Leading Through Digital

Business Models that Exploit the Digital Opportunity

November 2017

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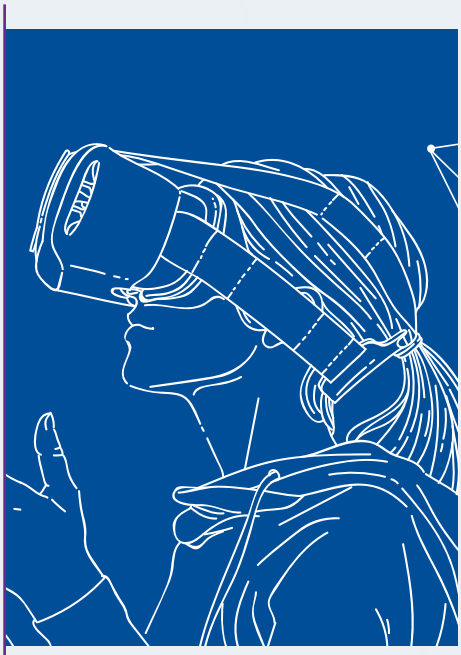

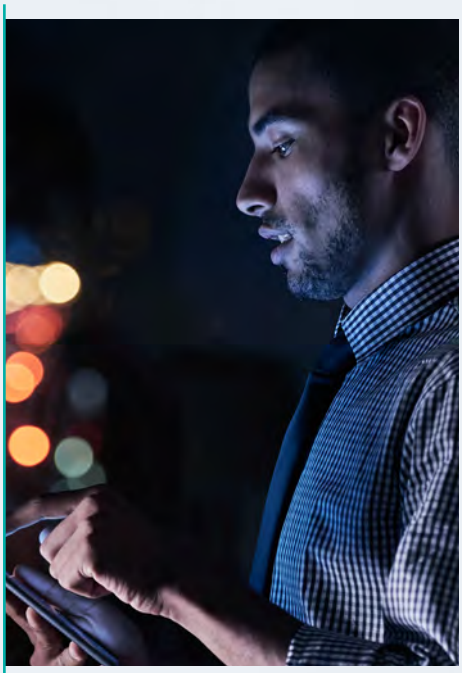

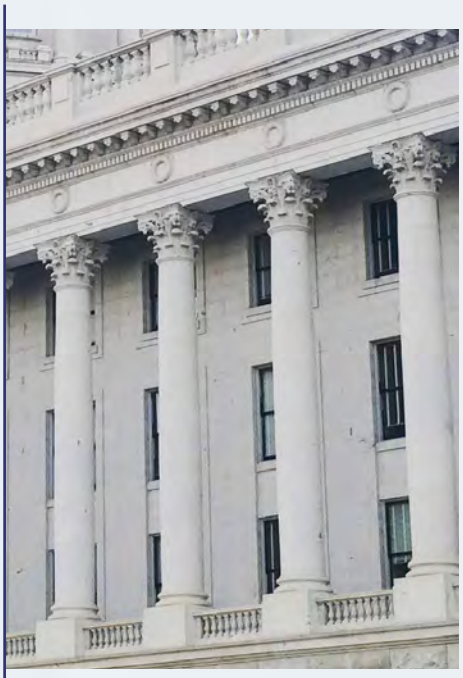

1.0 Foreword

Over the past decade, we have seen digital reshape the agenda of many businesses and produce new leaders in several sectors. We are witnessing a shift in the balance of power from traditional value-chain business models to digital platform models. For instance, seven (7) of the ten (10) most valuable entities (by market capitalisation) in the world are digital platform models. These entities (Apple, Google, Microsoft, Amazon, Alibaba, Tencent & Facebook) cut across various sectors of the economy and reinforce our perspective that digital platform business models are industry agnostic. They have an overarching focus on the customer, particularly retail customers. Google, Apple, and Alibaba have 2 billion, 588 million and 450 million users respectively. Bottom-line is that numbers are essential to creating value! The source of value for digital business models is having the capability to acquire new customers (users) exponentially while ensuring that innovation produces a steady flow of products and services to keep users engaged, excited and promoting the brand.

Digital platform businesses are also leading a quiet revolution in Nigeria and indeed Africa. Over the last 18 months, Jumia (an eCommerce platform) and one of Nigeria's leading Fintechs attracted investments of $425 million and $250 million respectively. Based on reports, these entities are valued at over $1 billion each. They both have footprints across Africa and are looking to become formidable platform businesses. We also note foreign investments into Nigerian Fintechs such as Flutterwave, Paystack, etc., accelerator programs by Tech Giants (such as Google) and the growing reputation of Nigeria as a leading digital destination on the continent.

In this publication, we share our perspective on the size and attributes of the market opportunity for digital in financial services and the economy at large. We explain the distinction between the 'Underserved' and 'Unserved' from a financial services standpoint. Our analysis indicates that the opportunities with respect to the 'Underserved' are significant, not well understood and available to be seized by entities willing to approach the market differently – through digital. The 'Unserved' speaks to the Financial Inclusion challenge. Progress continues to be limited and slow; we offer perspectives on how to accelerate the financial inclusion agenda by employing digital.

Given our emphasis on digital platform business models, we unveil the attributes and components of a digital platform. Our publication provides insights on how digital platform businesses can ramp up customer/user base exponentially by winning the customer experience (CX) and

user experience (UX) challenge; accelerate time-to-market for products and services through Open APIs; delight customers and engender advocacy by leveraging the power of Analytics, Robotics & AI; and scale quickly, often across geographical barriers by riding on the Cloud. Digital platform businesses also require a different approach to governance – a focus on agility, speed and innovation. The capabilities and culture necessary to drive a digital agenda are often underestimated.

Lastly, government and regulators are making some progress with regards to creating an enabling environment. The CBN's initiatives on creating a national Sandbox for Fintechs, the establishment of an inclusive stakeholder group for ongoing communication across the Fintech landscape and guidelines on Blockchain and Crypto-currency are noteworthy. There is a rich pool of evolving regulations across the globe that provide a baseline to build on. Accordingly, we have articulated a 4 point regulatory agenda on digital spanning Alternative Finance, Open APIs, Data Sovereignty and Fintech Enablement.

We hope that you find our publication insightful regardless of where you are in your digital journey and look forward to receiving your feedback and/or comments.

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Technology Advisory
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KPMG in Nigeria

2.0 Digital Businesses Assume Leadership in Key Markets

Advances in technologies continue to have a growing impact on business models, value chains and customer behaviors across the world leading to businesses being forced to adapt to new realities. This advancement is changing the way we relate with information, people and do business.

The ability to digitally integrate siloed information systems, rapidly generate and analyze complex data sets as well as encourage online collaboration among people is creating new opportunities for individuals and organisations. Thus, digital offers an excellent opportunity for organisations that embrace change, whether as a means of better engaging their customers, gaining insight from the vast amount of data available or providing more convenient and efficient delivery of services.

Digitizing transactions was straightforward and readily achievable by overlaying technological fixes on existing processes. However, to take full advantage of the new wave of the digital era, there is a need to reconsider the business model at a fundamental level, and this is a far more challenging and complex task.

Dealing with Digital

Proportion of organisations with enterprise-wide digital strategy is up by **52%** in three years: 2017 **41%**, 2016 **35%**, 2015 **27%**

Biggest Impediment to digital success is resistance to change **43%**. Only 25% saw lack of budget as a major issue.

TOP TACTICS TO FOSTER DIGITAL INNOVATION ARE TO:

1. Dedicate more time for innovation — **54%**
2. Partner with innovative organisations e.g. academic institutions — **52%**
3. Ring-fencing innovation budgets — **31%** A distant third

A quarter of organisations (25%) now employ a Chief Digital Officer: 2017 **25%**, 2016 **18%**, 2015 **17%**, 2014 **7%**

Source: KPMG CIO Survey 2017

The Reality

Today, many organisations across the world are operating in a more complex environment where the fundamental definition of how customers experience and interact with the organisation and its products is being challenged and redefined. Market leaders are also facing competition from a myriad of nontraditional providers who threaten to disintermediate the traditional business model.

For many organisations, the question has become to what degree digital disruption will impact their business and more importantly what can be done about it. In surveys of IT executives conducted by Harvey Nash in association with KPMG, 62% of respondents said their business was already being disrupted or would be within two years (2015 figure) while 68% indicated that they have or are currently working on an enterprise-wide digital strategy (2017).

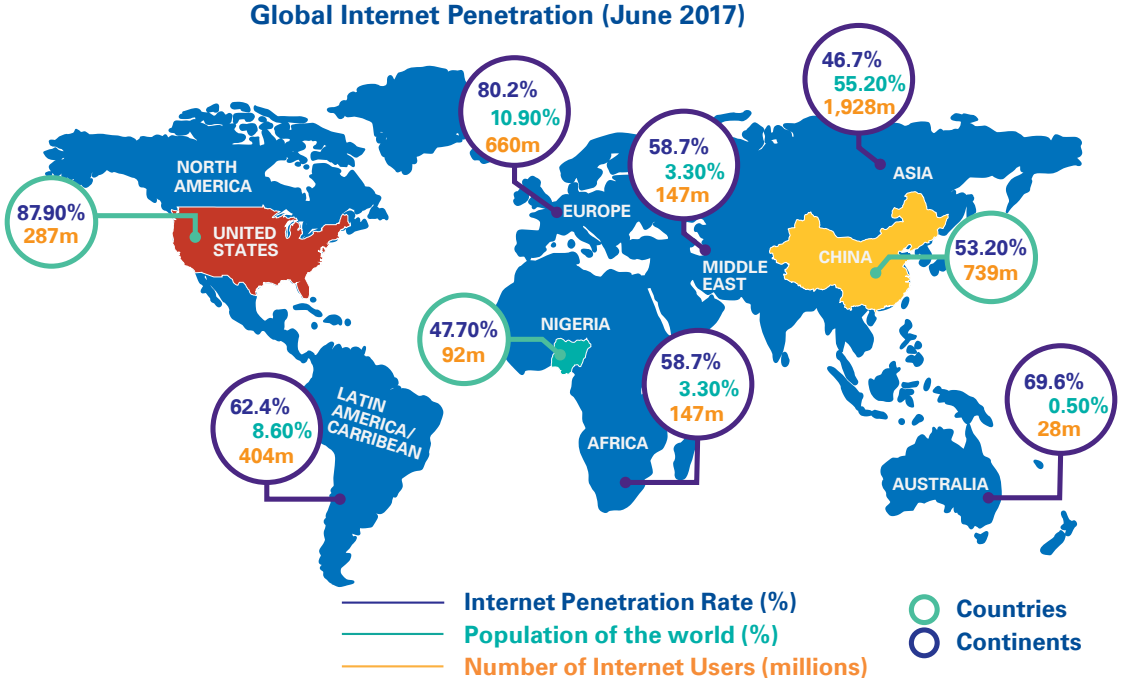
The fact is that unless a company is a greenfield startup, responding to digital disruption presents executives with some significant challenges to overcome. Part of the problem is that digital disruption is about much more than understanding and deploying new technologies. It is driving a wave of innovation in business models, products, services and internal business processes that can threaten an organisation's survival. In addition to harnessing new technologies, it requires new ways of thinking and doing business, new roles and skills, new organizational structures and operating models and adapting to a much faster rate of change.

Digital innovation is already transforming many businesses around the globe – from the recording industry to banking, publishing and the news media. Customers who used to visit a video store for a rental now download or stream digital content. Newspaper deliveries and walking into a bank to pay bills have increasingly become quaint. Companies are employing digital innovations to reinvent customer experience, optimize the supply chain, break down internal barriers to collaboration and ultimately drive profitability growth by targeting new markets.

Digital platforms are reconfiguring business models paving the way for new areas of profitable growth and disrupting the established status quo. New competitors can now sweep into the market with speed and agility, rewrite the accepted rules of a sector and grab a competitive advantage. This global phenomenon is made possible by the increase in mobile and internet penetration across the globe.

Major digital innovations in the financial services sector

Global Internet Penetration (June 2017)



Source: Internet World Stats, www.internetworldstats.com. Site accessed on 11 Oct 2017

Clear examples of these include Amazon, which has changed how we buy things. Netflix transformed how we consume videos while new entrants Airbnb and Uber have shaken up the hotel and transportation industries respectively. Another example is Argos, which announced its decision to move to a digital-retailer strategy in 2012. As at 2016, an estimated 29 million customers visited physical Argos stores while a billion visitors were at the online store.

Comparison of the world's most valuable companies in 2010 and 2017

	2010 (USD Bn)		2017 (USD Bn)	
1	PetroChina	329	Apple	791
2	ExxonMobil	316	Google	664
3	Microsoft	256	Microsoft	568
4	ICBC	246	amazon	459
5	Apple	213	Berkshire Hathaway Inc.	451
6	bhpbilliton	210	Alibaba Group	436
7	Walmart	209	Tencent	405
8	Berkshire Hathaway Inc.	200	facebook	399
9	GE	194	ExxonMobil	348
10	China Mobile	192	Johnson & Johnson	347

7 of the 10 most valuable companies in the world are digital business models

Source: Financial Times Global 500 2010 and Q3 2017 Largest Companies in the World by Market Value 2017 as at 7 April 2017

As seen from the comparison above, organisations with digital business models are already winning in the marketplace.

Many organisations in Nigeria have already recognized the advantage that digital offers and its importance in safeguarding the future. These entities have taken some steps to harness the potential of digital technologies. A look at the top 10 most valuable companies in Nigeria shows this more clearly.

However, there is still significant scope for improvement in growth, quality and productivity from the application of digital.

"Digital initiatives and ways of dealing with new information and communication technologies need to be examined in their entirety and fine-tuned to the corporate strategy of each business".

The term **"digital transformation"** describes the ongoing changes to business models, business processes and operations as well as customer interaction in connection with new information and communication technologies.

The digital investment landscape in Nigeria has grown significantly over the last few years from a cumulative total of 13 deals as at 2010 to over 84 deals as at October 2017 with an estimated value of about US$2.3 billion[1].

These investments cut across various segments, including retail, financial technology, data management, media, health management, transportation, IT consulting and related services, etc.

It is worthy to note that the reported values are based on publicly disclosed deals which indicate that the actual volume of transactions in this space, particularly for small companies and startups, is higher than the reported data.

Key drivers of growth include:

- growing investor interest in the upside potential of digital solutions attributable to the presence of a large young middle-class populace and impressive internet usage statistics
- improving ecosystem (launch of incubator platforms and government incentives) supporting the development of startup and small tech companies.

Digital companies in Nigeria are expected to continue to attract significant investment due to sustained investor interest in the huge potential presented by the large population coupled with the existing shortfall of sophisticated solutions to address the need for the growing middle class.

Indications are that the most valuable companies in Nigeria will also be digital business models. For instance, Interswitch is reported to be valued at just over $1 billion[2]. At this valuation, Interswitch will compare with the 7th most valuable (market capitalisation) Nigerian company on the stock exchange.

In 2016, we saw a consortium of local and foreign investors put in a whopping $425 million[3] in Jumia – a fast growing e-commerce platform. Jumia is reportedly valued at over €1 billion[4]. This valuation will land Jumia in the same class as the 6th most valuable company on the stock exchange.

We see that not only is the New York Stock Exchange (NYSE) led by digital business models, but the trend is also in motion in Africa's largest economy. What is driving these record valuations? Are we witnessing a mere bubble or is there substance behind these digital business models? Are these digital models sustainable? In the following chapters, we will speak to how digital business models create value by launching into underserved and unserved markets, providing superior customer experience and delivering products and services more efficiently.

Top 10 Most Valuable Companies in Nigeria

		(₦ Billion)
1	DANGOTE CEMENT	3,579
2	NB	1,277
3	GTBank	1,236
4	Nestlé	951
5	ZENITH	803
6	Stanbic Bank	440
7	Ecobank The Pan African Bank	409
8	UBA United Bank for Africa	315
9	access	286
10	LAFARGE	277

Source: Nigeria Stock Exchange, Bloomberg (25 October 2017)

1. Capital IQ
2. https://www.businessdayonline.com/helios-sells-stake-interswitch
3. http://www.financialnigeria.com/goldman-sachs-mtn-invest-326-million-in-jumia - news-411.html
4. https://www.thisdaylive.com/index.php/2016/03/10/jumia-set-to-break-new-records-in-e-commerce-business/

Top Recent Digital Deals in Nigeria

Target	Investment period	Deal Value (USD'm)	Investor
Africa Internet Group (Jumia)	Feb-16	300	AXA Partners Limited; Goldman Sachs European Special Situations Group; MTN Group Limited; Rocket Internet SE
Africa Internet Group (Jumia)	Apr-16	75	Orange Capital SA; Orange Digital Ventures
VANSO International Corporation	Mar-16	75	Interswitch Limited
Africa Internet Group (Jumia)	Jul-16	50	CDC Group plc
Andela Inc.	Oct-17	40	Africa Angels Network; Amplo; Chan Zuckerberg Initiative; DBL Partners LLC; GV; Salesforce Ventures; Spark Capital Partners, LLC; TLcom Capital LLP
Zinox Technologies Limited	Aug-16	25	N/A
Andela Inc	May-16	24	Africa Angels Network; Chan Zuckerberg Initiative; GV; Learn Capital, LLC; Omidyar Network; Spark Capital Partners, LLC
iROKO Partners Limited	Jan-16	19	Kinnevik AB; CANAL + SA
Andela Inc	Jun-15	15	Learn Capital, LLC; Omidyar Network; Spark Capital Partners, LLC
Pagatech Limited	Oct-15	13	Omidyar Network; Capricorn Investment Group LLC; Adlevo Capital Managers, LLC; Goodwell Investments BV; Alitheia Capital; JCS Investments Limited; Acumen Fund, Endowment Arm
Cars45 Limited	May-17	5	Frontier Car Group, Inc.
Digital Genius Ltd.	Apr-16	4	RRE Ventures LLC; Novel TMT Ventures Limited; Compound; Lowercase Capital; Lerer Hippeau Ventures; Bloomberg Beta L.P.; Salesforce Ventures; Spider Capital Partners; Singularity Investments
Interswitch Limited	Mar-17	N/A	TA Associates Management, L.P.
Zinternet Nigeria Limited	Jun-15	N/A	Konga.com Online Shopping Limited

Source; Capital IQ and KPMG analysis [Note: Data presented captures only publicly disclosed deals as reported on Capital IQ]

3.0 Value Comes From Exploiting Market Opportunities

- **Reaching the Underserved through:**
  - o Alternative Financing
  - o Wealth Management
  - o Insurance
- **Reaching the Unserved**

Overview

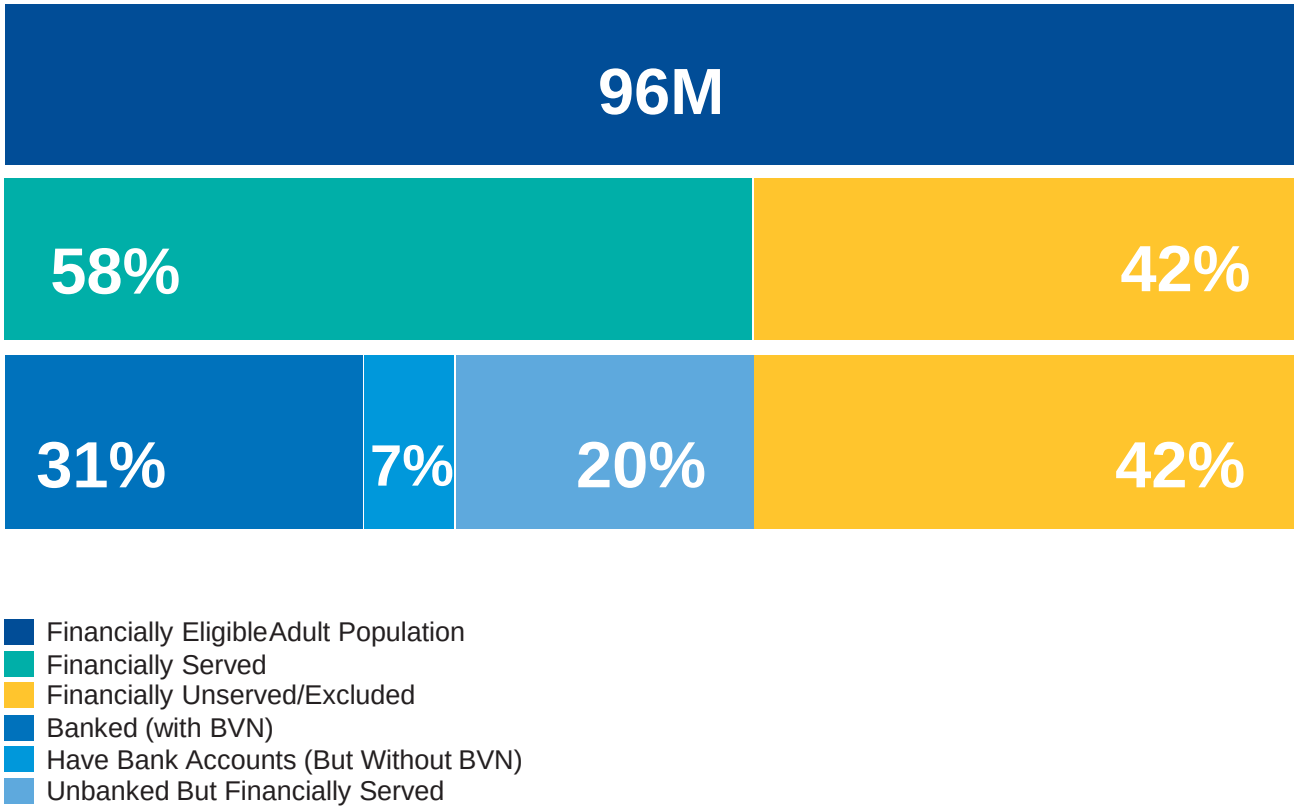
Businesses that have the ambition to lead peers require clarity on where the market opportunities lie. The most valuable organisations (Apple, Google, etc.) are clear on their target market and organize their digital platforms to harness these markets. There is a common thread through these companies – they focus on retail customers!

Google has an estimated 2 billion users on Android[5] only, Apple has 588 million users[6], while Amazon has 80 million Prime subscribers[7]. Alipay (owned by Ant Financial Services Group) has 450 million users[8] and only this year its parent company broke into the Top 10 most valuable companies in the world.

Facebook now has 2 billion monthly users[9]. The bottom line is that numbers are important; in fact, a digital strategy that does not seek to pursue exponential growth of customers/ users is an anomaly. The source of value for digital business models is the capability to ramp up users exponentially while ensuring that products and services continue to be deployed innovatively and at service levels that reinforce customer experience.

The market opportunity in Nigeria is quite significant particularly when we take a closer look at "The Underserved" segment of the market.

