	Country	Year founded	Description
Ezetap	Bengaluru, India	2011	Ezetap works on the mission of coming up with solutions leading to creation of frictionless payments in India
Milaap	Bengaluru, India	2010	Milaap is a crowd funding platform based out of Bangalore, India and Singapore. It allows to crowdfund donations for personal causes, emergencies and social causes
Eko India	Gurgaon, India	2007	Eko provides a low cost infrastructure powered by innovation and technology to create banking simpler for low income customer segments.

Bank in a Box

Company	Country	Year founded	Description
Avoka	Sydney, NSW, Australia	2005	Avoka provides solutions for accelerating digital customer acquisition and business agility for financial services, government, education, and other industries.
Bankable	London, UK	2010	Bankable offers white-label and API-based payment solutions including e-wallets, m-wallets, remittance service
ebankIT	Porto, Portugal	2014	ebankIT offers the most innovative Omnichannel banking products: internet banking, TV banking, mobile banking, branch front office and Facebook banking

Appendix B: Mature market analysis

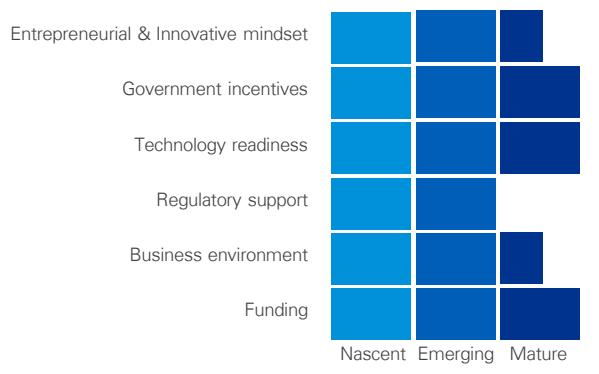
The United States

The U.S. 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 U.S. 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 U.S. has more than 25 unicorn fintech start-ups with value worth USD 1 billion. The Silicon Valley has more than 15,000 start-up firms¹⁰⁹, about two million hi-tech workers and the most experienced start-up employees¹¹⁰

Assessment of fintech environment in the U.S.



Source: Internal KPMG Analysis, 2016

Key growth levers

Government incentives

The U.S. 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 world¹¹¹. This offers a strong pull to the U.S. 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 itself¹¹².

¹⁰⁹ Unlocking the potential: The fintech opportunity for Sydney, KPMG, October 2014

¹¹⁰ The 25 fintech 'unicorns' worth over USD1 billion ranked by value, Business Insider website, <http://www.businessinsider.in/The-25-fintech-unicorns-worth-over-1-billion-ranked-by-value/articleshow/48577057.cms>, accessed on 30 May 2016

¹¹¹ The Global Startup ecosystem Ranking 2015, Compass, August 2015

¹¹² Unlocking the potential: The fintech opportunity for Sydney, KPMG, October 2014

¹¹³ The Pulse of Fintech, 2015 in Review, KPMG, March 2016

¹¹⁴ Tech Crunch, <http://techcrunch.com/2016/02/11/bbva-shuts-in-house-venture-arm-pours-250m-into-new-Fintech-vc-propel-venture-partners/>, accessed on 13 May 2016

Funding ecosystem

The U.S. 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 U.S. raised a total funding of USD 7.3 billion across 378 deals in 2015, up from USD 4.3¹¹³ 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 2014¹¹⁴

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-ups¹¹⁵.

Emerging strength areas

Regulatory support

Regulatory framework introduction to the retail funding pool:

The U.S. 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 U.S.'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 entrepreneurship¹¹⁶, 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.