Nigeria Adult Population Financial Inclusion Dimension



Source: EFInA

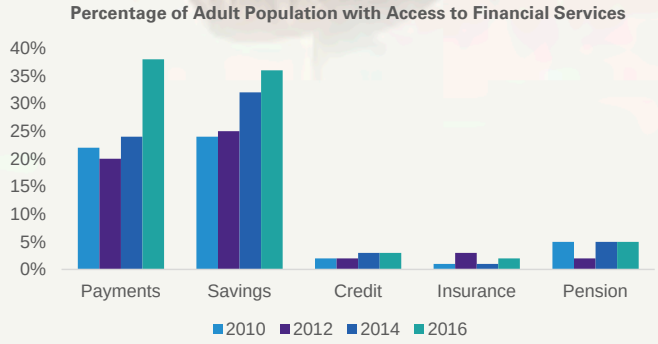
5. https://techcrunch.com/2017/05/17/google-has-2-billion-users-on-android-500m-on-google-photos/
6. http://www.businessinsider.com/credit-suisse-estimates-588-million-apple-users-2016-4?IR=T
7. http://www.businessinsider.com/amazon-prime-subscribers-hit-80-million-2017-4?IR=T
8. https://techcrunch.com/2017/05/09/alipay-first-data-us-point-of-sale-expansion/
9. http://www.telegraph.co.uk/technology/2017/06/27/facebook-now-has-2-billion-users-mark-zuckerberg-announces/


TVS

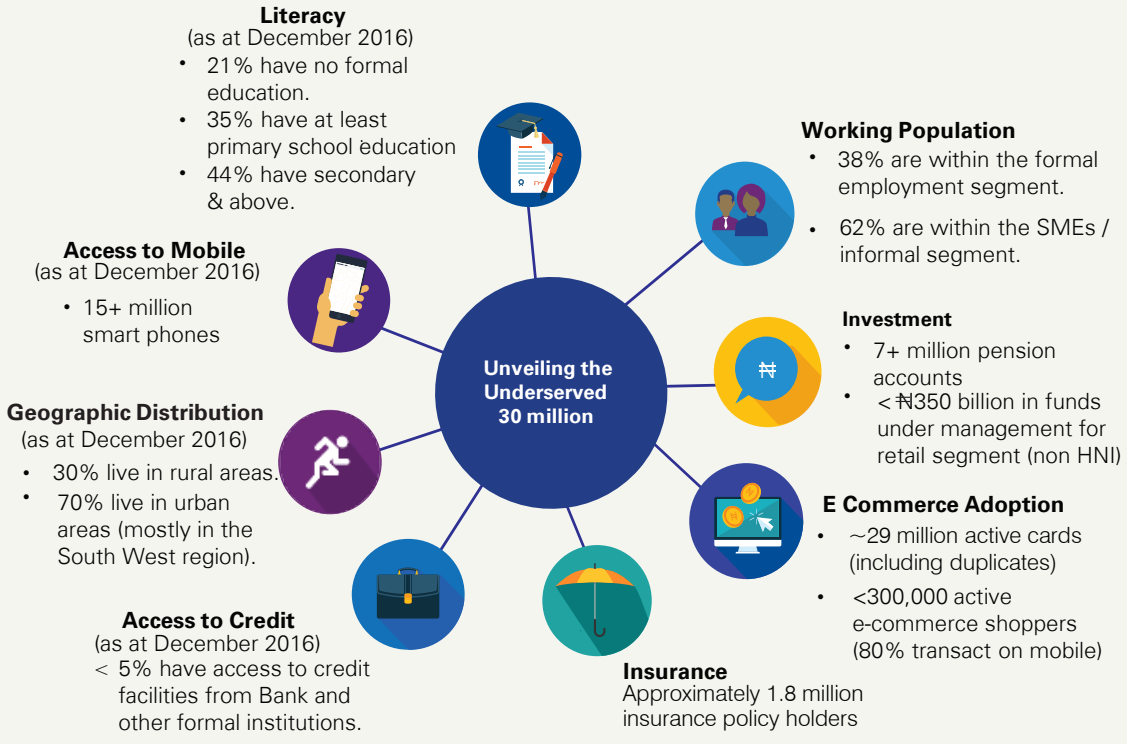
Exploiting Market Opportunities:

Reaching the Underserved

The underserved refers to the upper segment of the 30 million Nigerians that are formally banked (with a BVN) but who do not enjoy additional financial services such as Insurance, Securities, Credit, Pension, Mortgages, etc. For instance, there are only 1.8 million[10] Insurance policy holders and 1.2 million investors in Securities within the country. In the following sections, we will delve into the key opportunities for the underserved segment. These opportunities are related to Alternative Financing, Insurance and Asset Management but are by no means exhaustive.



Source: EFInA Access to Financial Services in Nigeria 2016 Survey



Sources: Nigeria Bureau of Statistics, CBN, NIBSS, EFInA, EIU Viewswire, Jumia Report

10. http://www.efina.org.ng/assets/A2F/2016/Key-Findings-A2F-2016.pdf

Alternative Financing

Overview and Models

The simplification of the links between those who want to invest money and those who need it is revolutionizing the banking and investment landscape. This simplification involves the use of technological innovations to change the way people, companies and institutions access and invest money. In the process, it has given individuals more control over their money as well as new outlets to invest or avail it while providing entrepreneurs and SMEs with the means of obtaining much–needed finance, which they would not otherwise be able to secure.

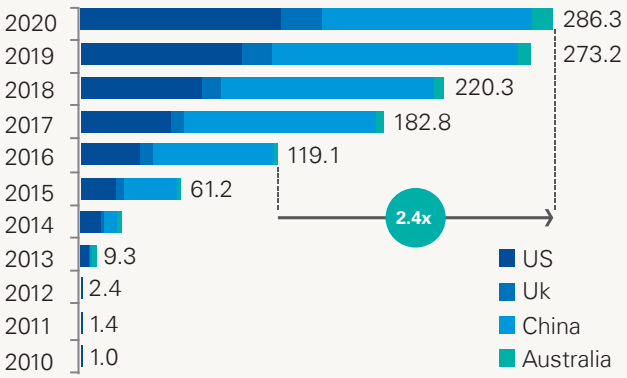
Alternative financing denotes financing options from external sources other than banks. It draws from different sources and generally over digital platforms with lenders ranging from individual investors to non-bank lending companies. These online lending platforms frequently rely on new methods of evaluating credit and require different criteria for funding - relying less on collateral.

Following the 2008 - 2009 global financial crisis, customers' trust for the surrounding financial services quickly dissipated. Regulators also mandated increased safety measures around loans (e.g., higher capital adequacy requirements) which resulted in many banks tightening loan requirements. This mutual loss of confidence created a lending gap, leaving a considerable portion of borrowing needs underserved by financial institutions[11]. Research from the Office of Advocacy and other organisations has documented this post-recession decline in banks' lending to small business, which has prompted these firms to seek finance elsewhere[12]. Furthermore, customer preferences in financial services are rapidly changing, demanding more transparency, efficiency, and control over their savings and loans.

Over the same period, alternative funding platforms have experienced rapid growth as they cater to the high-risk market based on access while the traditional institutions continue to provide for the low-risk market based on trust. Although these alternative funding platforms are not likely to replace the traditional capital raising ecosystem in the short or medium term, their growth could change the role of incumbent institutions. Alternative funding platforms could also evolve to focus on investors with motives beyond financial return. They could help funnel capital to low-return opportunities that would not have qualified for investment from traditional venture capitalists but provide non-financial returns to crowd investors.

The use of alternative online finance by businesses across the world grew over the course of 2016. Companies with valuations of over a billion dollars in this space have raised an average of $670 million of equity and have achieved an average valuation of US$3.1 billion with Asia leading the pack with average valuations reaching US$3.7 billion, and Ant Financial being the world's largest Fintech company at a valuation of US$60 billion[13].

Global marketplace lending to reach $290 billion by 2020 (USD $billion)



Source: GP Bullhound Research Fintech 2017

11. http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf
12. https://www.sba.gov/advocacy/small-business-lending-united-states-2013
13. http://www.gpbullhound.com/wp-content/uploads/2017/04/GP-Bullhound-Research-Fintech-2017.pdf

A Look at the Global Alternative Finance Market

Global marketplace lending is expected to increase 2.4x from 2016 to 2020, with China driving growth at a 40% CAGR, versus their US counterparts forecasting 35% CAGR over the same period[14].

Source: The Pulse of Fintech, Q3 2016, Global Analysis of Fintech Venture Funding, KPMG International and CB Insight

Of the 39 Fintech companies valued at $1 billion and above, 16 are in the Alternative Finance space and three were created in 2016 in this vertical alone - two in China and one in Hong Kong.

14. http://www.gpbullhound.com/wp-content/uploads/2017/04/GP-Bullhound-Research-Fintech-2017.pdf

China

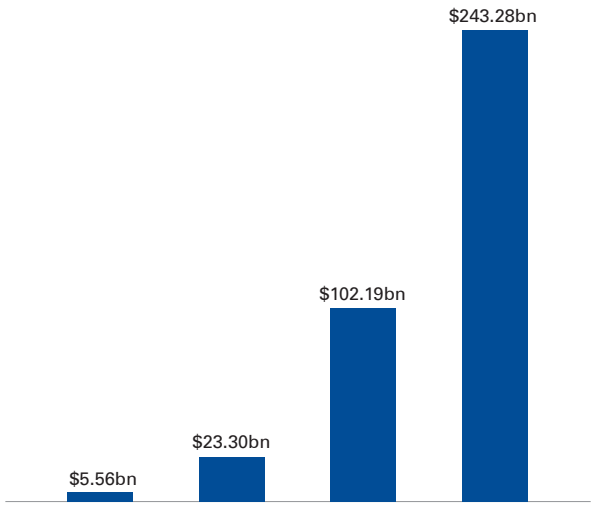
China has solidified its status as one of the global Fintech leaders with 13 companies valued at over USD$1 billion (8 of which operate within the alternative finance vertical). The total volume of China's alternative finance more than doubled from US$102.2 billion in 2015 to US$243.28 billion in 2016. Although the growth rate of China's alternative finance volume slowed to 138% from 2015 to 2016, from 321% in the period 2014-15 and 337% during 2013-14, the total volume is now growing from a much larger base size. China's alternative financing volume is estimated to equate to around 85% of the total global market. This figure is based on the 2016 released figures for the USA and the rest of the Americas, Asia Pacific and the UK combined with an estimation of the total volume for the rest of Europe, Africa & the Middle East based on the 2015 growth trajectory[14]. This success in China is fueled by strong domestic and e-commerce market, high rates of investment, a supportive regulatory environment and demand for digital-first services from under- or unbanked businesses and consumers. Also, the regulatory changes in China over the past year have accelerated the process of industry consolidation by raising the operating requirements on platforms even though China has so far not made an explicit decision regarding whether to regulate alternative finance separately or as part of the existing regulatory framework

A specific update to regulations in 2016 was the Administrative Measures for the Online Payment Business of Non-bank Payment Institutions from the People's Bank which was promulgated on 28 December 2015 and took effect on 1 July 2016. The impact of this regulatory document is that third-party platforms are required to be licensed, and there is a narrow scope of permitted activities[15]. In general, activities that are traditionally performed by banks will continue to be provided by banks under banking regulations, and activities that are traditionally securities transactions will continue to be regulated by securities regulations.

On a related note, the Interim Measures for the Administration of the Business Activities of Online Lending Information Intermediary Institutions was promulgated by the Banking Regulator, the Ministry of Industry and Information Technology, the Ministry of Public Security, and the Cyberspace Administration. This interim measure limits the scope of activities for online lending information intermediaries, including prohibiting them from direct lending as platforms. In addition, the borrowing balance of an individual must be no more than CNY200,000 (~$30,000) from an online lending platform and no more than an aggregate amount of CNY1 million (~$150,000) across all licensed platforms. The borrowing balance of a company (legal person) is no more than CNY1 million and an aggregate amount of CNY5 million (~$750,000) respectively. Furthermore, an online lending platform is required to hold any funds received from borrowers or lenders in a segregated account of qualified banks.

The more recent Information Transparency Guidelines for Network Borrowing Information Agencies' Activities specified information that P2P lenders are required to disclose within the first five working days of every month in relation to transactions they have brokered in the previous month. The impact of the new regulatory approach will continue to be seen over the course of 2017. Already over 2016, it was clear that many alternative finance platforms ceased operations and the industry's growth rate was tempered markedly over 2015-2016 (138%) as compared to 2014-2015 (321%).

Total Alternative Finance Market Size in China 2013-2016 ($US Million)



Source: Cultivating Growth Asia Pacific Alternative Finance Report 2017

15. https://www.phil.frb.org/-/media/bank-resources/supervision-and-regulation/events/2017/Fintech/resources/21_slides_rau.pdf?la=en

Alternative Finance in Nigeria

Alternative finance platforms in Nigeria are redefining the way businesses, and individuals save, invest and borrow money. Similar to the rest of the world, alternative finance platforms in Nigeria, began trading around 2010 with Nigeria slowly moving up the Alternative Finance growth ladder, primarily driven by its emerging Fintech ecosystem where several players are increasingly supportive both in terms of providing funds as well as building technological and entrepreneurial skills.

Nigeria is transitioning into a dynamic ecosystem offering players within the alternative finance market a platform to succeed and potentially grow into multi-million dollar businesses. Nigeria's growth wave is still far behind its global counterparts, but it is stacked well, primarily due to a robust talent pipeline of easy-to-hire and inexpensive tech workforce.

A close look at the alternative finance market in Nigeria shows multiple players adopting different models in offering various solutions. Some examples include:

• **Riby Finance** that provides cooperatives, companies, individuals, associations, and financial development institutions a finance management platform with features such as Personal Savings, co-operative savings & Loans management, Peer-to-peer lending, Personal & Group investment management amongst others

• **Lidya** that aims to improve access to credit and finance in emerging markets by providing financial services platform using technology, algorithms, and machine learning to industrialize the credit assessment process (employing close to 100 data points to evaluate businesses, build a credit score unique to each business, and disburse loans[16])

• **CowriePay;** a solution that allows merchants and retailers to offer consumer financing at the POS backed by their employers with payment spread into 6-12 equal monthly installments to be taken directly from the staff salaries.

• **SureCredit** that provides voucher financing at select retailer outlets for individuals to purchase assets or services and pay later over time directly from their salaries.

• **The Advancer and SnapCredit:** online alternative lending platforms that collaborate with employers to provide credit facilities to employees and finance repayments of such credit facilities from employee salaries.

• **Aella Credit and Paylater:** online lending platforms that offer instant short-term loans to individuals (by integrating metrics using an Application Programming Interface) without the hassles of collateral tendering and request for referees.

• **Social Lender:** a platform that grants existing customers of Sterling Bank access to small cash requests over social media based on the individual's social media profile and reputation score obtained using a proprietary algorithm and software to rank available social profile according to several predefined parameters[17].

• **Reach, PiggyBank and Cowrywise** that provide online platforms that help users in achieving their financial savings goals.

Despite the seemingly divergent approach to Alternative Financing within the country, there exist some roadblocks in its widespread adoption. Some of this includes the lack of authentic consumer information on digital media, poor technological capabilities and lack of digital infrastructure, especially around personal identification. The emergence of Alternative Financing models in which the platforms are increasingly dependent on employers to provide credibility for their employees is becoming evident.

Also, regulatory bodies in the country have shown disapproval of crowdfunding primarily due to lack of clarity around applicable legislation and policies such as Banks and Other Financial Institutions Act (BOFIA), Investment and Securities Act and other relevant Central Bank of Nigeria (CBN) regulations/guidelines. Other critical challenges that the alternative financing market in Nigeria is still facing includes trust, budding national identity system, obsolete legislation and time-consuming court processes.

Over the coming years, the proportion of funding attributed to business finance will likely increase in Nigeria, since equity-based crowdfunding and peer-to-peer business lending are beginning to take root in Africa. And as seen in other regions such as Europe, America and Asia, peer-to-peer lending and equity-based crowdfunding are dominating the alternative finance markets[18]. It remains to be seen whether the same market dynamics will emerge in Nigeria.

16. https://www.lidya.co/about.html
17. http://sterling.sociallenderng.com/site/faq
18. https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-africa-middle-east-alternative-finance-report.pdf

Insurtech in Nigeria

Insurtechs drive specific innovation across the insurance value chain by leveraging new technologies, user interfaces, business processes or business models; and leverage different forms of funding, including, but not limited to, venture capital.

The number of technology startups in the insurance industry has more than doubled globally during the last three years, according to a Gartner analysis[19] of the sector conducted in the second quarter of 2016. Digital customer engagement, mobile insurance management and analytics are the most common technology focus areas of Insurtechs.

Digitalization is one of the top priorities for insurance CIOs. However, the vast majority of insurance CIOs are still struggling to progress their digital strategies.

Until recently, insurance has been a virtual island in a sea of technological change. While new players worked to disrupt banking and wealth management, insurance seemed to be operating much as it had for decades. Insurance is now, like other major sectors, grappling with the risks and opportunities of new technologies[20].

Nigeria's insurance penetration is currently about 0.3%[21] and considered to be among the lowest in the world. When compared with the number of mobile phone and internet subscribers of 154 million[22] and 91 million[23] respectively, it is clear that there is a significant opportunity for insurance companies to reach more customers via digital channels.

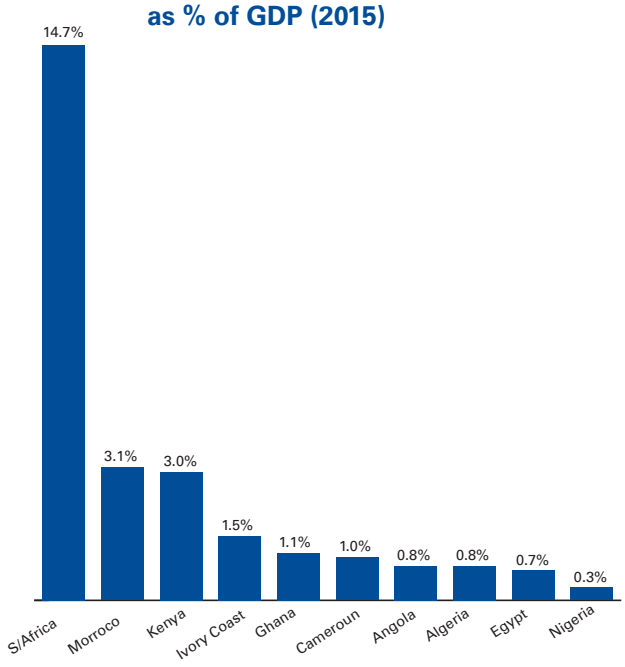
Insurtech could be considered as a big industry disruptor for the very near future. However, this is still largely untapped in the Nigerian market and Africa as a whole. Insurance companies in Nigeria still operate on a traditional model with a heavy reliance on paper-based processes and historical information instead of a predictive approach.

Insurance companies in Nigeria are approaching this sector with an experimental approach, not as an innovation milestone. Once it proves a profitable value addition to the insurers, whether through process efficiencies, improved customer acquisition or through reduced cost, it will be integrated into the mainstream insurance value chain.

Nigeria is yet to witness the disruptive power of Insurtech, but by studying the trends in markets where Insurtech has made a mark, it is apparent that startups will need to work closely with insurers to provide real benefits to end-customers.

This is the right time for insurance companies to invest in technology. There is skepticism in the industry about the dependency on automation and regulatory direction, but disruption starts with some early adopters showing a higher appetite for risk, which a company's competitors couldn't show earlier. Their investment in technology today could prove to be a huge differentiator for them in the coming years.

Insurance Penetration, Premiums as % of GDP (2015)



Source: Swiss Re, Sigma 2016

19. https://www.programbusiness.com/News/Gartner-Insurance-Firms-Should-Invest-in-Insurtechs
20. https://www.iif.com/system/files/32370132_insurance_innovation_report_2016.pdf
21. http://media.swissre.com/documents/sigma_3_2016_en.pdf
22. http://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#view-graphs-tables-5
23. http://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#gsm

Imperatives for the Insurer

Insurance companies are understandably mired in immediate issues. Challenges surrounding legacy IT systems, changing regulations, rising competition, and low consumer trust, all loom large in the traditional insurer's windshield. As a result, many incumbents fail to create a clear digital vision to guide activities or to make day-to-day decisions to move the organisation meaningfully toward the achievement of that vision. Creation of such a vision, as well as a roadmap of the way forward, is a critical first step.

Next, insurers need to address four (4) critical components of their business:

01

Shift product mindset

Today, most insurers think in terms of specific product lines instead of the needs of the customer buying the product. Insurers should shift their focus to consumer needs and anticipate how changing behaviors will create opportunities for new products.

02

Seek technology partnerships

Building or buying technology solutions may no longer be the best options. Instead of developing an in-house solution, companies should look to partner with insurtech and Fintech companies who can provide immediate digital capabilities.

03

Address backend processes

Legacy processes can be a stumbling block to change. While more insurers are offering digital products, few have re-engineered their backend to match, creating inefficiencies and increasing the risk of error. Insurers need to address these gaps and take advantage of the opportunities of improving digital processes.

04

Create a culture of innovation

There is nothing that an insurer does today that cannot be innovated upon, transformed or entirely rethought using enabling technology. To seek and embrace this innovation requires organisation-wide cultural change. From the C-suite to the mail clerk, insurers need to ask their employees to explore opportunities for innovation, with KPIs to measure performance and incentives to spur activity. Such a culture will also help insurers make considerable strides in attracting and retaining digital talent.

Breadth over depth – for now

Many Insurtech companies' solutions target individual components of the insurance value chain. However, investor interest and activity is evident across all insurance types, with current high-activity areas including health and life insurance, P2P solutions, chatbots, risk management for small businesses, insurance comparison tools, self-service claims, and more. Global digital challenger insurers, such as Lemonade and Trov, and Nigerian startups like Autogenius and Compare Insurance have also drawn interest for their innovative delivery models. Trends elsewhere indicate that the market may soon deepen, with Insurtech solutions using high growth areas such AI and IoT.

The Digital Wealth Management Opportunity

“Wealth managers and private banks are becoming much more strategic about digital. Many are starting to think more clearly about how digital empowers the advisor and the client of the future. And everyone is starting to reassess the value that digital will deliver across the enterprise.”

Digital and the ‘move to the middle’

As margins compress and competition heats up, we are seeing a ‘move to the middle’ from players across the financial services sectors, where everyone is angling to capture a greater share of assets under management (AUM). Digital is playing a central role in enabling this shift. Retail banks that traditionally focused on life cycle lending and payment transactions are seeking to move up the value chain by launching digital advisor plays that help them secure a greater portion of their banking clients’ investable funds. On the other end, Wall Street brokerage firms that traditionally focused on ultra and high net worth segments are moving downstream by launching digital lending and payment offerings. Traditional insurance providers are also entering the fray, seeking opportunities to capture wealth share through digital channels by leveraging their trusted brands. Digital channels and the digitalization of operations will play a vital role in the competitive battle that is now underway as market participants continue their efforts to move to the middle and be the holistic providers to a vast array of consumers.

Without an iota of doubt, digital will be the key to success in the future, not just as an enabler of growth, but also to reduce costs, improve performance and better manage risks. The good news is that after worries that the sector may be falling behind peers in other financial services sectors the wealth management sector has started to get strategic about digital. Indeed, according to our research, most are now beginning to think clearly about how digital will transform the traditional wealth management business. However, our research suggests that few have managed to translate this more strategic view of digital into real and sustainable competitive advantage.

Most are still struggling to understand the implications of digital. The more advanced are learning from peers in other sectors and partnering with Fintechs to develop new approaches and ideas.

A year ago, most — if not all — wealth management firms and private banks recognized the value of digital. Only a slim majority (56 percent) possessed a formal digital strategy. Just a few organisations focussed

their investments beyond delivering discrete solutions that tackled operational and client challenges such as onboarding, reporting, and aggregation.

A new view on digital

Over the past year, however, it seems that wealth managers and private bankers have started to rethink their strategies and their overall approach to digital. In part, this is driven by a recognition that digital will have a transformational effect on the sector. In fact, according to a recent global survey of more than 70 investment management CEOs, 47 percent say they expect their organisation to be transformed into a 'significantly different entity' within the next three (3) years. Banks used to view digital as something that was unique to the various businesses, but now they understand that it is a core part of the overall business strategy. Today, banks see digital as an enabler that will improve business at an accelerated rate. There is an ever-increasing level of awareness about the value of digital in the wealth management space," noted an interviewee from one large US-based global private bank. Our conversations with wealth management leaders suggest that organisations are starting to move from a focus on 'point solutions' to instead view digital as a broad enterprise strategy. As the Asia leader for one sizeable global bank noted, "We realize that we can't just offer robot solutions without a far broader view of how digital influences our multi-channel options. What is clear is that digital is here to stay, but if we don't invest strategically, we may not be here to stay."

Path to transformation

The logical first step for organisational transformation is to refine the wealth business model and place strategic bets on key growth markets and segments. Investments in mining customers' needs and behaviors are often required to sharpen the value propositions and service offerings delivered. With this foundation in place, many firms are then able to realize the massive opportunities to simplify customer offerings by focusing on the core services that will drive future growth and exiting tertiary services that are not contributing to customer and shareholder value creation[24].

With a sharpened business model in place, the firm can adapt their operating model to architect a differentiated wealth service model to attract and retain clients and deliver a more engaged and integrated customer experience across channels.