¹¹⁵ Frontier Finance, <http://www.Fintech.finance/news/the-state-of-Fintech-industry-as-we-know-it-infographic>, accessed on 14 may 2016

¹¹⁶ White House launches "start-up America" initiative, the WHITE HOUSE, <https://www.whitehouse.gov/start-up-america-fact-sheet>; SEC Adopts Rules to Permit Crowd funding, SEC, 30 Oct 2015

“ 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

- Fintech Innovation Lab and Barclays Accelerator were launched in New York City in 2015¹¹⁷.
- Fund for New York City has establish a New York Fintech innovation Lab in 2010¹¹⁸.
- Stanford University developed university-affiliated accelerator programme, StartX with a grant of USD 3.6 million in 2013¹¹⁹.

Next stage focus areas

Talent acquisition and retention

- Given the surge in demand, a standard tech-compensation range of approx. USD 120000¹²⁰, and this premium is straining the funding pressure of fintech startups. 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 world¹²¹. 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 startups or those aspiring to get late-stage funding by showing profitability.

117. Barclays Launches Fintech Innovation Hub Rise New York, Other Rise Hubs to Follow, Bitcoin Magazine, 16 July 2015, <https://bitcoincmagazine.com/articles/barclays-launches-fintech-innovation-hub-rise-new-york-rise-hubs-follow-1437080636> accessed on 30 May 2016

118. Fintech Investment in U.S. Nearly Tripled in 2014, Accenture website, <https://newsroom.accenture.com/news/fintech>, accessed on 26 May 2016

119. StartX, Stanford University and Stanford Hospital and Clinics announce USD3.6M grant and venture fund, Stanford news, 05 September 2013, <http://news.stanford.edu/news/2013/september/startx-fund-release-090513.html> accessed on 30

May 2016
120. 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

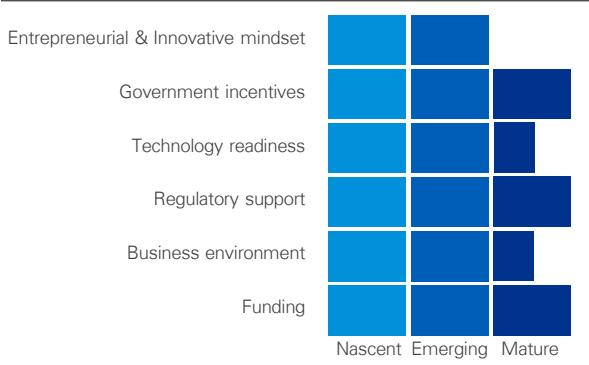
121. <https://www.sec.gov/news/pressrelease/2015-249.html>, accessed on 13 May 2016

The U.K.

The U.K. 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 U.K. has also emerged as a strong fintech ecosystem, with USD 1.07 billion of investment activity in 2015¹²². 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 U.K.



Source: Internal KPMG Analysis, 2016

Key growth levers

Regulatory support

The U.K. 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 U.K. 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 2017¹²³.
- Virtual currencies, such as bitcoins have been promoted with tax holidays while many other countries banned their usage¹²⁴.
- The U.K. appointed a brand ambassador for the fintech sector in July 2015 and established advisory units for fintech growth¹²⁵.

123 Fintech start-ups get tax boost, The Trade, 16 March 2016, <http://www.thetradenews.com/Technology/BUDGET-2016-Fintech-start-ups-get-tax-boost/> accessed on 30 May 2016

124 Bitcoin currently banned from 'Bitcoin-related risks', The Register, 22 January 2016, <http://www.theregister.co.uk/2016/01/22/ehina-virtual-currency-risks/> accessed on 30 May 2016

125 The digital adviser for both David Cameron and Boris Johnson talks about diversity and success, The Guardian, 07 December 2015, <https://www.theguardian.com/technology/2015/dec/07/eileen-burbidge-tech-venture-capitalist-profile> accessed on 30 May 2016

126 UK IsraelTech Hub drives partnerships in technology, Matimop, http://www.matimop.org.il/blog_UKIsraelTechHub.html#sthash.8lSveXbL.dpuf accessed on 30 May 2016

Collaboration

The U.K. is focusing on collaboration with global fintech ecosystems to counter its strained availability of technology talent and mentorship. This is key to the U.K. 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 practices¹²⁶.
- The UK-Singapore cooperation focuses on leveraging inherent strengths of each other for technology and operational matters¹²⁷.