Aligning wealth client expectations and channels

An integrated multichannel service strategy, enabled by the right business architecture and customer focus can help wealth firms realize growth and margin improvements. To achieve this business potential, organisations need to rethink fundamental aspects of how it supports advisors and clients across channels. We have found that an in-depth analysis of customer, channel and product profitability – including an examination of high cost, inefficient and toxic customer servicing processes – can serve as a catalyst for re-thinking existing transformation program investments.

The role of the digital channel in a traditional full-service wealth management model is beginning to crystallize and the role of an advisor remains central to serving HNIs and UHNIs. Digital strategies can drive new forms of customer engagement.

To achieve customer experience 'parity' with the experiences being delivered by digitally enabled wealth startups, traditional providers will need to deliver a very strong digital 'core' offering, which addresses crucial customer experience priorities and strengthens the overall relationship between the firm, client and advisor.

Wealth customer analytics to focus and operationalize the transformation

Customer analytics and insights are critical inputs to re-focusing the business model, shaping new value propositions and refining customer segmentation strategies:

Mining internal and external information sources can drive deeper insights into customer wallet share and relationship penetration.

Integration of socio demographic and behavioral characteristic data can help firms identify micro-customer segments.

Predictive analytics and scenario- based modeling can improve the effectiveness of relationship-based pricing strategies to attract additional assets and penetrate banking and lending needs.

Advanced analytics can also be used to operationalize growth strategies and enable a more personalized customer experience across channels.

Digital customer experiences become much more personalized and relevant to addressing relationship needs, by leveraging customer insights and tailoring the communications messaging to the unique servicing needs of micro-segments.

Hype or opportunity?

Is your bank and affiliated brokerage competing in this emerging area of financial investing?

24. http://businessmirror.com.ph/effective-wealth-management-transformation-requires-focus-and-alignment/

Although digital upstarts have jumped in with both feet and established brands are solidifying their position, it is not too late for banks to launch a successful robo advising service. KPMG LLP's (KPMG) proprietary research of 1,500 bank clients–conducted in partnership with MFour, a leader in mobile survey technology–reveals overall customer awareness of available solutions in the robo investing space remains relatively low. Moreover, investors have a strong interest in their banks providing digital portfolio solutions.

This publication explores the current robo advising market and how it's expected to grow, learn what it means for banks and brokerages, and key business and operating model questions to consider in order to capitalize on the exciting opportunities for digital wealth management successfully.

Robo Advice Platforms Will Manage US$2.2 trillion Worth of Assets by 2020

KPMG surveyed 1,500 bank clients about their awareness of and interest in digital wealth management, or robo-advisors. The firm found that while awareness of the robo advising services of popular Fintechs including SigFig, Betterment, Wealthfront, and FutureAdvisor (8% to 15%) was relatively low, interest in robo-advisor services was high, with 75% of respondents who said they were "very likely or somewhat likely" to consider robo advising services from their banks.

The factors that contributed to the growth of digital advice, according to KPMG, include the fact that these solutions provide increased transparency, increased accessibility through low or no minimums and fees, enhanced customer experience, as well as their use of exchange-traded funds to build diversified portfolios.

Hence, robo advisors often appeal to less-wealthy investors, given the availability of low-minimum and low-cost portfolios. These solutions also coincide with expanding interest in passive investing.

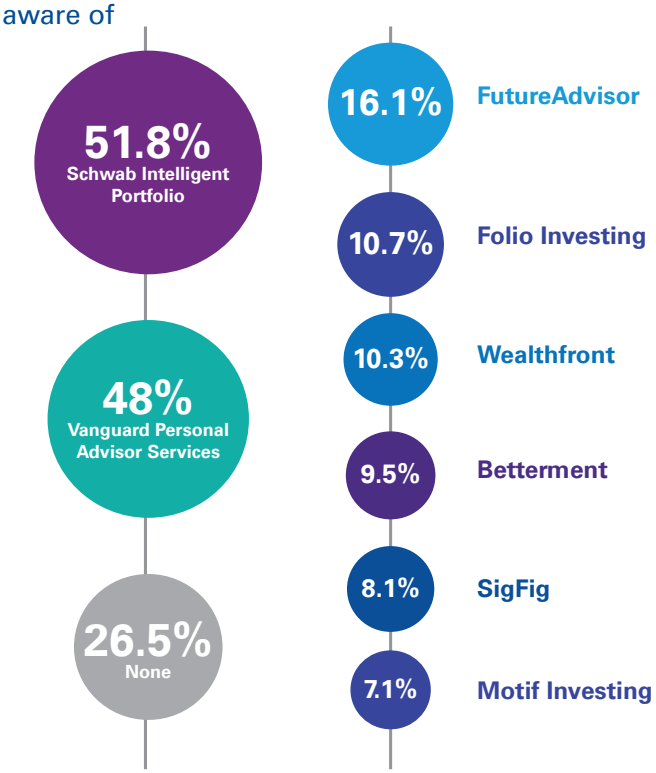
Digital wealth management is changing the investing landscape, the firm said. KPMG estimates that by 2020, robo advisors will be managing US$2.2 trillion in the US.

One population that is particularly keen on online wealth management solutions is the millennial generation: 80% of respondents aged between 18 and 34 years old said they would be "very likely or somewhat likely" to consider using robo advisors.

Interesting fact:

"People spanning the financial spectrum are buzzing about "robo advisors," automated, digital wealth management solutions that have proven attractive to both high net-worth clients and mass market customers. A quick Google search on the term produced more than 683,000 hits and 31,000 news results[25]."

Awareness of online investment providers
Below are answers from respondents who were asked to select all those products that they were aware of



25. http://Fintechranking.com/2016/02/25/kpmg-report-robo-advice-platforms-will-manage-us2-2-trillion-worth-of-assets-by-2020/

Reaching the Unserved through Mobile Financial Services

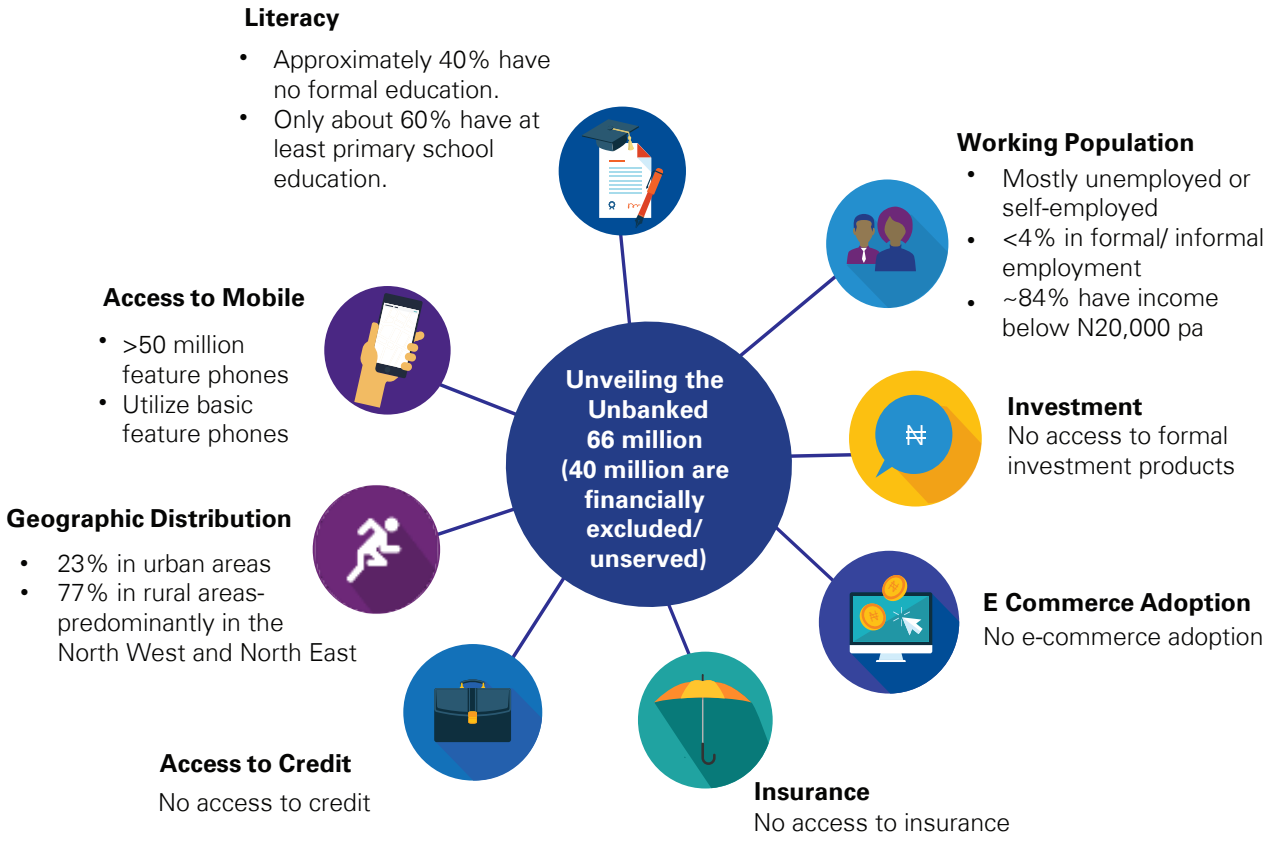
About 42% of the adult population in Nigeria are financially excluded or unserved. In other words, this group of people or businesses depend on informal means to meet their financial services needs. According to the World Bank, access to a transaction account is seen as the first step towards broader financial inclusion since it allows people to save money, send and receive payments[26]. Unfortunately, the unserved are faced with challenges that almost will continue to ensure that they remain financially excluded unless there is an urgent intervention from the private sector as well as the government. Financial illiteracy, lack of access to valid identification, few tailored services that are affordable and meet their needs are some of the challenges the unserved face which obstruct their access to financial services. Furthermore, the biggest challenge faced by the unserved is poverty. In Nigeria, 84% of the unserved earn N20,000 ($55) or less annually[27]. It is therefore imperative that affordability is at the heart of reaching the financially unserved populace. However, as wide-spread and humungous as the

26. http://www.worldbank.org/en/topic/financialinclusion/overview#3
27. http://www.efina.org.ng/assets/A2F/2016/Key-Findings-A2F-2016.pdf

challenges are so are the opportunities. For instance, it is estimated that more than 400 million people across Africa lack an official ID[28]. There is a huge opportunity for digital identity in solving the user identification challenge which is a critical enabler for digital financial inclusion.

Success Stories Exist for Serving the Unserved

M-Pesa and Zoona are valid case studies of Fintechs that have been able to solve some of the challenges of the unserved markets and drive financial inclusion in countries such as Kenya and Zambia respectively, with impressive results. Founded in Zambia in 2009, Zoona, unlike M-Pesa (which is owned by Safaricom, a Telecom) is not owned by a telecom. It is a Fintech built from ground up with a strong desire to reach the unserved. Since starting in 2009, Zoona has now processed up to $2 billion in transactions creating over three thousand jobs[29]. Zoona was recognized as one of the most innovative Fintechs by KPMG in 2016.



Sources: Nigeria Bureau of Statistics, CBN, NIBSS, EFInA, EIU Viewswire, Jumia Report

28. https://www.gsmaintelligence.com/research/?file=3bc21ea879a5b217b64d62fa24c55bdf&download
29. https://ilovezoona.com/about-us/

4.0 Digital Platforms and Operating Models

- **Is platformification the future of financial services?**
- **Platform Architecture Principles**
  - Customer First
  - API-Led Architecture
  - Analytics, Robotics & AI
  - Cloud
  - Cybersecurity

The principal assets of any platform are interactions which create "network effects" within a "business ecosystem" and facilitate 'innovation' to drive value for stakeholders. Therefore, the key to creating a successful platform is building a thriving ecosystem around it to gain a network effect

The term platform is ageless and applicable in different contextual scenarios. In this section, we focus on the concept of "platform as a business model" and factors that make platform-based businesses successful.

Platforms essentially facilitate interactions between two or more interdependent groups or individuals (typically suppliers and consumers) to enable value exchange. These interactions stimulate a growth effect commonly referred to as the 'network effect' which allows a platform to become more valuable to its users as it attracts more users through co-creation of value. For instance, the Amazon Marketplace connects Merchants and end-user in a two-sided market. Thus, as the number of participants on each side grows, value increases on both sides.

It is important to note that platforms are not a new concept neither are they limited to the digital world; they exist in the non-digital world. For, instance, the power grid is a platform, as it facilitates the creation of multiple electrical household appliances, shipping containers are platforms that boost global trade, malls link consumers and merchants; newspapers connect subscribers and advertisers. However, we are in the midst of a reorganisation of our economy in which the platform owners are seemingly developing the power that may even be more formidable than that of the factory owners in the early industrial revolution.

Over the last five to seven years, factors such as the rise of IoT (Internet of Things), social web, smartphone proliferation and bulging millennia population have all combined to make the world much more connected and given rise to endless possibilities in the evolution of the new platform age. For instance, the four (4) largest companies in the world by market capitalization[30] - Apple, Alphabet (Google), Microsoft and Amazon are all powered by digital platforms which have emerged as a dominant model for businesses in different industries across the world.

At the heart of these businesses, is a platform that **unlocks the power of networks and democratization of wealth.** For instance, the global developer community has earned over $70 billion from the App Store since it was launched while Apple itself has made more revenue from the App Store alone in 2017 than it did in all of 2007. According to SensorTower (Mobile App Store Marketing Intelligence), the revenue from App Store purchases in the first six months of 2017 was nearly 40% more than Apple's total revenue for the entire fiscal year of 2007, when the iPhone was launched[31].

The principal assets of any platform are interactions which create "network effects" within a "business ecosystem" and facilitate 'innovation' to drive value for its stakeholders. Therefore, the key to creating a successful platform is building a thriving ecosystem around it to gain a network effect. It is also important to note that platform-based businesses leverage the network effect to dominate by creating ecosystems of "buyers and sellers," "producers and consumers," "service providers and service consumers," etc.

Digital Platforms will continue to grow in importance in the digital age. We argue that the future of corporate competitiveness across industries will depend on the use of platforms. Therefore if a business does not lead platform competition, then it will have to rely heavily on platform providers for its survival. Thus every organisation needs to be designed or redesigned to be platform compatible.

30. Financial Times Q3 2017 largest companies in the world by market value 2017 as at 7 April 2017
31. https://www.cultofmac.com/489758/2017-app-store-revenue-crushes-apples-entire-2007-earnings/

There are several ways to categorize Digital Platforms, especially those that provide financial services. We will categorize them into the following:

- Enabler Platforms
- Single-provider Platforms
- Multiple-provider Platforms

Enabler Platforms
These are platforms (typically 3rd party Application Programming Interfaces - APIs) that support financial institutions by extending the capabilities of their platforms or solutions to provide specific financial services. Thus, an enabler platform will indirectly facilitate interactions between platform participants to enable value exchange. These platforms have been successful in making improvements within traditional ecosystems and infrastructure.

The enabler platforms can operate in the following modes:

Mutualization Mode
These are shared-service platforms that enable financial institutions to standardize processes and eliminate duplication thereby lowering processing cost. For instance, the Central Bank of Nigeria in 2015 implemented the Bank Verification Number (BVN) an enabler platform aimed at mutualizing the customer identification and verification process across banks as it gives each bank's customer a unique identity across the Nigerian banking industry.

The NIBSS Instant Payment (NIP) an on-line real-time based Inter-bank credit transfer is another enabler platform that operates the mutualization model. NIP facilitates payment and settlement across the Nigerian money trade space and it is usually offered via internet banking, mobile and bank branch platforms for corporates and individuals as well as through the banks' branch network.

In this model the investment for each bank and finance institution is far reduced, as they share a central infrastructure.

Externalization Mode

Externalization in the context of a platform model is primarily based on the underlying principle that certain processes and services can be performed more efficiently (i.e. lower cost, higher speed, higher quality or lower risk) by highly specialized third parties than it can within an incumbent financial institutions. For instance, there are a variety of Credit Scoring platforms in the US providing alternative credit scoring capabilities based on sophisticated use of advanced technology and available records from alternative sources (social, web, etc.) to enable all lending decisions in the formal financial sector for the unbanked and under-banked. These platforms provide services such as identifying qualified leads and assessing applicant creditworthiness for savings, credit cards, insurance and personal loans.

Fintech startups are acting as a catalyst for corporate innovation as both banks and insurers look to improve their digital performance and capabilities. Front office solutions remain popular, such as Backbase's AI-driven banking chatbot, though Fintech activity is noticeably increasing across back office functions as well.

Companies such as Five Degrees from the Netherlands are gaining attention for creating platforms to connect back office legacy systems to customer-facing systems and apps, external financial ecosystems, and regulatory services. In addition to new B2B-focused startups, other Fintechs are adapting their B2C offerings to survive or differentiate in crowded markets. One example is Frankfurt-based Vaamo, which has transformed its B2C investment robo-advice solution into a B2B robo-advice platform, able to integrate into major banks' value chain.

Single-provider Platforms

These are platforms that facilitate direct interactions between platform participants (e.g. customers and merchants) to enable value exchange (e.g. payments). These platforms are mostly disruptors that have changed how financial services are structured, provisioned and consumed across almost every subsector of the financial services industry.

Majority of these platforms have the potential to establish new and self-sustaining financial service ecosystems by leveraging big data and machine-learning algorithms to create an entirely new way of providing financial services; a system that is based on what the customer needs and wants.

Dominant players that have thriving single-provider platforms include Ant Financial - Payments, Qudian - Lending, Oscar – Insurance, Lufax - lending and wealth management platform and Interswitch - Payments.

Alipay, operated by Ant Financial Services Group has grown into the world's largest online and mobile payment platform with $1.7 trillion total payments[32] in 2016 and 450 million registered users[33].

Alipay has disrupted financial payments by tackling the issue of trust between its platform participants (i.e. consumers and merchants). Historically, consumers in China were used to paying after transaction and sellers would not ship their product unless payment was made. Alipay platform was built on a business model that tackled the trust issues through an escrow system that ensures consumers' payments are received and held by Alipay until they receive the product. Merchants have confidence that payments have been made before dispatch, and only receive payment only if the consumers do not complain within 7 days of delivery. Also, payment and delivery information are tracked and shared with both consumers and merchants.

Alipay is also the go-to-platform that covers a variety of payment needs in consumers' daily life. This platform is still evolving through a combination of mobile development, partnership and innovations.

Multiple-provider Platforms

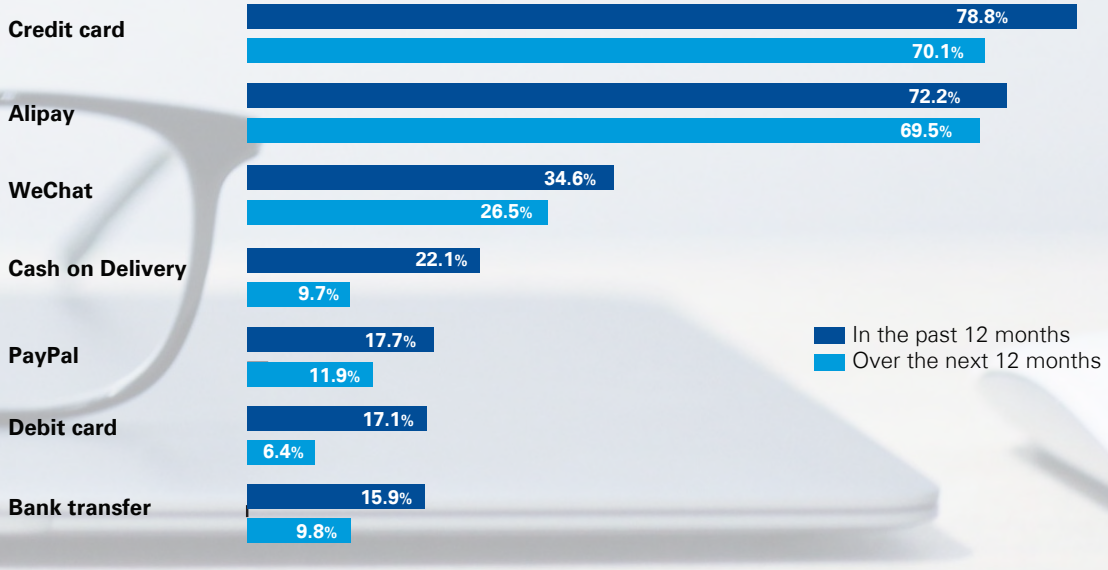
The shift to multiple provider platforms as a channel to distribute and trade is gradually emerging across geographies and throughout a wide range of financial products

Platforms that offer the ability to engage with different financial institutions from a single channel will become the dominant model for the delivery of financial services.

Similar to single-provider platforms, multiple-provider platforms facilitate direct interactions between platform participants to enable value exchange. However, for a multiple-provider platform, one set of the platform participants are financial institutions, thus allowing interaction with different financial institutions from a single platform to provide financial services.

Retail distribution of financial products will take place within digital platforms, either open or curated, where customers will have the ability to choose between multiple providers. For instance, Tencent's Webank platform acts as a storefront, allowing retail customers to purchase products from multiple competing vendors of credit and asset management services.

Top Methods Used to Pay for Online Purchases in China



32. http://markets.businessinsider.com/news/stocks/Glance-Pay-Follows-in-Alipay-s-1-7-Trillion-Footsteps-With-User-Initiated-Payments-1002226271
33. https://www.forbes.com/sites/greatspeculations/2017/09/05/how-alibaba-is-innovating-to-drive-alipay-usage/#272f867e379d

Platformification:
The Future of Financial Services

Platformification is the amalgamation of several services on a single platform. According to the Financial Brand, the most significant trend in the future would be the Platformification of banking and financial services where both existing financial institutions and startups would begin a strategic shift towards becoming wholly financial institutions.

Power shift to platform businesses

Traditionally dominated by large players, the financial services industry has been a forerunner in the application of technology innovation to support basic to complex business processes such as payments, wealth management, credit management to drive growth and profitability albeit through operational efficiency and customer service improvements. However, most sectors of the industry have been highly resistant to business model changes due to the attendant challenges including high cost of operational and technology infrastructure, capital adequacy and other regulatory requirements.

The emergence of platform businesses in and outside the industry is shifting the balance of power towards both platform providers.

Fintechs pursue banking licenses

Fintechs acquiring banking licenses is an early indicator that the business model is shifting.

In addition, financial services organisations are coming under severe threat by tech platform giants like Apple, Google and Ant Financial (formally known as Alipay) who have encroached into the payments space, drastically changing customers' expectations around the way they pay for goods and services. Only financial services organisations that offer seamless experiences across digital platforms and innovate as fast as consumer tastes change will survive the threat"

As tech giants move deeper into classic banking territory and some Fintechs are likely looking to disrupt banks by disintermediating them from their customers through the provision of value-added services, others are looking to support the banks themselves. B2B-focused Fintechs such as Token, Figo and NDGIT are helping financial institutions develop API offerings and platforms to compete efficiently in the new world of open banking.

Critical success factors for Fintech partnerships

Disruption and rapid innovation is already occurring in and around financial services, with examples such as Alibaba, TenCent and PingAn entering into a joint venture to create a new online insurer, ZhongAn, while non-banking and insurance players are beginning to compete. Banks must 'disrupt from within' to swiftly change culture to enable innovation.

Rather than in-source or purely outsource platform capability, the solution to create rapid, dynamic, customer-centric change will also be in establishing Fintech partnerships. Critical success factors for building partnerships include recognising areas where the business can lean on external capability, where a partner can create better customer experiences in a more cost-effective manner and ensuring there is equal value for both parties.

Fintech companies have concentrated their efforts on those areas of the financial services value chain where there is high friction, and/or high cost, and/or high regulatory arbitrage. They have focused chiefly on providing discrete services which has led them to predominantly tackle areas such as (un)secured lending on Peer-to-peer platforms providing access to funds for customers groups incumbent financial institutions declined to serve.

We have observed the newcomers making inroads in payment, personal finance advice, remittances and money transfer. They have democratized wealth management, allowing the general public access to funds and portfolio management services. Insurtech solutions are on the rise with new value proposition for on demand insurance, insurance broker SAAS, Insurtech startups across auto, home, industrial, Insurance claims management and Insurance fraud detection. Fintechs are making progress in reducing friction and lowering the cost of financial services, to the benefit of society in general.