Government incentives

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

- In October 2015, the government of U.K. launched research initiatives with USD 14.64 funding for crypto currency and distributed ledger technology¹²⁸.

Emerging strength areas

Business environment

Despite the traditional disconnect at regulatory and business fronts within the EU, the U.K.'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 companies¹²⁹.

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 U.K. 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 million¹³⁰. The U.K. accounts for more than half of the overall fintech funding in Europe.
- Government funding schemes: U.K. Angel Co-fund, Start-up Loan Scheme, Enterprise Capital Fund Programme, U.K. Innovation Investment Fund, Business Finance Partnership and Future Fifty programme.

127 Bilateral Collaborations between Singapore and the United Kingdom, IE Singapore, <http://www.singaporeshow.gov.sg/Multic/Overseas/Browse-By-Market/Europe/United-Kingdom/Bilateral-Collaborations> accessed on 30 May 2016

128 UK Government to Fund Research in Digital Currencies and Explore Regulation, Bitcoin Magazine, 19 March 2015, <https://bitcoinmagazine.com/articles/uk-government-fund-research-digital-currencies-explore-regulation-1426792550> accessed on 30 May 2016

129 5 Things You Need To Know About PSD2 – Payment Services Directive, Sepa for Corporates, 13 October 2015, <http://www.sepaforcprates.com/single-euro-payments-area/5-things-need-know-psd2-payment-services-directive/> accessed on 30 May 2016

130 The Pulse of Fintech Survey, KPMG, March 2016

Technology readiness

To counter the absence of a traditional technology hub of the stature of a Silicon Valley in the U.S., 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 students¹³¹.

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 U.K.'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 U.K. has to incentivize its investors to keep a steady flow of investment within the geography.



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

131 Strengthening Hong Kong as a Leading Global International Financial Centre, [http://www.fsdic.org.hk/sites/default/files/REV1per cent20Strengthening per cent20Hong per cent20Kong per cent20As per cent20Leading\(English\).pdf](http://www.fsdic.org.hk/sites/default/files/REV1per cent20Strengthening per cent20Hong per cent20Kong per cent20As per cent20Leading(English).pdf), accessed on 30 May 2016

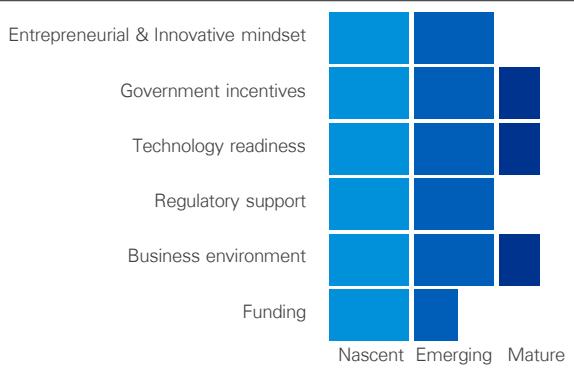
Hong Kong

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 235,000¹³¹. 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 more¹³² 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 the HK



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 needs¹³⁴:

- 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 institutions¹³⁵.

- 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 2021¹³⁶.
- 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 SVF¹³⁷. 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 development¹³⁸.
- InvestHK - Incubator programme through HK Science & Technology Parks guarantees loans and marketing grants for SMEs in the country¹³⁹.
- 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.

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 activities¹⁴⁰.
- Established Innovation and Technology Fund in September 2015, allocating HKD5 million in funding for the development of the sector¹⁴¹.
- Hong Kong fintech startups got USD160million in funding in January 2016.