Global Digital Platform Players

KPMG performed an extensive global research on Fintechs based on data relating to total capital raised, degree of product, service and business model innovation amongst others. 100 Fintech companies were selected and profiled in the "2016 Fintech100" report. The list below shows some of the profiled Fintech companies operating a platform model to either drive disruption or enable incumbent players within the financial services industry (please note that the list below has been arranged in alphabetical order).

Platform Provider	Country	Category	Platform Type	Company Description
Ant Financial	China	Payments	Single-provider	Ant Financial, formally known as Alipay, which is the world's leading third-party payment platform. Ant Financial is dedicated to creating an open ecosystem, providing inclusive financial services to small and micro enterprises and individual consumers.
Avant	United States	Lending	Single-provider	Avant is an online lending platform lowering the costs and barriers of borrowing for consumers. Avant launched in 2012 offering consumer personal loans. Over $1 billion dollars in loans has been originated through its platform. The Avant Institutional Marketplace enables qualified institutional investors the ability to purchase loans originated through the Avant technology platform.
Funding Circle	United Kingdom	Lending	Single-provider	Funding Circle is one of the world's leading marketplaces, exclusively focused on small businesses — more than £1.3 billion ($2 billion) has been lent to 20,000 businesses in the UK, USA, Germany, Spain and the Netherlands. Businesses can borrow directly from a wide range of investors, including more than 40,000 people, the UK Government, local councils, a university and a number of financial organisations.
JD Finance	China	Lending	Enabler	JD Finance's services include JingBaobei, its microloan platform, Baitiao, its crowdfunding platform, Jintiao and Xiaobai, which provides wealth management services. By utilising transaction records and credit management systems developed by JD Finance, it provides a variety of financial services for both enterprises and consumers.

Platform Provider	Country	Category	Platform Type	Company Description
Klarna	Sweden	Payments	Single-provider	Klarna provides e-commerce payment solutions for merchants and shoppers. Klarna offers safe and easy-to-use payment solutions to e-stores. At the core of Klarna's services is the concept of after delivery payment, which lets buyers receive ordered goods before any payment is due. At the same time, Klarna assumes the credit and fraud risk so that retailers can rest assured they will receive their money.
Kreditech	Germany	Lending	Enabler	Kreditech Group's mission is to improve financial freedom for the under banked by the use of technology. Combining non-traditional data sources and machine learning, the Company is aiming to provide access to better credit and a higher convenience for digital banking services.
Lufax	China	Capital Markets	Single-provider	Lufax is an Internet based lending and wealth management platform, which is owned by Ping An Group. Lufax aims to provide one of the most comprehensive wealth management platforms globally.
Oscar	United States	Insurance	Mutiple-Provider	Oscar is a health insurance company that employs technology, design, and data to humanise healthcare.
Qudian	China	Lending	Single-provider	Qudian is a student micro-loan site, an installment payment and investment management platform.
Square	United States	Payments	Enabler	Square is a merchant services aggregator and mobile payment company that aims to simplify commerce through technology. For sellers, they have created one cohesive service to run an entire business, from a register in your pocket and analytics on your laptop, to small business financing and marketing tools that drive new sales. For buyers, they make it faster to order from restaurants and easier to pay someone back.

We reviewed Digital Platforms in Nigeria and selected certain players with a focus on disintermediation or providing an enabling environment for the exchange of value between suppliers and consumers of financial services. This list is compiled in alphabetical order:

Name: Flutterwave | **Category:** Payment

Platform Type: Single Provider

Description: Flutterwave provides an underlying technology platform that allows businesses make and accept payments in Africa. Flutterwave's technology has processed over 10 million transactions amounting to over $1.2 billion dollars for clients including Uber, Paystack, SimplePay, Page Microfinance Bank, and Access Bank

Name: PayLater | **Category:** Lending

Platform Type: Enabler

Description: PayLater is an online lending platform that provides short-term consumer credit in Nigeria. It has a mission to help Nigerians cover unexpected expenses or urgent cash needs. The loans are processed without collateral. Paylater is operated by OneFi an alternative finance company.

Name: KongaPay | **Category:** Payment

Platform Type: Enabler

Description: KongaPay is a payment platform created in partnership with leading banks in Nigeria to facilitate payment transactions between buyers and sellers. In addition to meeting the needs of shoppers on the ecommerce platform Konga.com, According to KongaPay, it has expanded its services to provide the following services: Bank transfers (with ZERO transaction fee), Airtime Purchase, cable TV subscription fee payment, purchases on other ecommerce platforms.

Name: PayStack | **Category:** Payment

Platform Type: Single Provider

Description: Paystack allows businesses accept online payments from local and international customers using MasterCard, Visa and Verve Cards. About 4,000 businesses including Hotels.ng, Payporte, IrokoTV, Jobberman, Printivo, Gigalayer, Nairabox etc. use the Paystack platform. Paystack reached a milestone of processing ₦1 billion in monthly transaction volume in July, 2017 and has an ambitious goal of reaching ₦10 billion in monthly transaction volume in the next few months.

Name: Quickteller | **Category:** Payment

Platform Type: Single Provider

Description: Quickteller is a product of Interswitch, an integrated digital payments and e-commerce company that facilitates the electronic circulation of money as well as the exchange of financial value between individuals and organizations. Quickteller provides services that allow users buy airtime, make payments, fund mobile wallets & transfer money through the use of a debit or a prepaid card domiciled in a Nigerian Bank.

Name: Remita | Category: Payment

Platform Type: Single Provider

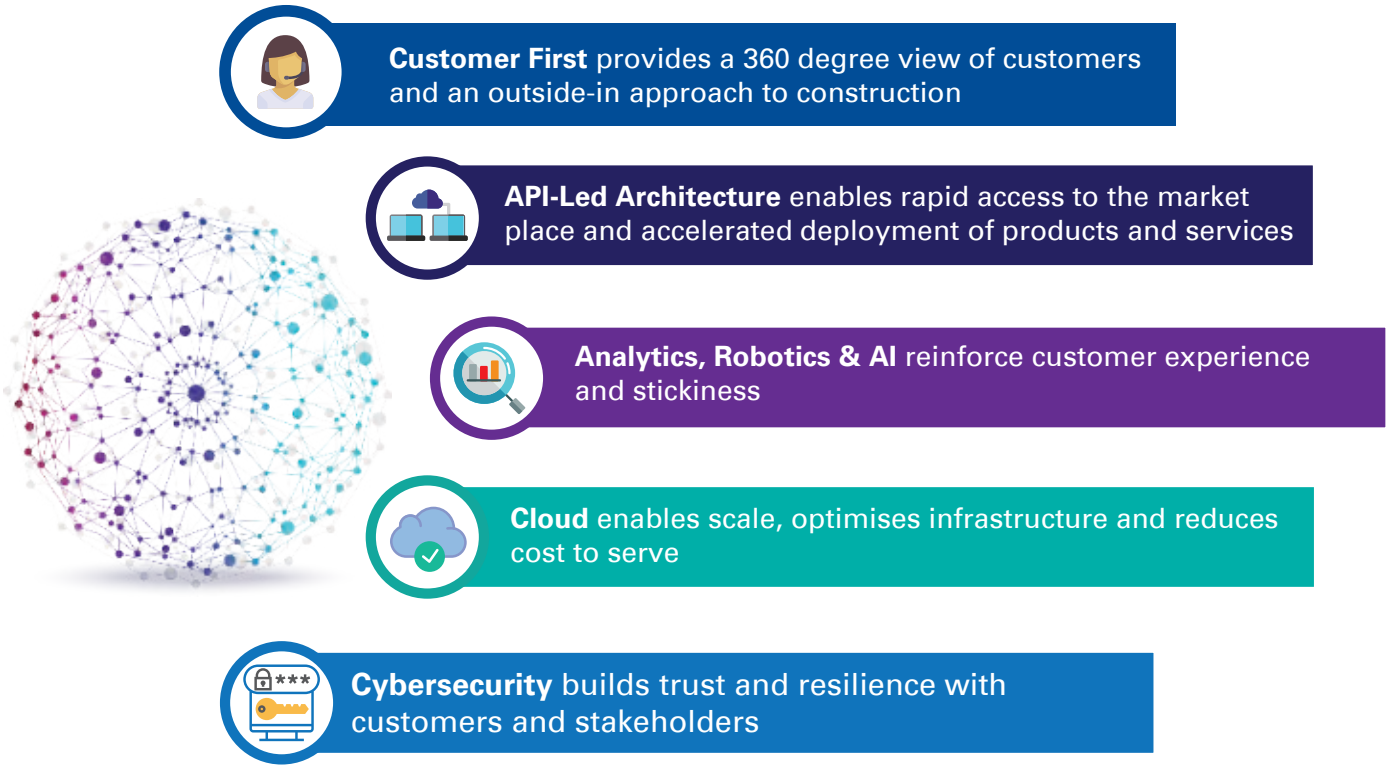
Description: Remita is an e-payments and e-collections solution hosted as a single multi-bank platform developed by SystemSpecs. It is used extensively by individuals, public and private sector organisations. Remita processes over ₦500 billion worth of transactions on a monthly basis. It is used by most of the commercial and micro finance banks in Nigeria.

Sources: Paylater, Flutterwave, Quickteller, KongaPay, Remita and Paystack

Platform Architecture Principles

If the trend continues, we will see customers identifying the go-to enterprise in each of their life spaces (like healthcare, education, entertainment, etc.). This will lead to further technology-enabled consolidations as a few firms will become very powerful ecosystem drivers – efficiently intermediating between the end customer and the service provider.

Digital platform business models require significant work in the design phases to ensure that the platform is sufficiently robust, connected to the ecosystem and agile enough to evolve over time. We offer five (5) architecture principles that should be considered by design enthusiasts viz:



Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

Note: A detailed discussion on cybersecurity is not included in this publication as it has been comprehensively addressed in an earlier KPMG publication - "Building Cyber Security and Resilience in a Digital Africa" (May 2017). You may access the report via the link provided. https://assets.kpmg.com/content/dam/kpmg/ng/pdf/advisory/ng_building_cyber_security_resilience.pdf

Customer First

The following strategic questions have remained the same over the years; Who are my customers? What do they want and need? How do they behave? What is driving their behaviour? Which propositions will succeed? Answering these questions by utilising traditional approaches is no longer sufficient.

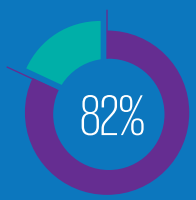
In today's fast-moving, customer-led world, a successful customer strategy requires the use of sophisticated data analytics tools, huge quantities of rich customer insight data and an agile, test-and-learn approach to the development of valuable new propositions.

Netflix provides an excellent example of the power of a company with a simple, clear customer strategy and business model adapted for the digital age. Netflix started out as a home delivery service of popular DVDs but has transformed into a global media powerhouse by using customer insight data to refine and develop its proposition. Netflix uses extensive data analytics to create rich personal profiles of customer preferences and behaviour to offer each customer a tailored digital service. Established businesses in many sectors can learn lessons in customer strategy from startups. The aggregate customer data that Netflix gathers from its millions of customers is used to inform major investments in new media content.

What new major products could your business develop if you were sure of the individual personal preferences of millions of your customers? KPMG has found that developing winning customer strategies for our clients involves the development of a clear view of customer behaviour and intentions using data and analytics. In the digital age, businesses need to be agile and co-create products and services with customers, beginning from the earliest stages of proposition development. To be successful, companies need to be willing to `fail fast' and embrace constant innovation in the process of finding a winning strategy.

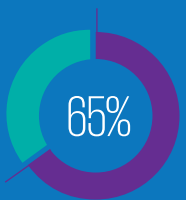
Key challenges addressed by customer strategy

Recent fundamental changes to customer needs and behaviour and the arrival of disruptive new competition means that many businesses need to develop a robust customer strategy. Creating a successful customer strategy is challenging as the disruption leaves them concerned about how their company remains relevant to customers, defends against new entrants, uses pricing efficiently and achieves profitable revenue growth in highly volatile markets.

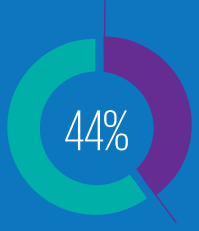


Remaining relevant to customers
CEOs are concerned about whether their company's current products and services will remain relevant to customers 3 years from now

Competing using pricing
Business leaders believe that they can increase profitability through more effective pricing strategies



Defending against new entrants
CEOs recognise that the lines between industry sectors are blurring and are concerned about defending against the disruption of new entrants



Achieving profitable growth
CEOs of businesses in all sectors are concerned about ways to grow revenue profitably and efficiently

CX/UX as Growth Lever

Understanding CX/UX

In recent years, user experience (UX) has been the focal topic or at least gets a spotlight in almost every digital discourse, formal and informal. From the executives to support staff, every enthusiast seems to be talking UX. While the impact of UX on growth, profitability and efficiency is no longer in doubt, only few decision makers prioritize UX as a key driver or consider it strategic for their digital business.

As expected, the buzz around UX has led to some confusion on what UX is and what it is not. Players and observers in the digital ecosystem are asking questions. Expectedly, the questions differ across the digital spectrum. Whatever the perspective, we recognize that the following questions are being asked:

- What is UI/UX?
- Is UX same as CX?
- Will a well-designed UI lead to superior UX? In fact, what is superior UX?
- Does great UX necessarily guarantee great CX?
- Will great UX drive profitability and growth?

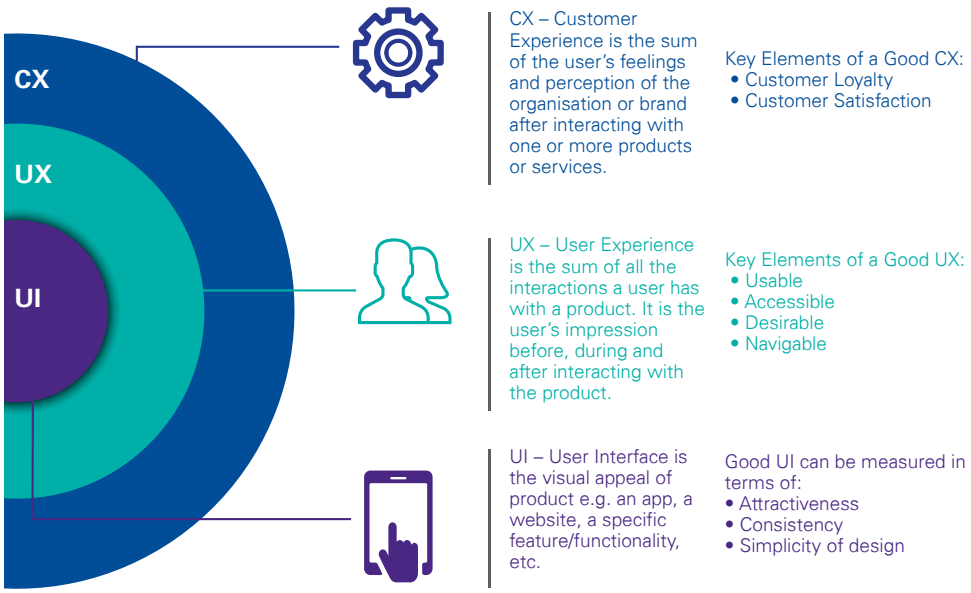
What is UI/UX?

User Interface (UI) is the visual appeal of a product. It is a user's point of interaction with an organisation's product.

UX describes the sum of all the interactions a user has with a product. In other words, from a digital perspective, UX is the interaction of the user with an app, a website, a feature/functionality, etc. Essentially, UX is the journey of a user through a product. Put simply, UX is UI + X, where X is the user's overall impression before, during and after interacting with the product.

Is UX CX?

Although used interchangeably, UX is not the same as CX. While UX focuses on the product, CX focuses on the organisation or brand, the entire customer journey. Therefore, CX is UX + Y (or UI + X + Y) where Y is the sum of the user's feelings and perception of an organisation or brand after interacting with one or more products, services or its staff/people offline or online.

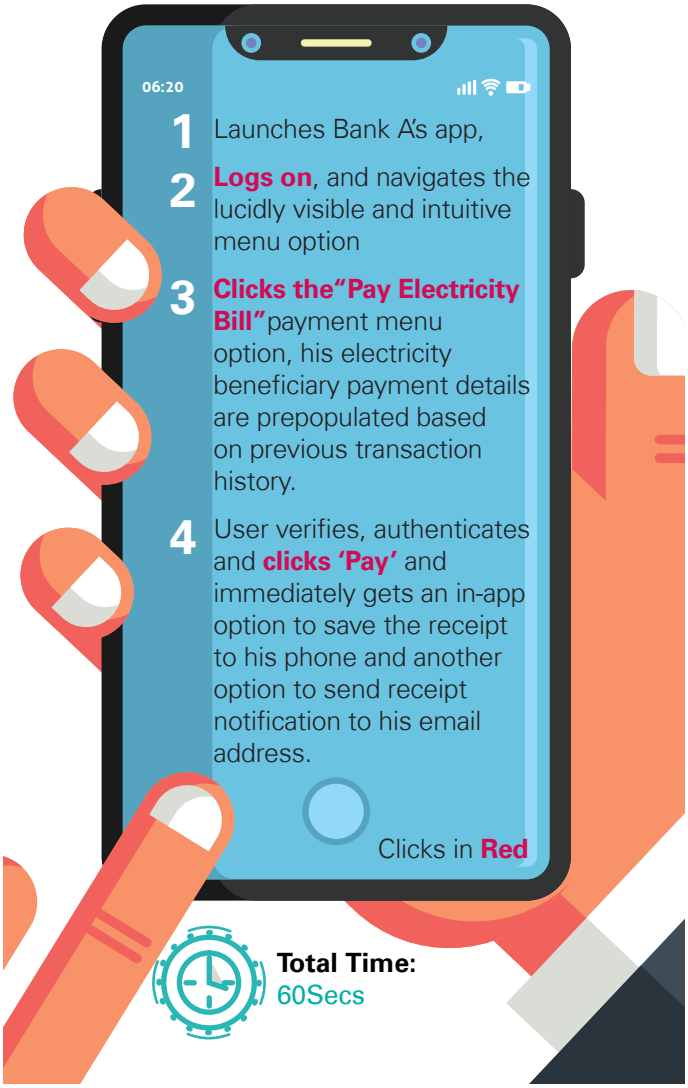


Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

Will a well-designed UI guarantee superior UX?

Great UI could facilitate a great UX but cannot guarantee one. In fact, a great UI is not required to achieve superior UX, only a good enough UI. So what makes UX superior?

In the scenario below, a mobile app user urgently needs to pay electricity bills so takes the following steps using Bank A's mobile app:



Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

User checks email and finds a copy of the receipt. User is happy that the transaction is quick and successful.

We observe here that to pay electricity bills, a user can perform the transaction in just three (3) clicks.

The scenario described above could have been poor, good or great UX relative to competition. Therefore, if Bank B with a similar UI allows the same user perform the same transaction in two (2) clicks and a total transaction time of 45secs, then Bank B offers superior UX. This amounts to competitive advantage for Bank B over Bank A and could be the difference in profitability and growth.

Does great UX necessarily guarantee great CX?

Getting UX right for one or all of an organisation's customer-facing touch points does not guarantee success in overall CX. As a general rule of thumb, a good UX offers huge potential for a good CX while a poor UX leads to a poorer CX.

According to Gartner[34], it is expected that with appropriate UX methodologies and approaches, UX will prove critical for CX success.

Will great UX drive profitability and growth?

It is common to see Fintechs employ fewer personnel to support their applications or products in contrast to incumbent financial institutions where the IT department is usually larger and running on a higher budget. While this phenomenon could be due to various factors, the quality of the UX usually tends to get the nod as a key factor. This advantage has kept Fintechs profitable and appealing to the digital user. Therefore, it could be said that organisations that have fewer resources manning customer service desks and attending to issues arising from usage of customer-facing digital solutions is on track to getting UX right. Good UX essentially drives user adoption. For instance, with reference to the earlier scenario, users are more likely to reuse a service and invite friends if they have had a consistently good experience.

34. http://www.tandemseven.com/wp-content/uploads/2015/06/how_ux_can_make_or_break_your_cx.pdf

How Fintechs Offer Superior User Experience (UX)

Digital customers have become increasingly sophisticated, and appear to almost naturally recognize a superior experience when they see one. The focused attention Fintechs pay to UX, especially business-to-customer (B2C) based models, have attracted attention in CX circles. Across the digital landscape, Fintechs are taking the lead in offering superior experience to their users. Their specific focus to users' needs and preferences is driving the overall user experience.

Despite growing interests in business-to-business (B2B) offerings, where focus is more on leveraging Fintechs to improve mid and back office effectiveness and efficiencies, UX is expected to continue to be a strong driver for Fintech growth.

The success of Fintech companies has largely been driven by their ability to create exciting and compelling user experiences. Leaders of prominent and successful incumbent financial institutions are beginning to realise that customer-centricity and superior user experience is a game changer and must be embraced.

How then do Fintechs offer superior UX?:

1. **Fintechs are big on personalization**
   Fintechs appear to have mastered the art of anticipating the user's preferences and habits. We observed that Fintechs prioritize providing an experience that recognises and truly knows the user. The user's online history of habits and preferences form the basis of engagement.

2. **Fintechs focus on pain points and unmet needs**
   Rather than build a platform that supports numerous financial services, most Fintechs focus on solving a single service inefficiency, ineffectiveness or deficit one at a time. By focusing on one thing, they better understand the customer's journey, and therefore efficiently unearth the user's pain points and needs. As a result, they are better positioned and equipped to serve and respond in a way that delights the user.

3. **Fintechs are agile in their approach to UX Design**
   In comparison to traditional financial institutions, one of the major strengths of Fintechs is their agility. By avoiding BDUF (Big Design Up Front), Fintechs have been able to innovate quicker than incumbents. Simply put, rather than focusing on getting a perfect final product, Fintechs focus on starting small first then scaling later. They do this by encouraging collaborative designing, prototyping, and early end user validation/ testing which are performed in an iterative cycle that starts with 'Conceive' and ends with 'Learn'. In addition to achieving a more customer-focused solution, we see that by encouraging early validation of prototypes, greater efficiency in the overall delivery of the solution is often achieved

Development of an early prototype is crucial for end user engagement and validation.

User engagement and validation of the early prototype fosters customer-centricity and increases the chances of meeting users' needs.

After rounds of iterations, a MVP that meets the users' needs is developed. Depending on the company's innovation appetite and new learnings, this MVP could become another early prototype, thus repeating the cycle. Fintechs almost never have a final product, they are constantly innovating and improving.

Users Now Make the Experience Call

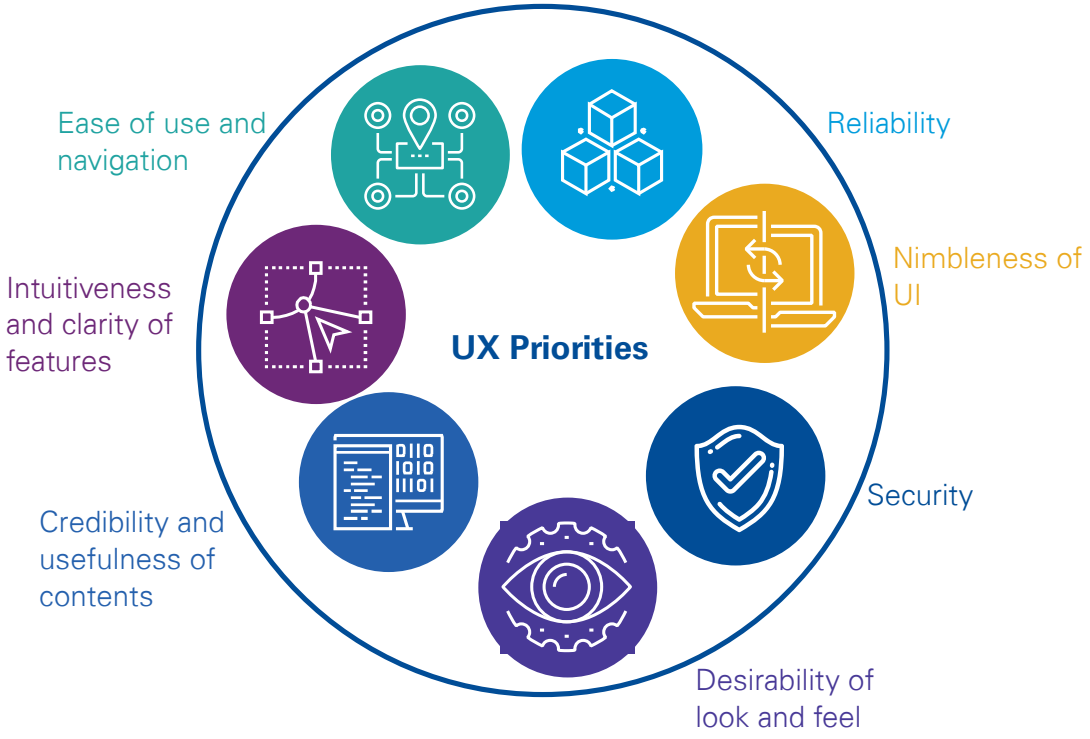
More than ever before, customers' expectations are driving digital change and innovation in various industries including financial services. Over the years, these expectations have fundamentally transitioned into more demanding, more sophisticated, more impatient, more consistent, more personalized, more transparent and more seamless expectations.