¹³² Open University and Innovate Finance launch Fintech 101 course, Finextra, 04 August 2015, <https://www.finextra.com/news/fullstory.aspx?newsitemid=27683> accessed on 30 May 2016

¹³³ Strengthening Hong Kong as a Leading Global International Financial Centre, [http://www.fsdic.org.hk/sites/default/files/IREV_per%cent20Strengthening_per%cent20Hong%per%cent20Kong%per%cent20Asper%cent20Leading\(English\).pdf](http://www.fsdic.org.hk/sites/default/files/IREV_per%cent20Strengthening_per%cent20Hong%per%cent20Kong%per%cent20Asper%cent20Leading(English).pdf), accessed on 30 May 2016

¹³⁴ Press release on Steering Group on Fintech, Hong Kong Government website, Link, accessed on 13 May 2016

¹³⁵ Government to release supportive fintech policy in near future, says Financial Secretary, South China Morning Post, 06 November 2015, <http://www.scmp.com/business/article/1875668/government-release-supportive-fintech-policy-near-future-says-financial> accessed on 30 May 2016

¹³⁶ HKUSD17b boost for Hong Kong's innovation and technology sector aimed at fintech start-ups, South China Morning Post, 25 February 2016, <http://www.scmp.com/news/hong-kong/economy/article/1916519/hk17b-boost-hong-kongs-innovation-and-technology-sector-aimed> accessed on 30 May 2016

¹³⁷ Regulatory Regime for Stored Value Facilities (SVF) and Retail Payment Systems (RPS), HongKong Monetary Authority, 13 November 2015, <http://www.hkma.gov.hk/eng/key-functions/international-financial-centre/regulatory-regime-for-svf-and-rps/> accessed on 30 May 2016

¹³⁸ Record number of UK start-ups move to Hong Kong to cash in on mainland China opportunities, The Telegraph, 08 November 2015, <http://www.telegraph.co.uk/finance/festival-of-business/11217670/Record-number-of-UK-start-ups-move-to-Hong-Kong-to-cash-in-on-mainland-China-opportunities.html> accessed on 30 May 2016

¹³⁹ InvestHK launches StartmeupHK Venture Programme to boost Hong Kong's position as world's most promising start-up hub, Invest HK, 09 July 2013, <http://www.investhk.gov.hk/news-item/investhk-launches-startmeuphk-venture-programme-to-boost-hong-kongs-position-as-worlds-most-promising-start-up-hub/> accessed on 30 May 2016

¹⁴⁰ Innovation and Technology Commission, Hong Kong Government, Link, accessed on 13 May 2016

¹⁴¹ Innovation and Technology Commission, Hong Kong Government, Link, accessed on 13 May 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-ups¹⁴².

Regulatory support

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

- 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 workforce¹⁴³. Examples:

- 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 sector¹⁴⁴.

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 Festival¹⁴⁵.
- SuperCharger Accelerator, a 12-week programme for fintech companies and RISE, a conglomeration of world's biggest companies¹⁴⁶ 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 accelerator¹⁴⁷.

Next stage focus areas

Regulations specific to fintech companies

The financial regulations 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 through 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.

¹⁴² Fintech Innovators Champion Hong Kong as Asian Hub, JumpStart Magazine, Link, accessed on 13 May 2016

¹⁴³ Making Hong Kong a Fintech Sector, Thomson Reuters, 2015
¹⁴⁴ HK sees some progress on Fintech, but still a long way to go, Ejinsight, 19 April 2016, <http://www.ejinsight.com/20160419-hk-makes-some-progress-in-fintech-but-still-a-long-way-to-go/> accessed on 30 May 2016

¹⁴⁵ InvestHK website, <http://www1.investhk.gov.hk/news-item/investhk-launches-startmeuphk-venture-programme-to-boost-hong-kongs-position-as-worlds-most-promising-start-up-hub/>, accessed on 25 May 2016

¹⁴⁶ Fintech supercharger website, <http://www.fintechsupercharger.com/>, accessed on 25 May 2016; 15. NEST, <http://nest.vc/>, accessed on 25 May 2016