In recent years, the maturity of digital technology, the innovation of leaders such as Apple, Google and Amazon, and ubiquity of smart phones have led digital customers, largely millennials, to rethink their relationships with traditional financial institutions. While these traditional institutions or incumbents slowly grappled with the customers' shift, Fintechs bullishly took advantage by disrupting and enabling almost all aspects of the financial services (FS) value chain.

Customers now by far judge their experiences by how well their service providers are able to meet their digital needs rather than via human interaction. Although human interaction still forms a significant part of the overall customer experience (CX), the UX has become the key driver in the user's experience call.

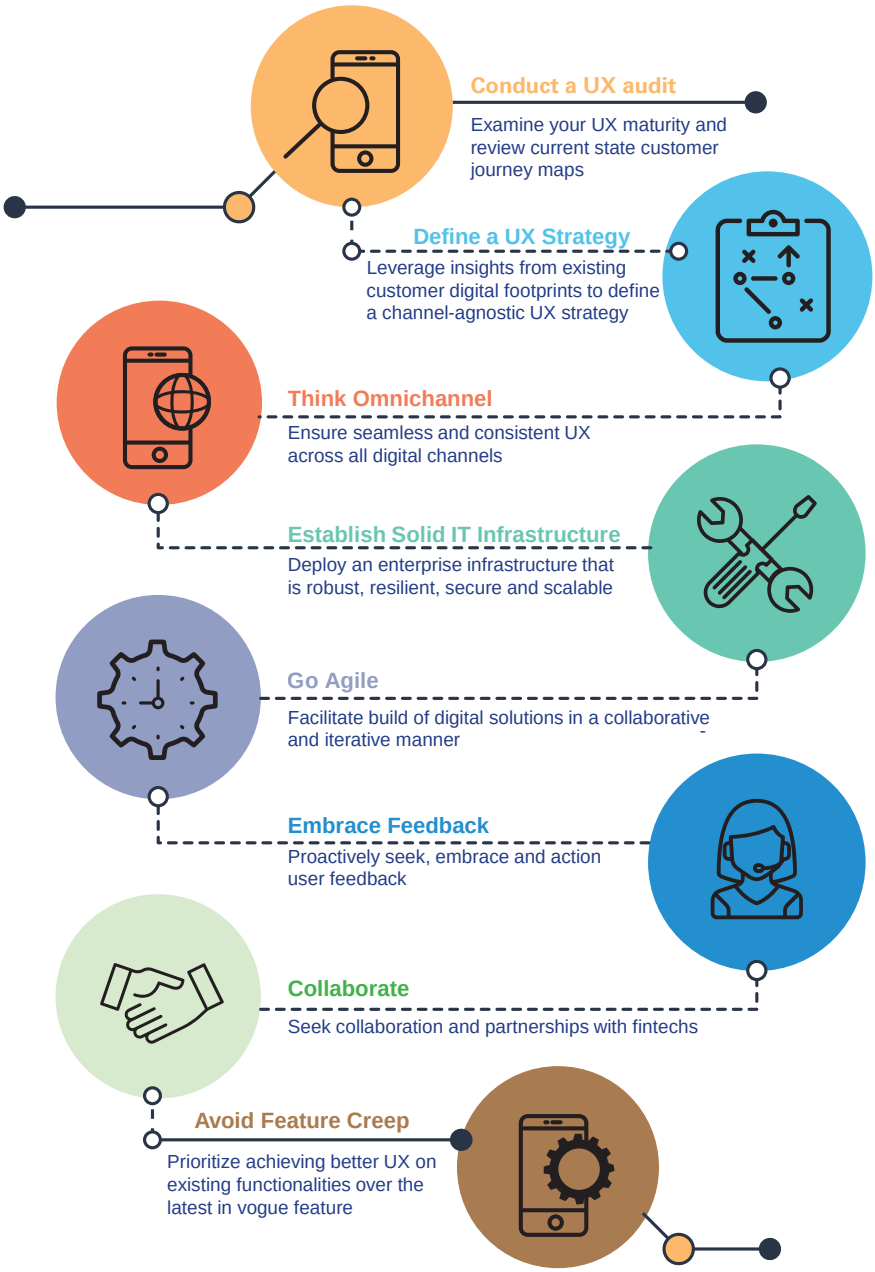
According to a recent KPMG Nunwood report, the world has reached an inflection point on the curve of customer experience (CX) improvement where the baton is passed from human to digital interaction. This shift is the foundation on which the Fintech experience revolution is predicated.

So what do users want? Our study of Fintechs has revealed that they all seem to prioritize the mix of the following elements to offer superior customer experience:



Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

Eight CX/UX Imperatives for Incumbent Financial Institutions



Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

API Led Platform Architecture

The greatest value APIs provide is removing barriers to growing revenue by integrating platforms and apps so organisations can quickly launch new business models and scale fast[37]

Business Value of API-Led Architecture

Open APIs have significantly transformed the approach for system integration and innovative development of software applications, especially mobile applications. The rapid growth and spread of Open APIs can be attributed to some factors including the penetration and use of mobile apps, payment systems, and social media platforms. When an optimal level of Open APIs adoption is achieved under a suitable regulatory framework, Open APIs have the potential to revolutionize the digital landscape.

PSD2 is one of the bold steps in the regulatory space that delineates the skepticism and creates a bright outlook for rapid Open APIs adoption amongst other initiatives.

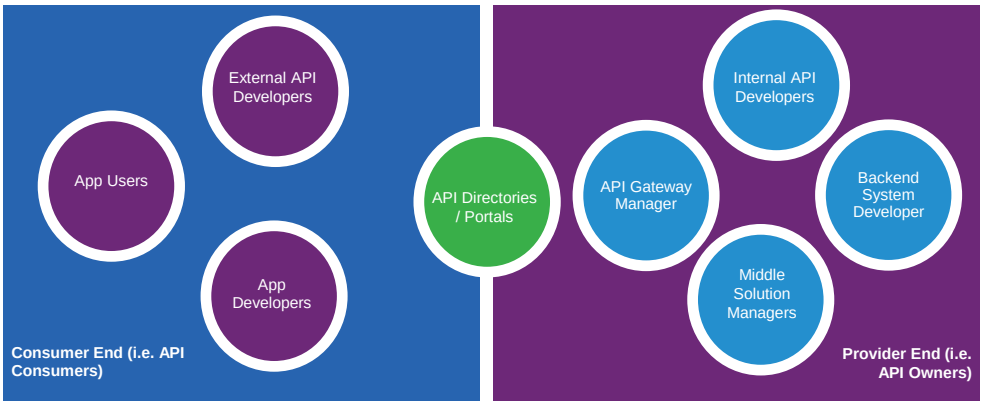
APIs are rising in value as drivers for revenue growth. For most organisations, APIs are proving to be a viable avenue to creating new services and capabilities, which will ultimately lead to new revenue streams[35]. Companies are leveraging the economic environment created by the growing need for Open APIs to generate revenue via business models innovated around APIs.

For example, Amazon reported that its Amazon Web Services (AWS) public cloud generated $916 million in operating income on $4.10 billion in revenue in the second quarter of this year (2017). Revenue for the AWS business increased by 42 percent year on year, higher than analysts' expectations[36].

With the mainstreaming of APIs and the popular services that make use of them, organisations will make APIs a critical factor in their business model. What's more, the accelerating progress of mobile technology and the Internet of Things creates little doubt that the **API economy** will continue to grow and flourish at a rapid pace[35].

APIs are most valuable for creating new business models and streamlining selling strategies across all channels. The greatest value APIs provide is removing barriers to growing revenue by integrating platforms and apps so organisations can quickly launch new business models and scale fast[37].

In the next few years, APIs will become the fuel to help CIOs create and launch new business models faster to enable their companies remain competitive[37].



Key Players within the Open API Economy

Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

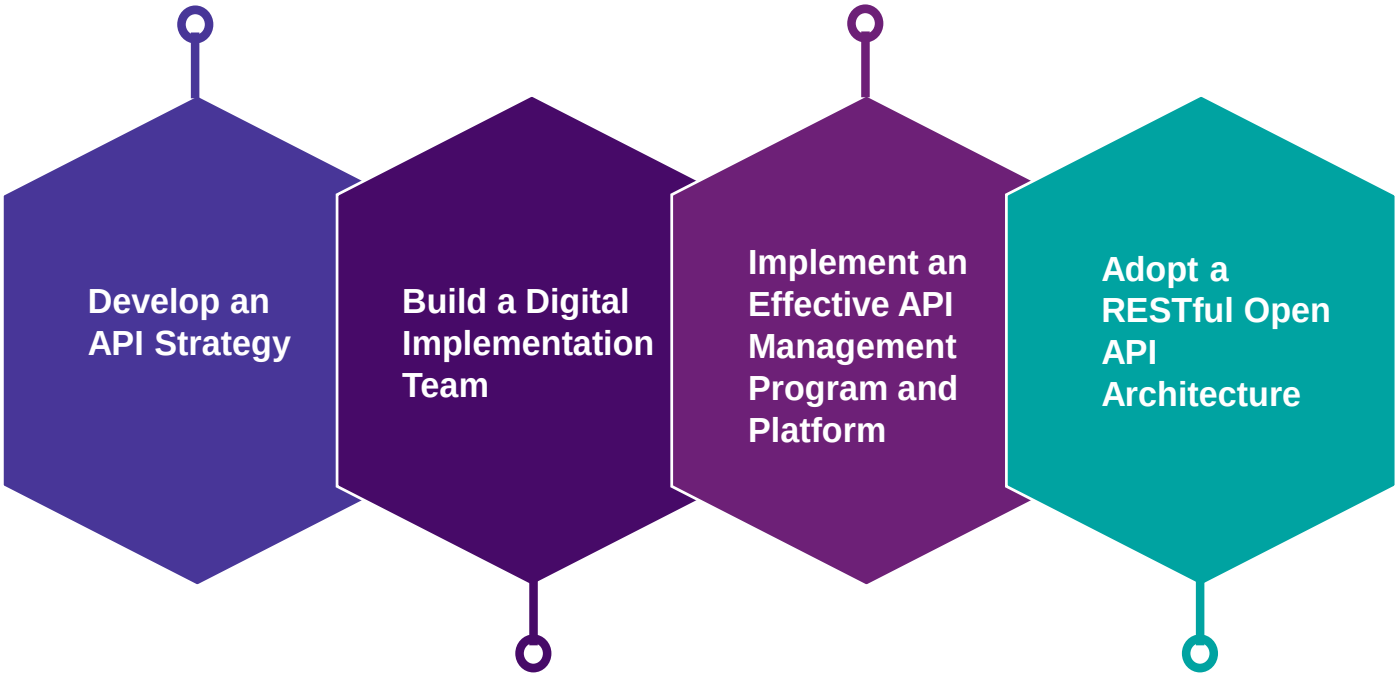
35. https://www.cnbc.com/2017/07/27/aws-earnings-q2-2017.html
36. https://www.mulesoft.com/resources/api/what-is-an-api-economy
37. https://www.forbes.com/sites/louiscolumbus/2017/01/29/2017-is-quickly-becoming-the-year-of-the-api-economy/#5789a6866a41

Key enablers of a successful API-led architecture are detailed below:

- The business model to be adopted for APIs must be clearly articulated and aligned with both business and IT.
- The API strategy should address the following, amongst others:
  - The role APIs will play in the overall business strategy
  - The business case for API, specifically as it applies to the enterprise
  - Assessment of current resource capability to support the business API model - considering time, personnel, cost and infrastructure
  - Resource scaling strategy over time
  - The "Go To Market" strategy: Direct to Open APIs or Closed APIs First.

Invest in a robust API Management solution and adopt a standardized API implementation and management program, viz:

- API implementation should be standardized across the following software development lifecycle: Analysis, Design, Build, Test, Deploy, Manage, and Version.
- Design for great API User Experience (APX). Refer to subsection "Open API Experience" for details
- Ensure simplicity and ease of use
- Enforce adequate API documentation
- Enforce terms of use and security measures
- Ensure proper traffic monitoring and analysis.



- An agile team of strategists, architects and developers with insight into the emerging trends in digital products and APIs are required
- Partnership with digital entities is encouraged for enterprises lacking such expertise depth

Representational State Transfer (RESTful) architecture has become the generally preferred approach for mass integration in the public domain (especially for mobile platforms). Some of the benefits offered by REST APIs over SOAP include: Simplicity, Scale and Performance.

Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

What is an API

Application Programming Interface (API) can be described as a piece of software program acting as a connecting interface between two distinct systems to enable program-level interaction. "Systems" in this context can be applications, databases, APIs, software programs, etc. An API defines and enforces the set of requirements that govern each interaction.

The concept of APIs is centered on facilitating interaction between disparate systems. One is called the provider – and holds a resource (e.g., data, functionality, etc.) to be accessed by the other system – called the consumer.

APIs are developed to enable the consumer have access to the resource(s) of the provider via an interaction mediated by both systems. Essentially, this interaction entails receiving a request from the consumer and disseminating the request to the provider for processing, and subsequently feeding the consumer back with the response from the provider. Using this approach, the provider and consumer systems are abstracted from each other – in other words, the resources made available by a provider via an API can be consumed via the same API irrespective of the type and nature of consumer system.

An ideal analogy of this tripartite relationship (which buttresses the role of an API), is the relationship between a customer, a waiter and the chef in a restaurant. The customer selects a specific order from a list of menus handed over by the waiter. The waiter then communicates the customer's order to the chef for preparation, and afterward, conveys the prepared meal (which matches the order requested) to the customer. In this scenario, the customer is likened to a consumer, the chef - a provider, and the waiter – an API.

An example of an API interaction is Google's API, which allows software developers embed Google authentication to their website or applications to enable their users authenticate login via their email login credentials as opposed to creating a new account upon contact with their website.

Another example is the social media's "Share" button which allows users post content directly from their social media accounts to a unique independent website for secondary consumption. These buttons are simply calls to the respective APIs of major social media outlets to create a post with a specific content.

The concept of APIs is centered on facilitating interaction between disparate systems.

Characteristics of APIs

APIs are designed to expose and sometimes enrich provider system resources/ features – hence they are named after the provider system or the provider resource, e.g., Google API, Account Opening API, etc. Using the "Customer, Waiter and Chef" analogy, like an API, the waiter uses the menu list to extend to the customer (i.e., the consumer) the various menu options the chef (i.e., provider) can offer.

They are productized - APIs are treated more like products than programs. They are designed to address a specific need or enhance a particular product and are mostly used by mobile developers. They are documented and versioned in a way that users can have certain expectations of their maintenance and lifecycle. Just like any other piece of software that is productized, the modern API has its own software development life cycle (SDLC) of designing, building, testing, managing, and versioning[38].

Using the "Customer, Waiter and Chef" analogy, imagine the restaurant was French and had two outlets – one located in a French village and the other in a town filled with English folks who love French food. A suitable arrangement would be to have a French-speaking waiter serve menu lists in French at the French outlet while an English / French-speaking waiter serves menu lists written or translated in English at the English outlet. This way, for the same set of French meals offered by the chef, each group of waiters is suited for the customer group being served.

38. https://www.mulesoft.com/resources/api-strategy

Same applies to APIs – provider system resources (usually legacy system of records) are fixed and not easily manipulated or tailored to suit consumer needs. APIs bridge this gap by providing the capabilities that not only extend provider resources/ features but customize the interaction to satisfy the consumer niche – they are said to be consumer-centric. This characteristic is a key distinguishing factor between APIs and services (which are said to be provider-centric).

They are standardized – APIs (specifically Open APIs) are built on global technical standards, which make them interoperable, scalable, reusable and easy to code. Developers do not need to learn some new and convoluted data transmission standard since APIs already use the popular HTTP (and HTTPS for secured calls).

APIs versus Services

The emergence of Open APIs has redefined the way system functionalities and resources are projected for integration (i.e. consumption) by modern and rapidly changing consumer applications (e.g. mobile apps). The attributes that APIs present now enable simpler, easier, fast-paced and more innovative integration.

However, along with this, has arisen some confusion about the difference between APIs and the earlier integration approach – Services (over a Service Oriented Architecture [SOA]). In the same vein, there is confusion about what differentiates the solution platforms for APIs and services – i.e. API Manager versus the Enterprise Service Bus (ESB) respectively.

Sometimes, the way the comparisons are made add to the existing confusion regarding these subjects. For example, some write-ups compare APIs with ESBs (the solution platform on which services run) instead of services.

To demystify the issue, it is important to mention that there are actually quite a number of similarities between APIs and services. Some of these include:

- Both support REST (Representation State Transfer) and SOAP (Simple Object Access Protocol) integration technologies. However, services are mostly implemented as SOAP interfaces and APIs as REST
- Both expose business assets, e.g. data, application functionalities, etc.
- Both can perform some level of transformation (from the consumer to the provider and back)
- Both support XML and JSON messaging formats
- Though the dimension might slightly differ, a couple of fundamental principles of a Service Oriented Architecture (e.g. interoperability, reusability, encapsulation, etc.) also apply to APIs.

SOA is provider-centric while APIs are consumer-centric.

These glaring similarities are the source of the confusion - hence the reason why a level of familiarity with services and SOA might cause some confusion about APIs.

It is important to note that a critical difference between APIs and services is the design objective behind the integration approach.

A key design objective for services in a Service Oriented Architecture is to facilitate reusable connectivity between systems of record (i.e. back-end provider systems). With the point to point integration becoming more and more unmanageable as a result of spaghetti connections that need to be untangled and put back together each time there is a change or new introduction, services were devised to encapsulate the resources/ functionalities of systems and interconnect them via an orchestration layer – the ESB. The purpose of the ESB is to act as an intermediary to shield the service consumer from changes at the back end. In a nutshell, SOA encourages the design of standard services that expose a huge chunk if not all the resources/ functionalities a provider system can offer, then enforces reuse of the same standardized service model by consumer systems. Services are provider-centric.

On the other hand, APIs are designed with the consumer system in mind – they are consumer-centric. As opposed to services that can be built by exposing existing resources with little consideration to tailoring same to a consumer group, the first two critical steps in designing and developing an API is to know the consumer audience and understand what they want (this includes what sort of resources/ features they want to expose as well as the preferred technology – a good reason why REST-based APIs are preferred over SOAP for mobile app related integrations).

However, worthy of note is that an API can be built out of an existing service by building another service layer on top of the existing layer which leverages the existing service and tailors it to the needs of a specific consumer group. An illustration is an API that provides account related information and loan booking functionalities can be built by leveraging existing Account Enquiry and Loan Booking operations exposed by a core-banking application as part of its bouquet of services. Consequently, APIs can be seen as services optimized for the needs of the consumer – in other words – Productized Services.

Governance is another distinguishing factor between APIs and services. Changes to service flows are governed strongly as are changes to the systems of record themselves to ensure these changes do not cause problems with the systems running the business. APIs on the other hand require lighter weight governance to meet the need for speed.

In principle, APIs are services, but not all services are APIs.

Are APIs and Services Complimentary or Contradictory?

Within a service oriented architecture, services are the means by which provider systems (e.g. Systems of Record) expose their resources / functionalities for ease of interconnectivity and reuse. APIs on the other hand can enable productization of services to deliver exposed resources / features in an easy to use form.

APIs and services are complimentary, rather than contradictory and can be applied together within an enterprise architecture to effectively expose provider system resources / functionalities to both internal and external consumers.

API Management Solution versus Enterprise Service Bus (ESB)

Similar to APIs and services, API Management Solutions and ESB both have similarities and differences, and can efficiently co-exist within an enterprise IT architecture.

Analysis of some of the key features of an API Management/ Solution against an ESB solution reveals the following similarities and differences:

APIs and services are complementary rather than contradictory, and can be applied together to efficiently deliver innovative products / functionalities.

Analysis of API Management and ESB Features

Feature / Attribute	API Solution	ESB
Message validation	●	●
Message routing	●	●
Service abstraction	●	●
Service re-use	●	●
Data formats (XML/JSON)	●	●
Protocols (SOAP / REST)	●	●
Error handling	●	●
Cloud hosting	●	●
Message transformation	●	●
Message re-delivery	●	●
Message orchestration	●	●
Business logic	●	●
Backend connectors/ adapters (DB, Email, File, etc.)	●	●
Other data formats (ISO, etc.)	●	●
Other protocols (SAP, etc.)	●	●
Service monitoring/ analytics	●	●
Service access / security control / rate limiting	●	●
Manage service products/ plans	●	●
Service monetization	●	●

● Fully supported ● Not supported ● Relatively limited

Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

In summary, ESB supports a wider range of messaging, service delivery, data transformation and back-end connectivity features than an API Management solution. However features that enable productization of services (e.g. service monetization, setting up of products/ plans, etc.) are limited or entirely unsupported by an ESB – these are fully supported by an API Management solution.

The API Ecosystem

The API ecosystem comprises a number of disparate groups of endpoint systems interconnected by a chain of integrated middleware solutions and network components. Each component plays a role in delivering the functionalities of an API both within and outside the enterprise network.

Figure 1 depicts an ideal API ecosystem in addition to the positioning of constituent integration components and touch points within a typical IT architecture.

The flow of requests for resources / data (i.e. API calls) are usually from the consumers to the providers while sharing of data / resources (i.e. API responses / feedback) flow the other way round (from the providers to the consumers).