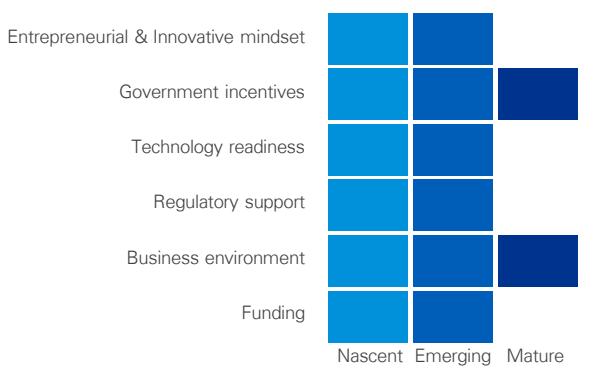
Singapore

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.

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 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 business¹⁴⁸.

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 the Singapore



Source: Internal KPMG Analysis, 2016

Key growth levers

Government initiatives and incentives

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 community¹⁴⁹. 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 U.K. and Singapore entered into a deal to share and use information on financial services innovation by the U.K.'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 jurisdictions¹⁵⁰.

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 Citi¹⁵¹ and global consultants such as KPMG¹⁵² have set up innovation labs, driving tech innovation in financial services.
- Singaporean bank DBS has allocated a SGD 10 million investment into the development of the Singapore start-up ecosystem¹⁵³.

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 launched¹⁵⁴.
- The Singapore Management University launched a student community fintech SMU¹⁵⁵ focused on fostering innovation in the sector.

148. The Global Start-up ecosystem ranking 2015, Compass, August 2015
Lessons banks can learn from Singapore Fintech ecosystem; <http://Fintechnews.sg/2240/Fintech/singapores-Fintech-start-up-scene>
<http://www.out-law.com/en/articles/2016/may/uk-and-singapore-Fintech-tie-up-will-benefit-firms-in-both-countries-say-experts/>

151. Citi launches Innovation Lab in Singapore, Citigroup website, http://www.citigroup.com/citicitiforcities/home_articles/n_singapore.htm, accessed on 30 May, 2016
152. KPMG launches matchmaking initiative for start-ups, IE Singapore website, <http://www.iesingapore.gov.sg/Media-Centre/News/2016/4/KPMG-launches-matchmaking-initiative-for-start-ups>, accessed on 30 May 2016
153. DBS Bank sets up USD10M fund for Singapore start-ups, ZDNet, 04 December 2015, <http://www.zdnet.com/article/dbs-bank-sets-up-10m-fund-for-singapore-start-ups/> accessed 30 May 2016
154. USD500 in SkillsFuture credits, 6 long weekends and more, The Straits Times, 02 January 2016, <http://www.straitstimes.com/singapore/500-in-skillsfuture-credits-6-long-weekends-more-what-you-can-look-forward-to-in-2016> accessed on 30 May 2016
155. The Singapore Management University launched a student community, Fintech SMU: Singapore Management University, <http://sis.smu.edu.sg/programmes/bsc-management/student-life/special-interest-groups-sig> accessed on 30 May 2016

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 sector¹⁵⁶.

Next stage focus areas

Growth funding

Startups 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.

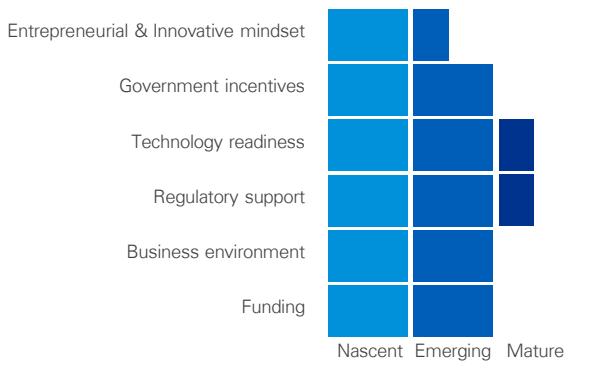
156. MAS sets up new Fintech and Innovation Group, Monetary Authority of Singapore, 27 July 2015, <http://www.mas.gov.sg/news-and-publications/media-releases/2015/mas-sets-up-new-fintech-and-innovation-group.aspx> accessed on 30 May 2016

Australia

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

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.