Constituent integration touch points from the providers to consumers, include:

- System of Records (i.e. Provider Systems)
- Services and Micro Services (SOA) and ESBs
- Closed and Open APIs and API Managers
- Internal and External Firewalls
- Consumer Systems (i.e. external applications, e.g. mobile apps)

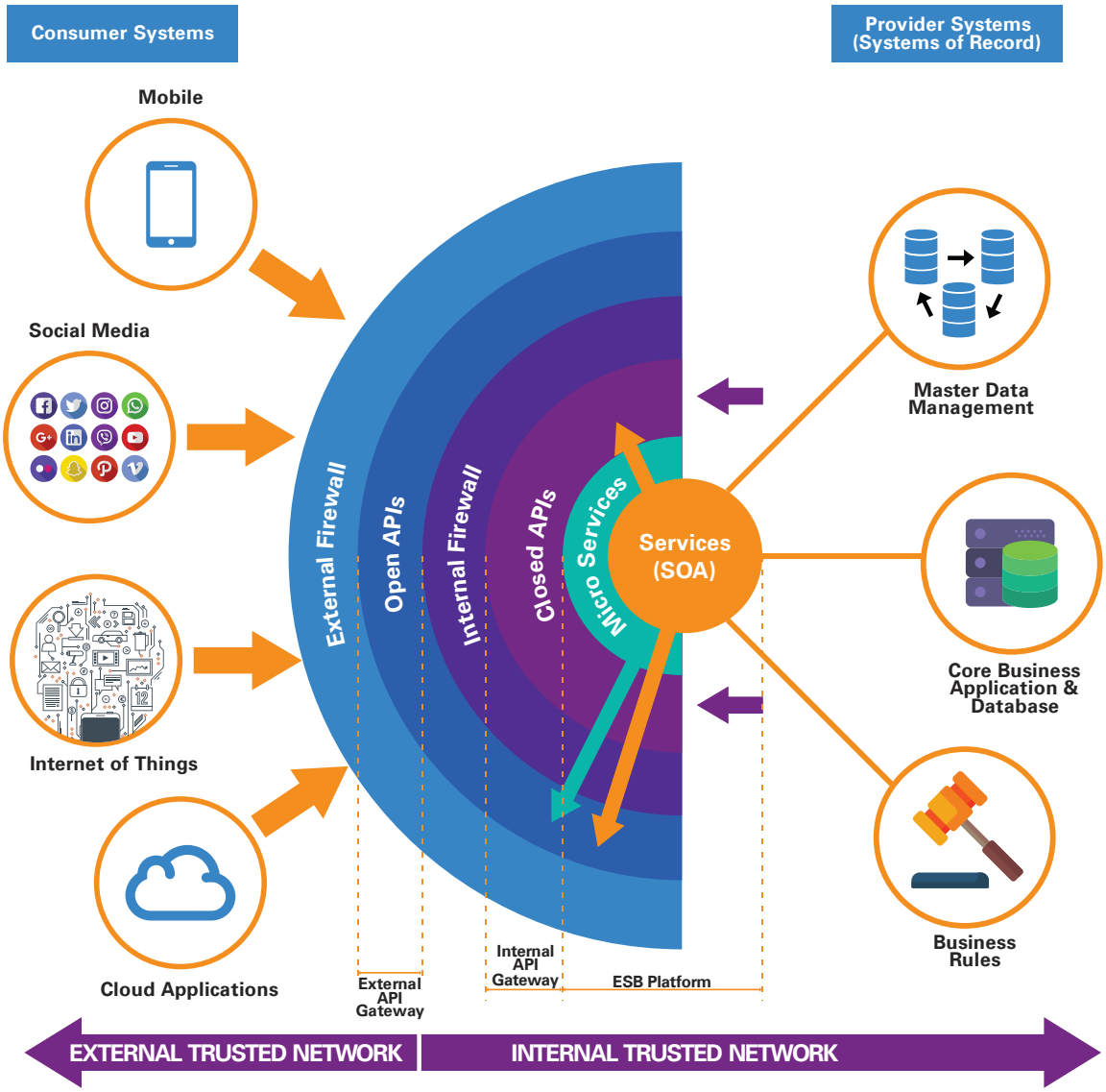


Figure 1: API Ecosystem

Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

Systems of Record (i.e. Provider Systems) – These are typically back-end systems within an enterprise responsible for transaction processing and data storage. Examples include core banking applications, data warehouse, workflow applications, legacy applications, etc.

It is important to note that, though most systems of record are providers, they can also be consumers of services provided by other systems interconnected within the same service-oriented architecture. Although not necessary termed "Systems of Record", an application program can also be a provider - so long as the resource(s) and/or data being provided by the service or API associated with it is wholly contained within the application program. For instance, a program that exposes a service which accepts some parameters, executes a mathematical function and returns a response can be regarded as a provider for that functionality.

Services and Micro Services (SOA) – A service is a coarse-grained processing unit that consumes and produces sets of objects passed-by-value. It is not the same as an object in programming language terms. A service consists of a collection of components that work in concert to deliver the business function that the service represents[39]. The objective of a Service Oriented Architecture (SOA) is to facilitate reusable interfaces between systems, hence reducing effort and cost of future integration. SOA encourages designing of standard services that expose a huge chunk if not all the resources/ features of a provider system, enforcing reuse of the same standardized service model by consumer systems. However, this service reuse can sometimes pose its challenges as consumer applications need to parse the entire volume of data exposed by a service whether or not the whole data volume is relevant.

Microservices are applications that are separated into a collection of small, independently deployable services. Each microservice is built and aligned around a business function to reduce the complexity of the application change-management process. Each service is individually changed, tested, and deployed without affecting other services, enabling faster time to market[40].

Also, the fact that a service or micro service can be the base for closed or open APIs as well as other services or microservices as depicted in Figure 1.

Enterprise Service Bus – IBM defines an Enterprise Service Bus (ESB) as a solution to connect applications together for communication purposes, regardless of platform, protocol and data format.

It is good practice to position the API and ESB platforms in separate network security layers within the DMZ and trusted network area respectively.

This connectivity means that your diverse applications can interact and exchange data with other applications in a flexible, dynamic, and extensible infrastructure. It is a critical component of the SOA architecture – playing the role of a centralized orchestration layer[41].

Closed and Open APIs – These will be explained in details in the subsequent section – Open APIs.

API Management / Gateway Solution - API management solutions provide a central access point for managing, monitoring, and securing access to your publicly exposed web services (i.e. APIs). It also allows for consolidation of services across different endpoints as if they were all coming from a single host[42]. Certain products combine the functionalities of an ESB into the API solution, however this may not be the best approach. Refer to the section: Combining API Management and ESB Features into One Solution – A Good or Bad Idea?

Internal and External Firewalls – External Firewalls or DMZ are those facing untrusted networks, usually the Internet. They filter connections from external hosts to your DMZ or internal hosts. Conversely, Internal Firewalls face the trusted networks, the LAN. They filter connections from the trusted hosts to the external network[43].

A demilitarized zone (DMZ) is an isolated network segment between the external and internal network (i.e. between the external and internal firewalls). It is good practice to position the API and ESB platforms in separate network security layers within the DMZ and trusted network area respectively.

Consumer Systems – Consumer system are typical API consumers, e.g. Mobile apps, social media apps, etc.

39. http://cic.javerianacali.edu.co/wiki/lib/exe/fetch.php?media=materias:soa-ibmvision.pdf
40. https://www.ibm.com/cloud/garage/content/architecture/microservices/
41. http://www-03.ibm.com/software/products/en/integration-bus-advanced
42. https://softwareengineering.stackexchange.com/questions/264280/differences-between-api-gateways-and-esbs/264284
43. https://www.reddit.com/r/networking/comments/2sf5ff/explain_the_difference_between_internalexternal/

Combining API Management and ESB Features into One Solution – A Good or Bad Idea?

Certain middleware solutions combine the features/ attributes of an API management solution and an ESB into one product – an innovative approach, with the objective of gaining market edge as well as reducing potential run-time failure points.

Though this appears like a good idea, it may pose some architectural challenge, particularly when it comes to deciding the specific layer (within the network architecture) to deploy the combined solution.

Using the architectural illustration depicted below (Figure 2), i.e. placing the combined API management and ESB solution in Position 1 would imply executing both API-related functions and ESB orchestration as well as accompanying business logic within the demilitarized zone. This may pose some risk of security exposures to critical business assets as the ESB layer typically couples various Systems of Records together and should, in turn, be placed within the internal network (i.e. "Trusted Zone") as are the Systems of Record.

On the other hand, having the combined solution within the internal network (i.e., Position 2) is not advised as security-related checks, and traffic-related monitoring (e.g., rate limiting) should be handled within the demilitarized zone before entrance into the trusted zone (i.e., the internal network). The exception to this will be if only closed APIs are adopted, in which case all API traffic originates internally with no external interaction.

API Management and ESB platforms can efficiently co-exist within an IT architecture. However, they should be positioned within different architectural layers. A possible ideal representation is shown in Figure 2.

Consequently, enterprises already running an ESB platform need not discard the platform for an API manager in a bid to open up internal resources / functionalities via open APIs. On the other hand, the way forward should be to leverage the existing ESB platform to tailor delivery of existing services to new consumers via API management solutions - which enable repackaging and productization of services as APIs.

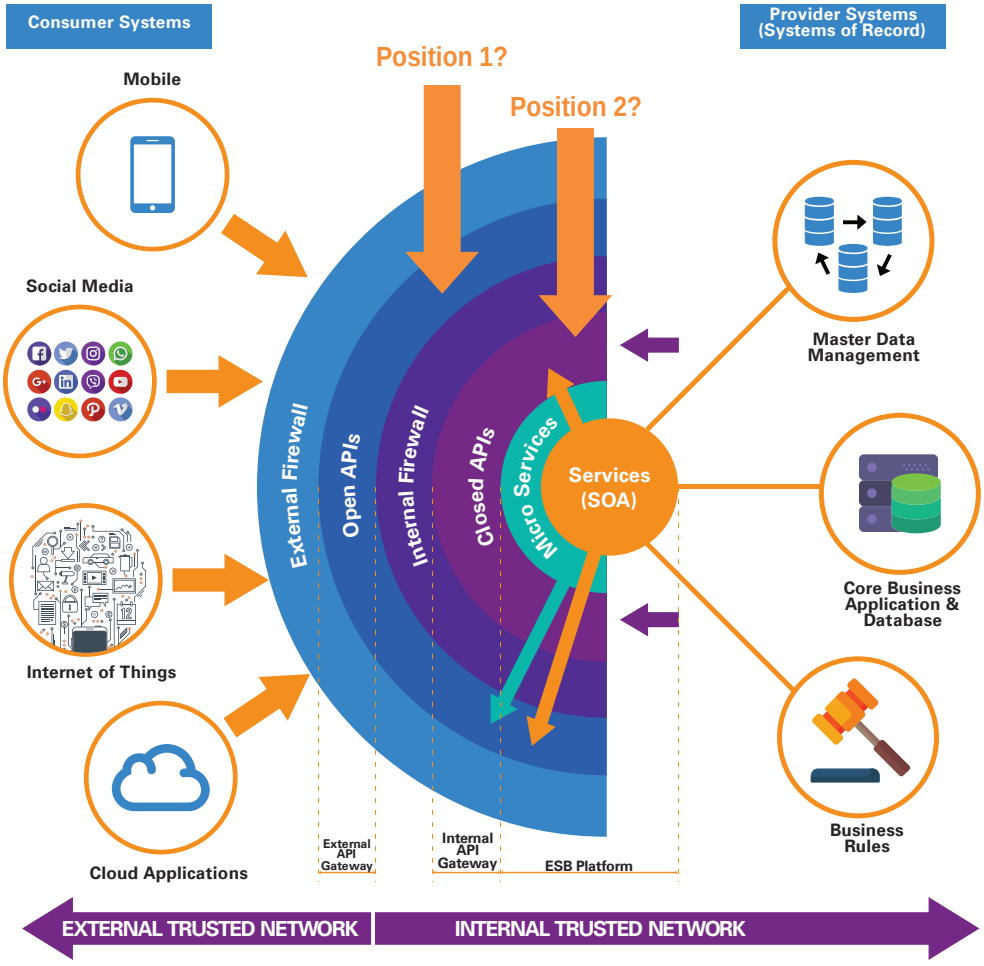


Figure 2: Possible Positioning of a Combined API Management/ Gateway and ESB Solution within an IT Architecture

Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

Open APIs

These are APIs made accessible to consumers outside the enterprise internal IT network. In contrast, closed APIs are those accessible by internal systems alone.

There are various degrees of openness – an open API can be fully publicly available, meaning all of the resources/ features it provides access to can be accessed by any party, usually with some form of registration process to enable identification and authentication. Other levels of openness include - Partner APIs (accessible to preferred business partners), Member APIs (accessible to members of a given group or community defined based on certain membership rules), etc.

In the financial sector, an open API requires at least a pre-authorized access for developers and for obtaining secured data – an authentication key.

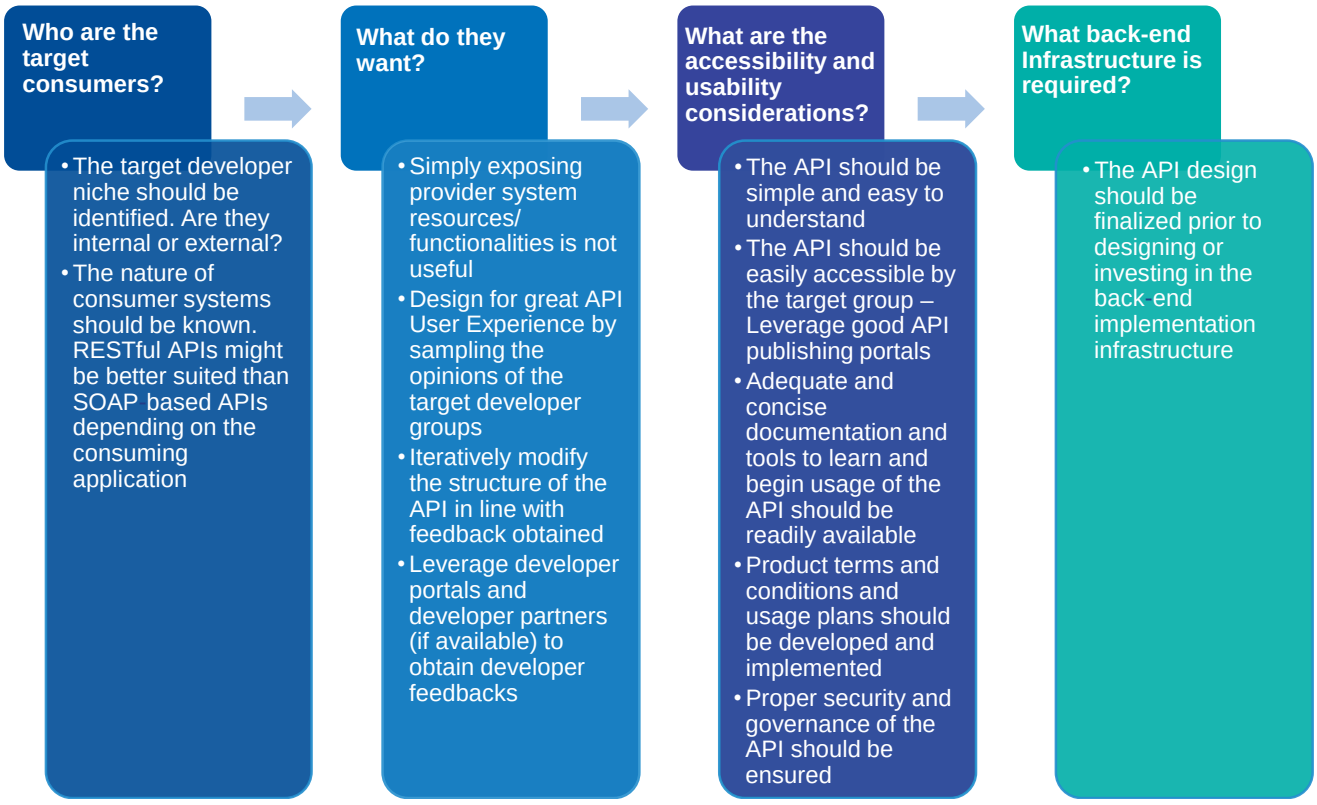
Open API Experience

APIs are more than just a piece of software or program. They are viewed as business products as well as a key enabler for successful digital transformation.

When viewed as a business product, the need to design APIs to meet certain requirements, which in this case are the needs of the users (i.e. the developers who will be developing applications or interfaces to consume them), becomes glaring.

Much like optimizing for UX (User Experience) has become a primary concern in UI development, optimizing for APX (API User Experience) should be a primary concern in API development. An optimal API design enables application developers to easily understand the purpose and functionality of the API so that they can adapt to it quickly and become more productive using it. It also allows organisations to focus on getting API designs right, before investing in back-end infrastructure. If properly designed, Closed (i.e. internal) APIs enhance the productivity of development teams by maximizing reusability and enforcing consistency in new applications, while Open (i.e. public) APIs add value to your business by allowing third-party developers enhance existing services thereby attracting a larger customer niche to the business[44].

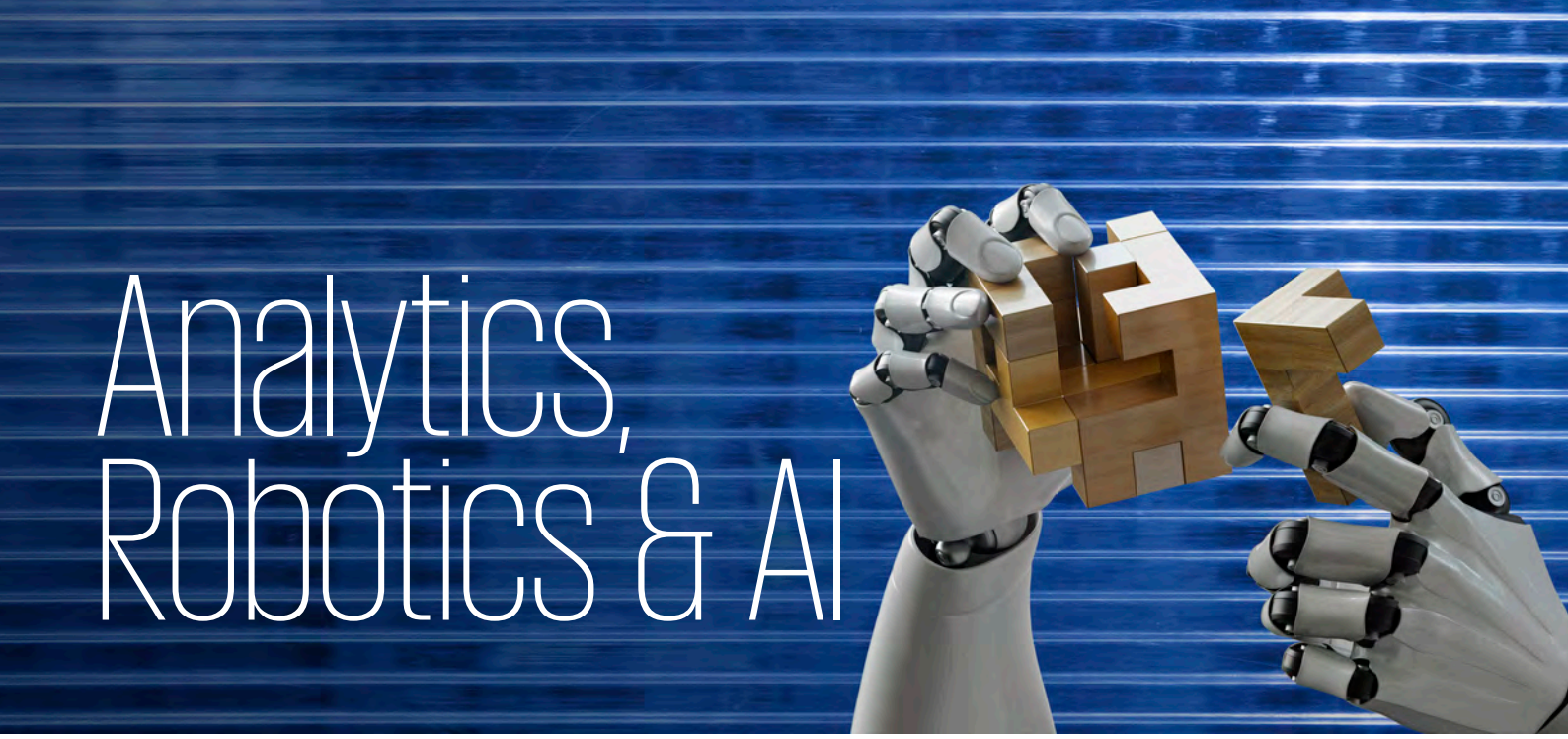
Having developed an API strategy to enable the digital transformation journey, the following schematic provides guidelines for good API User Experience.



Source: Leading Through Digital: Business Models that Exploit the Digital Opportunity, 2017

44. https://www.mulesoft.com/lp/whitepaper/api/secrets-great-api

Analytics, Robotics & AI



Data & Analytics as a Growth Lever

The volume of data generated via digital devices (including sensors and connected devices, billions of mobile phones, etc.) is estimated to double in size every two years. This dynamic, broad and disparate deluge of data generated by people, platforms, and devices requires innovative and scalable technology to gather, host and analyze to extract real-time business insights.

With data storage capacity increasing over time and associated cost falling, Data scientists and analysts have unprecedented storage and compute power at their disposal, and they are developing more complex algorithms and programs. Coupling this with the emergence of Fintech startups (such as Square, Prosper, Paystack, Appzone, etc.) has also stoked both competition and collaboration. The convergence of these trends is disrupting various industries at an alarming pace.

Indeed, a growing number of organisations across several industries have begun realizing the potentials of data and analytics and are therefore harnessing its capabilities to either improve their core operations or launch entirely new business models.

UPS deployed ORION, its proprietary route optimization platform that uses package data, algorithms and custom delivery maps to help drivers determine the most efficient way to deliver packages[45]. The company estimates that the system is expected to save 100 million driving miles annually, with a 100,000 metric-ton reduction in carbon dioxide emissions. That's the same impact as removing 21,000 cars from the road.[45] Global microfinance leader FINCA collaborated with First Access, whose data analytics and credit scoring platform predict the credit risk of borrowers in informal markets, to create the largest and most sophisticated alternative credit-scoring solution by a microfinance institution (MFI) in the world.[46] Also, Tigo Cash Ghana partnered with IFC for a predictive analysis to identify mobile voice and data users that a had high probability to become active mobile money users. This resulted in 70,000 new active mobile money users.

While some organisations are significantly benefiting from their Data and Analytics initiatives, most companies are only scratching the surface and are yet to realize the benefits.

Organisations must act immediately and incorporate big data in its strategies to evolve the relationships with their customers and transform data into an asset.

> **"Organisations are hitting roadblocks in determining which data to collect, in asking and answering the right questions and in getting value from their analytics."**
>
> **- Eddie Short,**
> EMA leader for Data and Analytics at KPMG

45. https://longitudes.ups.com/keeping-up-with-the-customers-sustainably/
46. https://www.fincaimpact.com/news-insights/finca-and-first-access-announce-worlds-largest-microfinance-Fintech-collaboration/

Data & Analytics Trends

The financial services industry has always maintained a rich repository of information on customers' transactions, financial status, income, demographics, etc. But only a few institutions have fully taken advantage of the vast range of data due to various reasons including existing organization structure and silos, legacy infrastructure, skills and talent gap, inability to develop a business case justifying the required investments amongst others.

Conversely, digital native companies were built with an integrated data and analytics core capable of disruption from inception and can circumvent traditional barriers to entry and break into the financial markets at an alarming. It is easier to design new systems and processes anew than to modify or revamp legacy systems, and the top analytics talent tends to flock to organisations that speak their language.

All of these advantages accentuate the need for incumbent institutions to stay vigilant about competitive threats and take a big-picture view of which parts of their business model are most vulnerable.

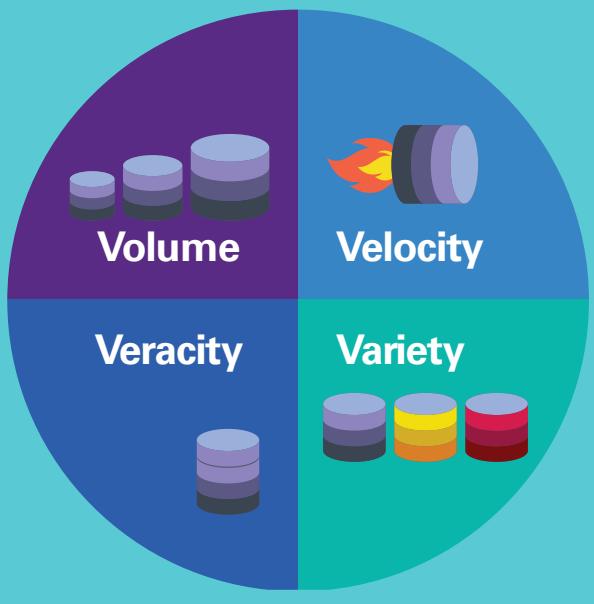
Today, consumers are embracing and getting accustomed to the digital experience offered by analytics frontrunners such as Google, Facebook, Uber, Airbnb, etc. who have differentiated themselves through their data and analytics assets, processes and strategies, Customers have gone from being passive consumers to active creators of content.

Big Data and Analytics

Big data refers to the dynamic, large and disparate volumes of structured, semi-structured and unstructured data gathered from a wide variety of sources including but not limited to social networks, digital images, digital devices (smartphones, tablets, wearables etc.), videos and transaction records. It is typically characterized by the four "V's".

Big data analytics refers to the strategy of analyzing large volumes of data, or big data. The need for big data analytics imposes unique demands on the traditional business systems and conventional data warehouses.

As a result, newer, innovative and scalable bigger data analytics environments and technologies have emerged, including Hadoop, MapReduce and NoSQL databases to amass, host and analytically process the vast amount of data to derive real-time business insights



Source: Extracting business value from the 4 V's of big data. http://www.ibmbigdatahub.com/infographics, accessed on 9th October 2017

Implication for players

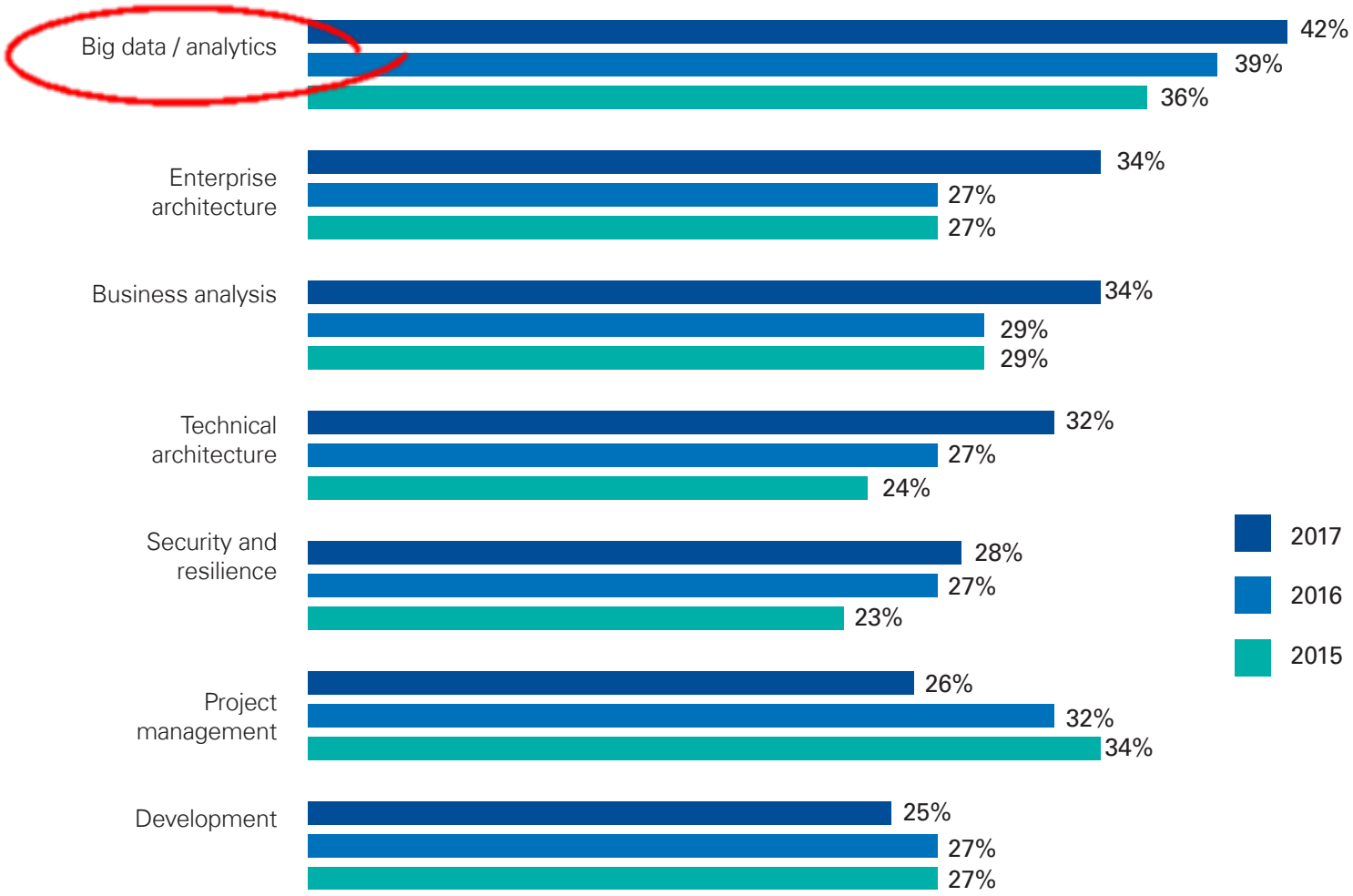
In the coming years, the adoption rate of data analytics will continue to increase in financial institutions and startups alike.

Indeed, it can be argued that the most effective approach will be one of collaboration rather than competition.

Startups have fresh, agile technology solutions with no legacy infrastructure. Financial institutions, by contrast, have the edge when it comes to mitigating risk, depth of data, and navigating regulatory requirements. Using their complimentary capabilities – financial institutions working with, rather than against, startups – could be the real key to success.

Digital disruption will create winners and losers. Winners will be characterized as those with a clear strategic vision, an appetite for customer analytics and technologies, and a penchant for volatile innovation returns. In addition, winners will recognise the material impact digital will have on them. At the end, we see winners embrace digital as an opportunity to better serve their stakeholders rather than as a disrupter.

Data and Analytics remain the most in-demand skill for third year in a row



Source: Harvey Nash KPMG CIO Survey-2017, Data-driven Business Transformation (2017)

Is your Company's Data & Analytics Strategy Effective?

In today's world, leading companies with mature Data & Analytics (D&A) strategies are harnessing the power of data by accessing multiple internal and external data sources and breaking down silos within the organisation as they do so.

They are using sophisticated techniques to produce accurate insights and improve the quality and effectiveness of the analytics solutions they implement.

The explosion of the cloud, wider adoption of open source analytics technologies, and the reality of cognitive computing further enable analysis of complex data streams—even with the volumes of transactional data produced and growing data production via the Internet of Things.

Now is the time to develop an actionable D&A strategy and future state vision that deliver measureable benefits in cost reduction, revenue growth, and risk management.

As discussed earlier, an effective D&A driven strategy can be the key to identifying and realizing competitive advantage.

These four self-assessment questions – which are part of KPMG's strategy driven D&A diagnostic tool- can help evaluate a company's readiness to take advantage of opportunities offered by D&A.

1 **Does your overall business strategy directly connect to your D&A strategy? Does your company measure this connectivity? Is your D&A strategy and this connectivity on your board's agenda?**

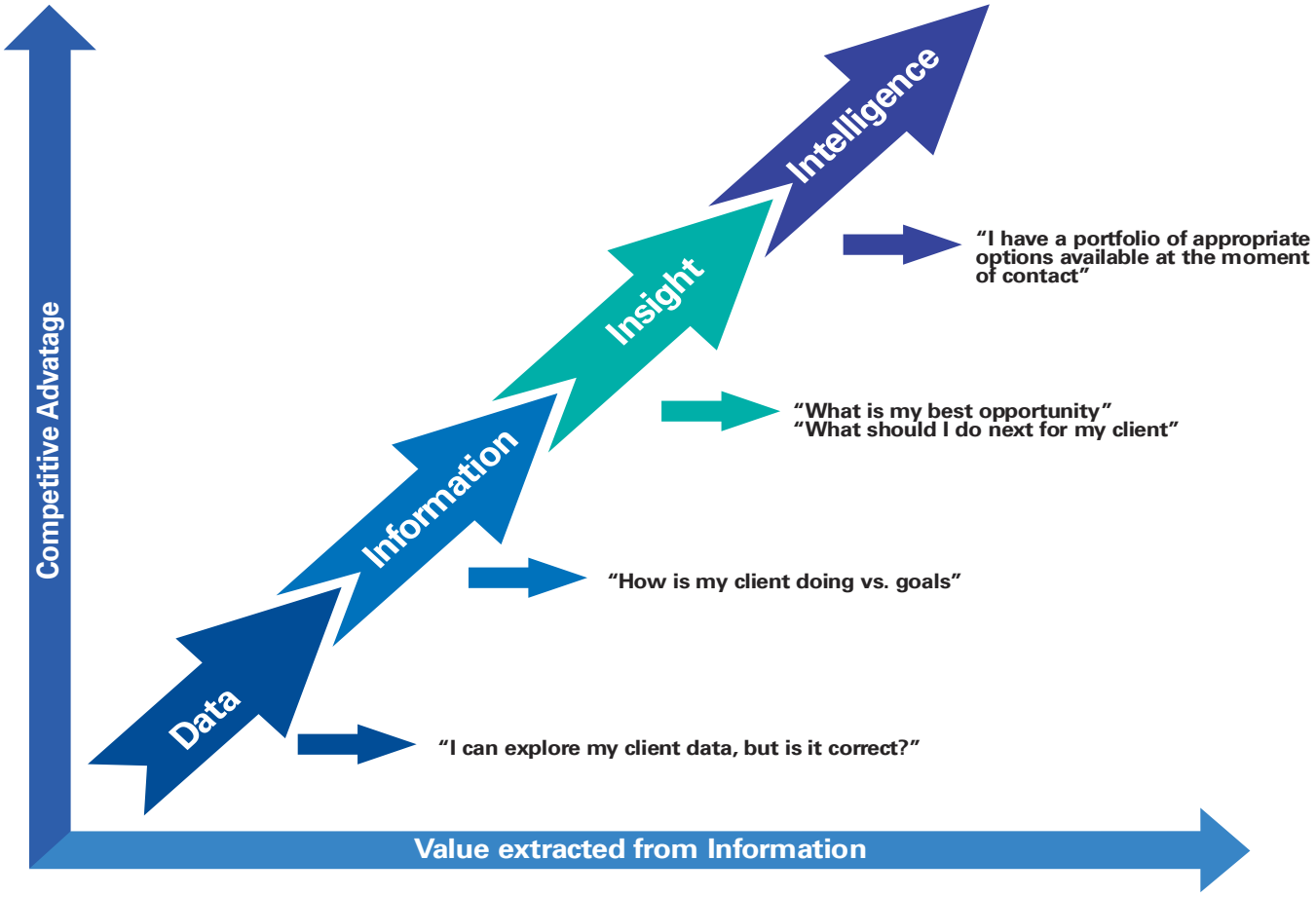
2 **Does your organisation use data and analytics to guide and prescribe decisions, or does it use D&A to justify decisions after the fact?**

3 **Are you waiting for D&A to be more mature before you embrace it? Are you focusing on long cycle technology implementation efforts, or do you have a culture of incremental strategic enhancement driven by D&A and the best use of current capabilities?**

4 **Do you have a clear data monetization strategy that considers using data to (a) reduce risk, (b) enhance revenue, expand markets, (d) optimize processes, (e) design new or enhanced products that can be syndicated and commercialized to adjacent markets, direct customers etc. (f) create barriers to entry or establish switching costs?**

For a given organisation, certain key capabilities will indicate that transformative data initiatives are enabled or under way. These include the ability to:

- Make sense of a broad range of structured and unstructured data and apply that knowledge to business planning, budgeting and forecasting and decision support
- Predict outcomes far more effectively than conventional forecasting techniques based on static historical financial reports
- Provide real-time insights into where the company should invest to close capability gaps and spot emerging opportunities
- Simulate responses to a wide range of events, from everyday market movements to extraordinary 'black swan' events
- Recognize, filter and extract value from financial and operational information to make better business decisions
- Identify competitive advantages to better service customers
- Make predictions – concerning potential fraud, for example – based on complex data patterns
- Create relevant and timely executive dashboards to measure success and drive strategy.



Source: Extracting Business Value from the 4 V's of Big Data. http://www.ibmbigdatahub.com

Robotics & AI

The digital age has forced companies around the world to think of ways to replace human effort with Artificial Intelligence (AI) and robotics. The availability of big data, powerful computing, analytics and AI has made it a reality. An illustration that comes to mind when we think AI are virtual assistants that understands the natural human language and performs a variety of tasks like playing music, controlling smart-home gadgets and proactively make recommendations while growing ever-more efficient at the job by learning from your behavior. Popular virtual assistants include Apple's Siri, Amazon's alexa and Microsoft's Cortana.

Business models across every industry are being transformed by the convergence of Robotics, Internet of Things (IoT) and Artificial intelligence, unlocking massive market opportunities and unleashing great innovation opportunities in a number of industries. It therefore comes as no surprise that these three emerging technologies were voted as the top technologies poised to drive business transformation over the next three years as captured by KPMG Technology innovation survey.

Bringing all these together is the concept of digital labour, which enables a more collaborative and natural relationship between human and machine. Most of the current applications of digital labour involves the automation of repetitive knowledge work by leveraging a range of technologies, including AI, robotics to augment or automate tasks that were traditionally performed by human labour.

From software robots to sophisticated cognitive systems, advances in these automation technologies are changing the game, reducing costs in some areas while improving speed, accuracy, quality, and control. At their most advanced, these technologies can simulate human capabilities such as the ability to perceive an image, infer an intention or context, reason through a probabilistic outcome, and learn from experience.

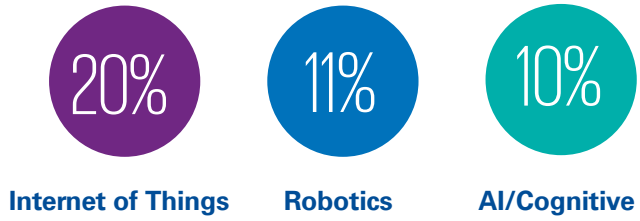
When combined with human ingenuity, they have the ability to transform functions and entire organisations, freeing employees to focus on contributing to innovation, building key stakeholder relations and assimilating insights.

To note:
These technologies interact more naturally and productively in everyday business environments.

Digital labour will leverage analytics and cognitive technology at scale to interpret vast amounts of data from multiple structured and unstructured sources including text, voice and video to carry out repetitive tasks and free up humans to collaborate, innovate and solve problems.

These intelligent technologies can evaluate evidence and be trained in a manner to simulate human reasoning and make or support decisions much like humans would.

What are the top technologies that will drive business transformation over the next three years?



The Internet of Things is massive in terms of data and continues to grow exponentially. **These connected devices are becoming intelligent things.**

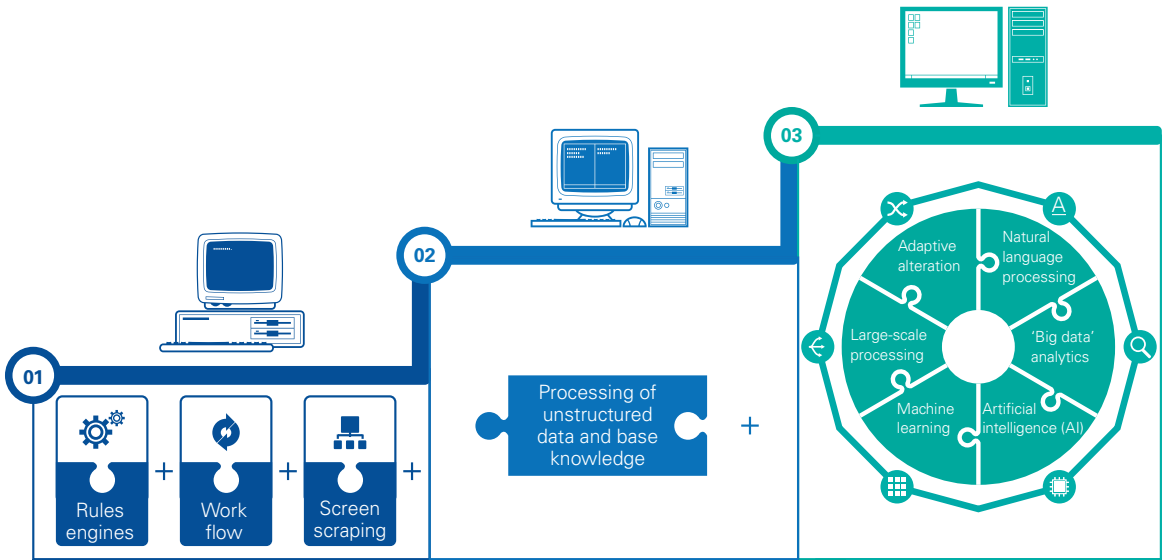
Robotics is enabling enhanced dexterity, intelligence and sensors. Robots are **changing the limitations of what humans can do** including people with impaired mobility.

The next wave of artificial intelligence (AI) is designed to simulate **how a human brain learns, reasons, understands and makes a decision** that results in an action.

Computational power growth in the next five years is creating **unprecedented improvements in data processsing power.**

Spectrum of Digital Labour Automation

It is helpful to have a basic understanding of the three primary types of automation. Each addresses a different target opportunity and leverages tools with differing capabilities.



1 Basic robotic process automation (RPA)

- Macro-based applets
- Screen scraping data collection
- Work flow
- Vision-type building blocks
- Process mapping
- Business process management (BPM)

2 Enhanced process automation

- Built-in knowledge repository
- Learning capabilities (e.g. 'learning assist' by watching and recording)
- Ability to work with unstructured data
- Pattern recognition
- Reading source data manuals (e.g. natural language processing (NLP))

3 Cognitive automation

- Artificial intelligence (AI)
- Teaching versus programming
- Natural language recognition and processing
- Self-optimization/self-learning
- Digestion of super data sets
- Predictive analytics
- Hypothesis generation
- Evidence-based learning

Winning the Robot Race

Consider, for example, the benefits that could be secured by adopting automation within just a small subsection of the finance function. We recently worked with a large insurance client to apply RPA within the account processing function and were able to shorten a three-hour data reporting process down to just 3 seconds. As a result, precious resources were freed-up within the finance function to focus on higher priority and higher value activities.

But that is not all. The company also quickly found that the data – and the insights they received from that data – was much more consistent and reliable. Manual errors had been eliminated, human variation had been removed and a reliable audit trail had been created.

At the same time, improving the processing speed of critical finance data provided the organisation's management with access to more timely information with which to make decisions. And with financial resources now focused on adding value rather than processing, the detail, and insight provided in those reports also significantly improved.

A recent experiment showed how the 'chatbot' behaved by the quality of the data fed into the system. Better quality of data led to better responses to the questions raised during the experiment. The value of cognitive robotics depends on the quality of data and the 'shared truth' in the system which will help unlock the right data from the system.

There is an industry-wide concern around the loss of jobs due to the intervention of robotics. Although unskilled jobs may be lost due to this, there is also a rise in new job profiles such as coding, monitoring, risk analytics, pattern recognition, etc. repetitive tasks which were redundant for employees will be taken over by robots, while most value-adding employees can be retained by imparting them the skills required to perform these new jobs. Displaced employees can be encouraged to perform sales, marketing, cross-selling, upselling and other tasks in the changed scenario, which provides them an opportunity to develop their skillsets and add further value.

It is clear that there is a significant competitive advantage to be gained through the adoption of RPA and cognitive robotics. But the advantages will go to those that start experimenting and implementing programs early.

Based on our experience, here are four quick tips to help CEOs start building their robotics strategy.

- **Take a strategic view:** Don't let the robots proliferate out of control. Start with a strategic view of how robotics will enable the future operating model and ensure that investments support the achievement of these goals. Goals should focus on targeted outcomes, not output.
- **Be realistic about your Capabilities:** Understand your current capabilities and infrastructure limitations. Focus on building capabilities in steps as skills and infrastructure is improved and expanded.
- **Aim for agility:** Create a more agile development environment – both within IT and across the business – and encourage the creation of a 'test and learn' mindset within the organisation.
- **Create smart governance:** Governance is critical to not only the management of data but also the management of the underlying infrastructure. Flexibility will be key as the technology evolves and new use cases emerge.

Cloud Infrastructure

Since cloud computing buzzed its way into the marketplace about a decade ago, it has evolved into one of the most significant paradigm shifts in the digital age. Instead of requiring millions of dollars of upfront capital investment and up to a year to provide a data center, it is now possible to do the equivalent with a credit card and a few mouse clicks within hours or much less. Once a steep barrier to entry, now any size organisation from a single individual to a global, multi-billion dollar enterprise has virtually immediate access to all of the computing capacity it needs, on demand.

Almost all the digital disruption that is occurring today has some form of cloud computing at its core. The availability of very low-cost, on-demand, and easily provisioned Infrastructure as a Service (IaaS) has all but rendered obsolete the need for many organisations to build and operate their own data centers. The growing popularity of Software as a Service (SaaS) has enabled businesses and organisations to directly procure solutions with little or no assistance from IT, eliminating the need for upfront capital and reducing the lag time from decision to value from months or years to weeks or even days. The recent Harvey Nash / KPMG CIO Survey confirmed this global journey to the cloud with the clear majority of respondents planning to make significant investments in cloud services, especially in Platform as a Service (PaaS) which has lagged behind both the SaaS and IaaS models, primarily due to its higher degree of complexity and relative immaturity.

The adoption of cloud computing in emerging African markets is very much on the rise as organisations are seeking avenues to lower operational costs. However, most businesses are wary of cloud adoption as they are burdened with concerns about data security, sovereignty, legal and regulatory compliance, internet broadband downtime amongst other adoption issues.

This appears to be greatly compensated by the cost savings and apparent transfer of cyber risk to the cloud service provider. As a result, several Nigerian institutions have started migrating from the traditional on-premise infrastructure to cloud services such as Microsoft Office 365 email platform. Several companies are also becoming bolder, hosting more of their critical servers and applications in the cloud as part of the digital journey.

Cloud Computing

The Cloud = Internet-based data access & exchange + Internet-based access to low cost computing and applications

In order for any offering to be termed as a Cloud, it should have five (5) essential characteristics, at least one of the three (3) service models and four (4) cloud deployment models as follows:

Characteristics =	On Demand Self-Service	Internet Accessibility	Pooled Resources	Elastic Capacity	Usage-Based Billing

Cloud Service Models

Software as a Service

Business operations over a network

"SaaS"

Platform as a Service

Deploy customer created applications to a Cloud

"PaaS"

Infrastructure as a Service

Rent processing, storage, network, and other computing resources

"IaaS"

Cloud Deployment Models

Private

Operated for single organisations

Community

Shared by several organisations, supporting a specific community

Public

Available to the general public or large industry group, owned by an organization selling cloud services

Hybrid

Two or more Clouds that remain unique but are bound by technology that enables data and application

The Cloud Opportunity is about Agility, not just Cost

There is little doubt that the explosion in Fintech innovation in startups is changing the financial services playing field, allowing savers and borrowers to bypass traditional banks with, for example, new smartphone apps and website loans. Many of these new services are built in the cloud, and the established institutions are not naive to the opportunity it presents for innovation.

Data from the 2016 Harvey Nash / KPMG CIO Survey confirms that cloud is poised for mainstream adoption and even more rapid growth (see below). Consequently, when CIOs were asked about their top reasons for adopting cloud computing, saving money only came in third. This indicates that rather than looking for immediate cost savings they are now taking a longer-term and more strategic perspective. The top three reasons for adopting cloud include:

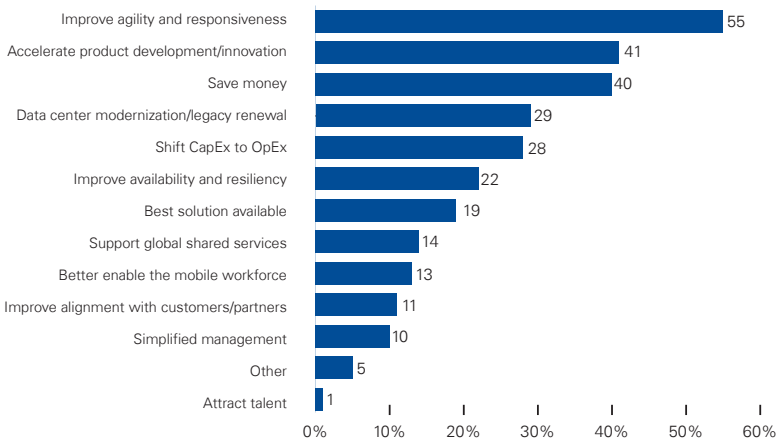
— Improve agility and responsiveness. To remain competitive, organisations need to be able to respond quickly to marketplace changes and customer demand. Using analytics to better understand customer experience, they need to be able to adapt products and services, marketing programs, and other elements based on what they learn. For example, an increasing number of online ads are customized for the users based on their past behaviours.