Assessment of fintech environment in Australia



Source: Internal KPMG Analysis, 2016

Key growth levers

Government incentives

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. Example:

- Employee share schemes: From 1st July 2015, tax concessions under employee share schemes were increased to help early-stage start-ups retain right talent¹⁵⁷.
- Immediate cash-flow benefits: The government allowed start-ups to deduct expenses incurred while starting the business¹⁵⁸.
- Tax saving: The corporate tax rate reduced from 30 per cent to 28.5 per cent for companies with revenue less than USD 2 million¹⁵⁹.

157. Changes to employee share schemes from 1 July 2015, Australian Taxation Office, 01 July 2015, <http://www.ato.gov.au/Newsroom/smallbusiness/Employers/Changes-to-employee-share-schemes-from-1-July-2015/> accessed on 30 May 2016
158. Tax changes will allow start-ups to write off investment costs immediately, The Guardian, 05 May 2015, <http://www.theguardian.com/australia-news/2015/may/05/tax-changes-will-allow-start-ups-to-write-off-investment-costs-immediately> accessed 30 May 2016
159. Reducing the corporate tax rate, Australian Taxation Office, 12 May 2016, <https://www.ato.gov.au/general/news-legislation/in-detail/direct-taxes/income-tax-for-businesses/reducing-the-corporate-tax-rate/> accessed on 30 May 2016
160. Investing in Australia - Significant Investor migration visas, Lexology, 06 July 2015, <http://www.lexology.com/library/detail.aspx?g=279f9ec9-974c-4689-883e-4bd601a5a98e> accessed on 30 May 2016

- 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 businesses¹⁶⁰.

Launch of incubators, innovation hubs

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.
- 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, Australian government has initiated strong technology drives 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 Australia¹⁶¹

- 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 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 U.K. 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.

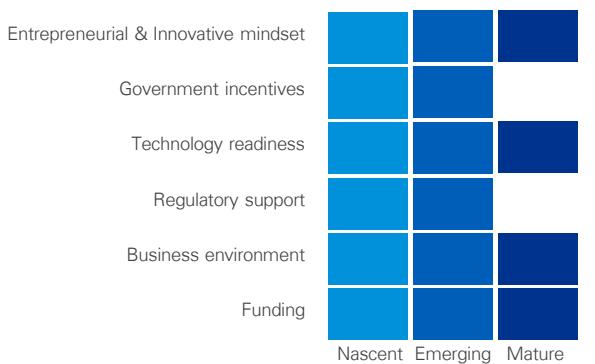
¹⁶¹. Government response to Australia's Fintech priorities, Australian government website, <http://fintech.treasury.gov.au/government-response-to-australias-fintech-priorities/> accessed on 28 May 2016a

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 the 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 globally¹⁶².
- Israel has witnessed a significant number of locals returning to the country after gaining global experience on the Wall Street and in London¹⁶³.
- Hi-tech firms such as Microsoft¹⁶⁴, Intel¹⁶⁵ and Amazon¹⁶⁶ 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 2016¹⁶⁷.
- In 2015, 373 Israeli start-ups raised USD 3.58¹⁶⁸ 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 country¹⁶⁹.

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 centers¹⁷².

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 U.K., Ireland, the U.S. 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 years¹⁷³.
- International events are regularly hosted in the region, such as Fintech Tel Aviv 2014¹⁷⁴, Digital-Life-Design¹⁷⁵, Go 4 Israel¹⁷⁶ and Mix Israel Innovation International¹⁷⁷.
- The Chief Scientist and Israel Innovation Authority have provided grants to support programmes¹⁷⁸.
- Tax breaks to venture capital backed accelerators. The Angel Act (2011) offers tax incentives to investors invest early-stage capital in firms¹⁷⁹.
- Tax benefits to investors funding start-ups which are not three years old¹⁸⁰.

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.



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



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