— Accelerate product development / innovation. Digital disruption has accelerated product lifecycles and significantly reduced barriers to entry in many industries. It is not uncommon for product lifecycles to be measured in months or even weeks, not years. As a result, time to market is the new value driver for business, and with technology underpinning all core business processes, they expect the same from IT. For example, Amazon's Echo and Google Home are innovative products that would not be possible without the cloud and its big data sets and raw computing power.

— Save money. It may not be top on this occasion – but it is always important. Organizations not only need to be innovative and fast, they must minimize cost and optimize margin at the same time to sustain their ability to continue to invest.

Coming in fourth place was data center modernization/ legacy renewal, highlighting that while everything digital gets most of the visibility, there are years of technical debt that must be paid down to optimize investment in digital transformation. If systems of engagement and insight can't easily integrate with the core systems of record, overall value will be constrained and competitiveness impaired.

Top reasons for adopting cloud computing



Source: Harvey Nash / KPMG 2016 CFO Survey

Cloud's Complexity Remains Challenging

Choosing cloud services means having to make decisions about service models (IaaS vs. PaaS vs. SaaS), delivery models (public vs. private vs. hybrid), location (on-premise, off-premise dedicated, off-premise co-located) and then navigating an ecosystem with hundreds of vendors supplying the components that must be stitched together to provision a workable solution. Also, factoring in the existing IT estate, data centers and legacy applications, these often represent a significant capital investment reflected in the organisation's balance sheet. It is no wonder that CIOs encounter many barriers when adopting cloud, ranging from compatibility and integration issues with existing systems to legal and regulatory compliance.

01. Suitability for Cloud

Many legacy systems have architectural limitations, are tightly coupled to their infrastructure, or have other constraints that prevent them from being easily migrated to the cloud. They will either need to be replaced or re-written at significant time and cost.

02. Data Loss & Privacy Risks

Using public cloud means putting customer data outside the internal network and in a location that is not always obvious. Concerns arise over the ability of cloud providers to protect the data and keep it segregated from other companies.

03. Legal & Regulatory Compliance

Different countries and different industries have varying approaches, which has an impact on where cloud computing resources are located, where data is stored, how it is transmitted, who has access, and who controls it. The large cloud providers are investing significantly to expand their geographic footprints to be able to meet these diverse requirements.

04. Cloud Governance

Decision rights about when, where, and how to use cloud need to be identified and enforced. The availability of SaaS solutions has enabled business users to procure technology solutions without involving IT directly. This independence can be a benefit, but it can also create serious risks and other problems if not controlled. Striking a balance to ensure the protection of the enterprise without putting up barriers that slow decision-making and prevent the business from seizing opportunities is challenging but must be addressed.

05. Making the Business Case / ROI

Over the years, organisations have made considerable investments in data centers, filling them with servers, storage, and networking equipment to support their applications and services. These investments often represent a substantial asset on their balance sheet. Moving these workloads to the cloud would require one-off migration costs and a write-off of outstanding balances which could eliminate any cost-benefit and invalidate the cloud business case.

Keys to Unlocking Cloud Value

Today's reality is that for the foreseeable future, most large enterprises will need to acquire and support multiple private and public cloud platforms, services, and solutions, and integrate them with existing infrastructure, applications, and data in a hybrid approach. Organisations migrating everything to the public cloud are rare today, but that will change as public cloud offerings mature. We propose three keys to managing the complexity and risk to unlock value in this complex environment.

Adopt an enterprise-wide cloud strategy

Many organisations are now taking a cloud-first approach when implementing new solutions but unless it is a startup with a zero IT footprint, becoming a cloud-first company is a long journey. Given that cloud solutions, especially SaaS, are often sold directly to the business and can be procured quickly and with little upfront costs, it doesn't take long for organisations to accumulate significant pockets of shadow IT services from multiple cloud providers. This flexibility creates more complexity, escalates costs from duplication, and making it difficult if not impossible to ensure compliance with internal policies and external regulations.

An enterprise-wide cloud strategy explicitly strikes a balance between observing organisational priorities and policies with individual business stakeholder requirements. At a minimum the strategy should address: when it is appropriate to use public versus private cloud; when it is appropriate to use off-premise versus on-premise; where different types of data can be physically stored and accessed; which cloud providers, services, and solutions are pre-approved; and the process for procuring cloud-based solutions. A significant driver of the cloud strategy is a detailed workload assessment for all existing and currently planned applications. The assessment will identify which applications can be immediately migrated to the cloud, which applications will require re-work to move to the cloud, and which applications are not suitable for a cloud environment.

Integrate effective cloud governance

With hundreds or even thousands of existing workloads to consider and new demand for capabilities to drive digital transformation on top of that, cloud governance must strike a balance between protecting the enterprise and optimizing cloud value across the entire organisation - while not creating barriers that slow down or prevent the business from obtaining the technology enablement it needs to remain competitive, or, worse, leading to a multitude of "shadow" clouds.

Cloud governance should address the following:

— Strategic guidance – leads to a formal strategy and roadmap

— Enterprise architecture & technology – adapts existing architecture and technology policies for cloud

— Procurement, contracts, and legal – sets out policies for how cloud services will be acquired and managed

— Security, privacy, and compliance – establishes policies around security, data privacy and location, and regulatory compliance

— Operational policies – establishes who has access, how cloud is consumed, managed and monitored.

Several cloud governance bodies will be required to develop, monitor and evolve cloud governance over time. These must, at a minimum, include a cloud governance steering and a cloud operations committee.

Deploy an integrated consumption platform

Hybrid IT environments are enormously complex and extremely challenging to manage. Since the market for orchestration solutions is immature and no single orchestration product is a silver bullet, we recommend developing a consumption platform instead. A consumption platform is a holistic set of capabilities for multi-modal service consumption (independent of deployment model).

The current market is filled with traditional heavy orchestration providers (high touch, custom coding/scripting, lock-in) with proprietary solutions that fail to deliver the end-to-end automation of all the hybrid components while "light" orchestration products born out of the open source market are evolving rapidly.

Light orchestration with embedded inline and out-of-band policy governance is required to manage future demand for cloud services and agile workloads securely. In-line governance means that compliance is embedded within orchestrated provisioning processes while out-of-band governance means that compliance is assessed continuously post-deployment. Rather than just focusing on orchestration as a "silver bullet", the consumption platform is a composite of commercial off-the-shelf (COTS) and engineered/open source components. It typically comprises three to four core tools with eight to twelve key integration points. There is no single mature end-to-end solution currently available in the market. The consumption platform contains tools and processes in four main categories including:

— Management & control – a set of tools for API management and integration, metering & chargeback, performance management, analytics and reporting, and a self-service catalog

— Orchestration – a set of tools for workflow management, policy enforcement, template & configuration management, agile pipeline integration, and provisioning

— Identity – tools for identity integration, auditability, authentication, and authorization

— Security & Governance – tools and processes for cryptography, data management, vulnerability management, and continuous compliance & configuration management

The Innovation Ecosystem

As organisations grapple to keep up with advances in technology and the ever-changing needs of the customer, they often get bogged down in looking for ways to improve upon their current models, products, and processes. The pace of internal innovation can be enhanced by tapping into external catalysts and engaging with a cross-section of industry stakeholders.

Tapping into a broad entrepreneurial network

Innovation hubs are sprouting in pockets around the world from New York to Tel Aviv, the Netherlands to Hong Kong and elsewhere. Although each offers a unique community, they bring startups and entrepreneurs together with government groups, regulators, academic bodies and established institutions under one roof.

Level39 in London's Canary Wharf district is one such hub. With a vision to nurture high-potential technology companies in an optimum environment, it provides office, event, and social facilities, and convenes important constituents of the financial services industry to accelerate innovation.

Level39 has provided a helpful platform for financial institutions, regulators, government, investors, mentors and tech startups to collaborate on innovation and foster a nurturing ecosystem. For example, the UK Chancellor has used Level39 to launch pioneering policies for financial innovation with regard to digital currencies, the blockchain, Fintech and alternative finance providers.

Incubating ideas to address customer gaps

As a key member of this network, companies can help direct innovation to address both organisational issues and customers' needs and wants, and leverage solutions that best fit their mandate. This has been attractive to various institutions from across the globe.

Singapore's DBS Bank wanted to better serve the credit needs of its small business customers, a constituency that alternative lenders and Fintechs threaten to take from traditional banks. Through their partnership with Level39, DBS discovered AMP Credit Technologies' new platform that electronically verifies cash flows. Striking a deal with AMP, DBS Bank has brought the new solution in-house to launch mLoan, a product that provides short-term unsecured capital loans up to SDG100,000 to small businesses that do not have audited accounts and personal income statements readily available.

"Leveraging advanced credit and data analytics, we are able to design a working capital loan for these small businesses that might otherwise be under-served," explained Joyce Tee, Regional Head of SME Banking at DBS Bank.

Accelerating innovation together

In addition to advancing individual innovations, the technology hub also aims to develop innovative capabilities that are necessary to address broad, industry-wide issues.

Australia's innovation hub, Stone & Chalk, has a growing membership base of 85 startups and 250 entrepreneurs and partners that include American Express, ANZ Bank, and Credit Union Australia. To leverage its community to help tackle cybersecurity, Stone & Chalk, together with co-host Data61 and partners KPMG and the Australia-Israel Chamber of Commerce, held a one-day cybersecurity summit that gathered industry experts from financial companies along with innovators, government bodies and research organisations to examine core challenges, assess gaps and explore opportunities.

Establishing new ways of working

Such broad collaborations, as well as those more individual ones offered by innovation hubs, can connect your company with a community that offers a catalog of leading-edge ideas and solutions. However, these innovations can only progress from inception to reality with access to more agile models, technology, and tools. They also require a culture open to continuous learning and development made possible through formalized coaching, feedback, and reflective practice sessions to define new ways of working those benefit innovators, corporates and others alike.

Digital leaders are more focused on innovation and growth than other organisations. At digital leaders, the number one business issue that the board expects IT to address is "developing innovative new products and services" while non-leaders are much more focused on costs (see Table 1). This focus is also driving leaders' investments in cloud, as their number one reason for using cloud is to accelerate product development and innovation (43%), nearly a third higher than non-leaders (32%).

Table 1:Top three key business issues that the management board expects IT to address

Leaders	Rank	Others
Developing innovative new products and services	1	Saving costs
Increasing operational efficiencies	2	Delivering consistent and stable IT performance to the business
Saving costs	3	Increasing operational efficiencies

Innovation does not just happen. It requires a culture that values and promotes it. Digital leaders are more focused on fostering innovation within their organisations. They are more likely to dedicate time for innovation opportunities, set up incubation labs where business and IT can jointly explore disruptive technologies, as well as prototype and pilot potential solutions. They are also more likely to have a dedicated innovation budget to ensure that funding for innovation is protected and does not have to compete with other alternatives (see Figure 3). The result is that they are four times more likely to be very effective at fostering innovation than others.

Several opportunities are available for companies to source innovation. These include Incubators, Accelerators and Innovation Labs.

Incubators provide services to startups such as marketing, legal advice, accounting, branding, office space, etc. These services are offered at discounted prices or in some instances as equity in the startup. These startups typically spend 3-5 years with the incubator.

Accelerators are cohort or class-based mentorship programs. They are highly competitive, fixed-term with short incubation period (typically 3-6 months). They usually culminate in a pitch / showcase. Some companies have successfully launched and leveraged corporate accelerators to achieve objectives such as:

- Boost marketing by positioning themselves as innovative and relevant in this age of disruption
- Scan the market for insights into potentially disruptive technologies, business models, as well as investment opportunities to remain competitive
- Build communities of interest through involvement in the startup ecosystem
- Innovation Labs help with internal innovation sourcing for the purpose of developing digital solutions to enhance a business.

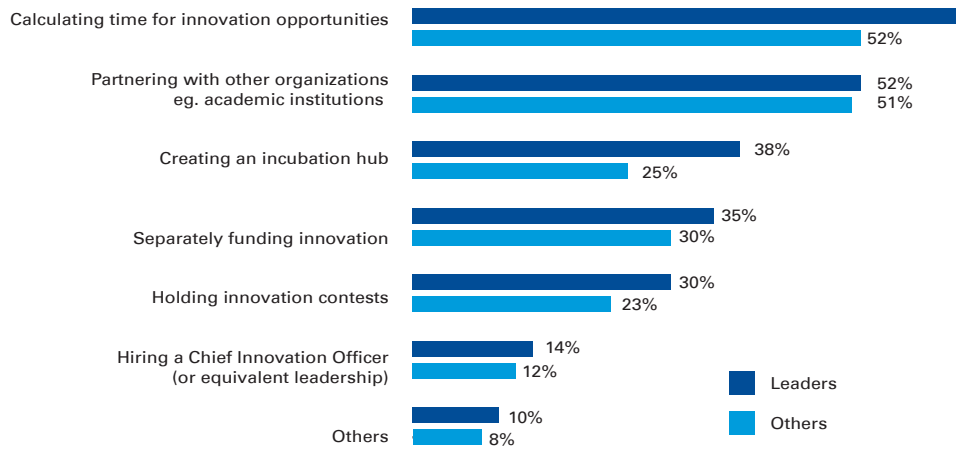


Figure 3: Fostering Innovation

Incubators, Accelerators & Innovation Labs

	Incubation Hub	Accelerator	Innovation lab
	Ideate	*Scale*	*Ideate & Scale*
Concept Definition	Incubators "incubate" ideas, they provide a space for Fintech to work, provide mentoring and structured services, and in some cases a financial investment	Accelerators are fixed-term, cohort-based programs that scale Fintech solutions for the market place by providing technical support, mentorship, educational support and access to network opportunities	Innovation labs are typically the internal digital factories for organisations They source innovation, develop innovation and push it into the Bank's production environment.
Key Differentiators	• Focus less on commercial scale ups • Timeline of hub activities is open • Long term solutions in planning • Small scale investments required	• Focus on commercial scale up of start ups • Accelerators work with a rigid timeline • Focus more on immediate pain points being addressed • Small to medium scale investments required	• Large scale commercialisation of solutions developed with higher priority • Fixed timelines for each idea mooted • Innovation is consumed by the Bank
Operating Models	**Ecosystem Driven** **Accelerator Program** / **Venture Funding** / **Digital Entity**		Organisation Centric
Some Global Players	Alchemist Amplify LA Angelpad MuckerLab StartX Techstars Plug And Play	Y Combinator	
Some Local Players	Co-creation Hub Passion Incubator 440NG L5LAB Wennovation Hub		

5.0 Regulatory Agenda

Governments and regulators have begun to realize the important role that digital plays in delivering social and economic benefits. **The economic potential of digital innovations is reinforced by the size of venture capital investments going to major digital hubs,** e.g. Fintechs. According to a report by Partech Ventures, African Tech Startups raised over $366 million in 2016 out of which about $205 million (56%) went into Fintech/ financial inclusion segment.

With many countries competing to position as the world's leading financial centre and digital innovation hub, governments and regulators are increasingly recognizing that they have a significant role to play in driving and enabling sustainable digital innovation. They see a need to ensure that the digital ecosystem evolves for the good of consumers, businesses and the economy at large.

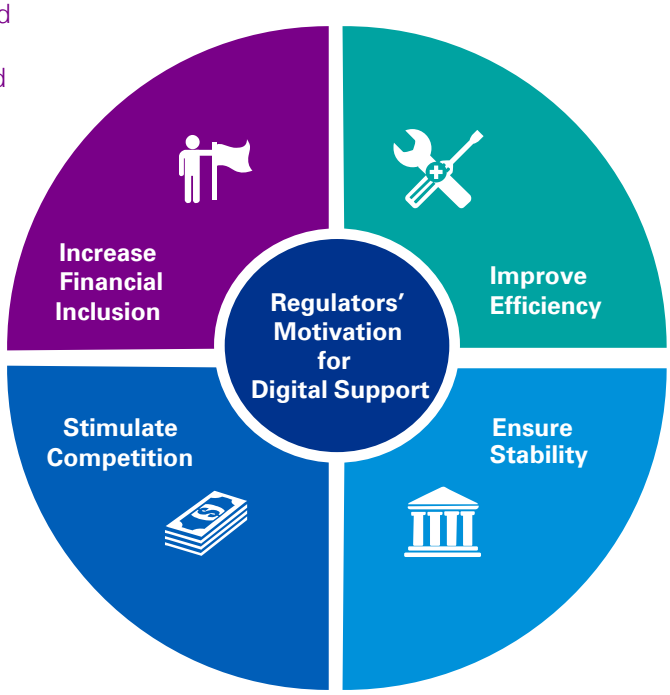
Some regulations are emerging to reduce the regulatory hindrances associated with digital growth. In 2016, the UK initiated the creation of Fintech bridges with Australia, Singapore, and China and announced plans for the establishment of similar collaboration with Belgium and Canada in 2017.

Despite the convergence in the realization of the digital potential, divergent regulatory priorities and customer needs will ultimately lead different regions down several distinct paths. While regulators have taken different approaches towards the regulation and enablement of Digital, their motivations are broadly categorized along four (4) primary goals:

- financial inclusion
- efficiency improvement
- stimulating competition
- ensuring stability.

New opportunities to expand the reach of digital products and services to the excluded population by providing solutions through which the financially-excluded or underserved population can gain safe access to basic or improved financial products and services.

Regulators are stimulating competition through the authorization and licensing of new entities (e.g. challenger banks). Initiatives like Open API are also driving competition.



Exploring efficiency improvement opportunities for general industry utilities such as (Anti Money Laundering, Digital Identity Management, etc.) by leveraging emerging technologies such as Open API, Data and Analytics, Artificial Intelligence, Cloud Computing and Digital Currencies.

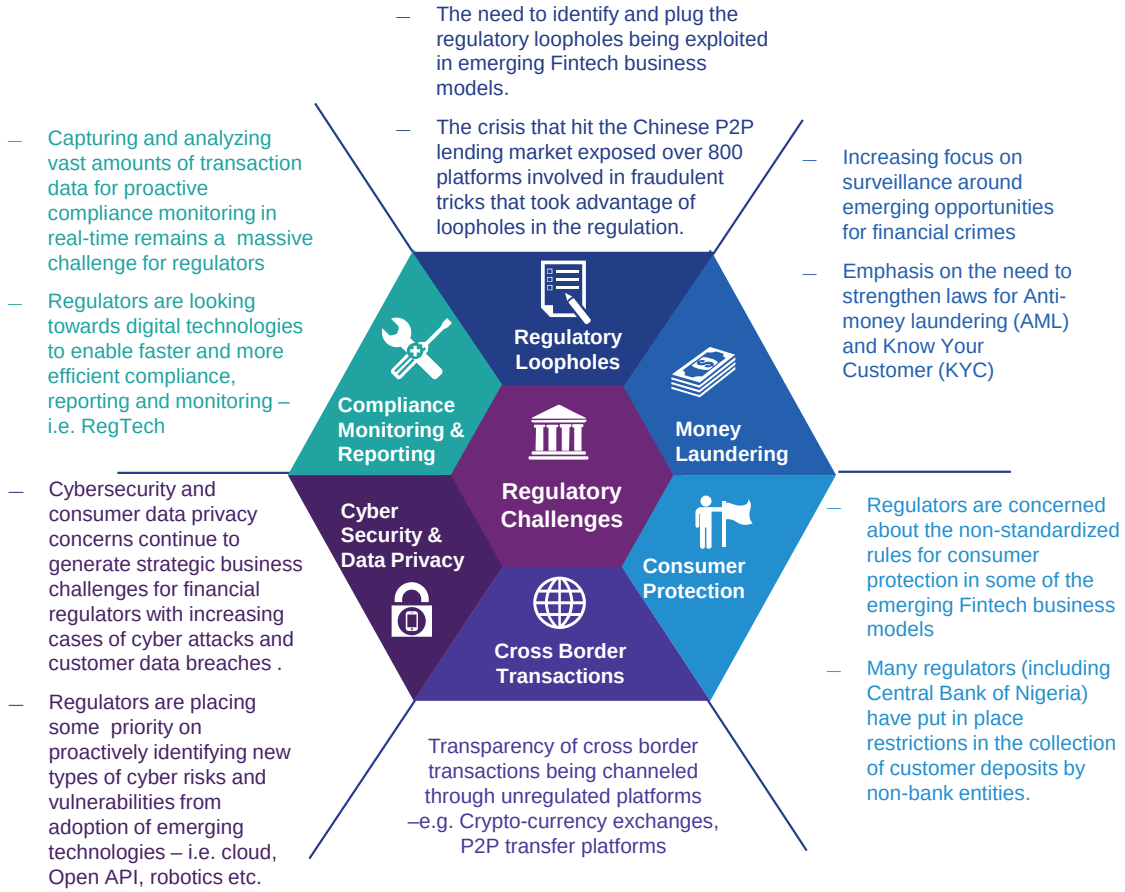
Regulators wish to ensure the stability of the digital ecosystem as a whole by managing any emerging bubbles and potential systemic risks. Core areas of interest in this regard include use of technology to gain a clearer line of sight on emerging risk and automation of compliance – RegTech.

Sources: The Complex Regulatory Landscape for Fintech - An Uncertain Future for Small and Medium-Sized Enterprise Lending (World Economic Forum, 2016), VC funding raised by African tech startups (Partech Ventures, 2017)

The Emerging Digital Regulatory Challenges

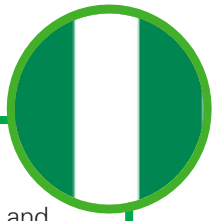
While regulators appear to join investors in embracing the benefits of financial technology innovation, they also acknowledge the new dimensions of risks and challenges with the emergence of digital business models, especially as it relates to risks that may impact the customer and the overall stability of the financial system. Lessons from recent incidents such as the problems with P2P lending schemes in China have reinforced the need for regulators to pay more attention to the sector. These issues range from the loss of over US$7.6 billion of investors funds on Ezubao's P2P lending platform in 2015 to the more recent concerns about the sustainability of the alternative lending platforms based on sub-prime/ high-risk lending.

In recognition of the potentially disruptive forces of Digital, regulators are actively pursuing appropriate oversight mechanisms to ensure "responsible innovation is achieved". However, regulators globally understand that the approach to regulation and supervision for Digital has to be one that does not stifle innovation and therefore has to be light touch while ensuring that critical risks are appropriately mitigated or managed.



Sources: The Rise of 'RegTech' and Why it's the Next Big Thing in Banking (World Economic Forum (WEF), 2017), The Complex Regulatory Landscape for Fintech - An Uncertain Future for Small and Medium-Sized Enterprise Lending (World Economic Forum (WEF), 2016)

Local Regulatory Outlook



- The Central Bank of Nigeria (CBN) currently plays a significant role in ensuring financial system and price stability.
- CBN encourages innovation in financial services but believes that players need to be subjected to regulatory controls of the Apex Bank to ensure a stable financial ecosystem.

"As part of initiatives to enable innovation in financial services, CBN has embarked on various initiatives, including:

– Establishment of the "Empower Fintech Startups Initiative," in collaboration with the Nigeria Inter-Bank Settlement System (NIBSS) – an initiative aimed at creating an enabling environment for Financial Innovation in Nigeria

– Establishment of the BlockChain Committee to develop guidelines, communication and use cases for Blockchain and Crypto-currency in Nigeria

– Collaboration with multilateral organisations to develop regulatory frameworks for Fintech in Nigeria. The Central Bank of Nigeria, along with other stakeholders (Bill and Melinda Gates Foundation, NIBSS, Venture Garden Group and Lagos Business School) recently visited Jakarta, Indonesia to explore opportunities in this regard.

– Collaboration with NIBSS for the creation of a sandbox and Open API, to enable innovation. The Sandbox initiative is aimed at providing a safe environment for Fintechs to access financial services via NIBSS Open APIs, experiment and test their products under the guidance and supervision of NIBSS. The Sandbox is expected to facilitate the regulatory licensing and approval process for successful and market ready Fintech solutions.

– Sponsorship and promotion of events – e.g., Card Expo Africa and the International Conference on Payment Systems (planned for 2018).

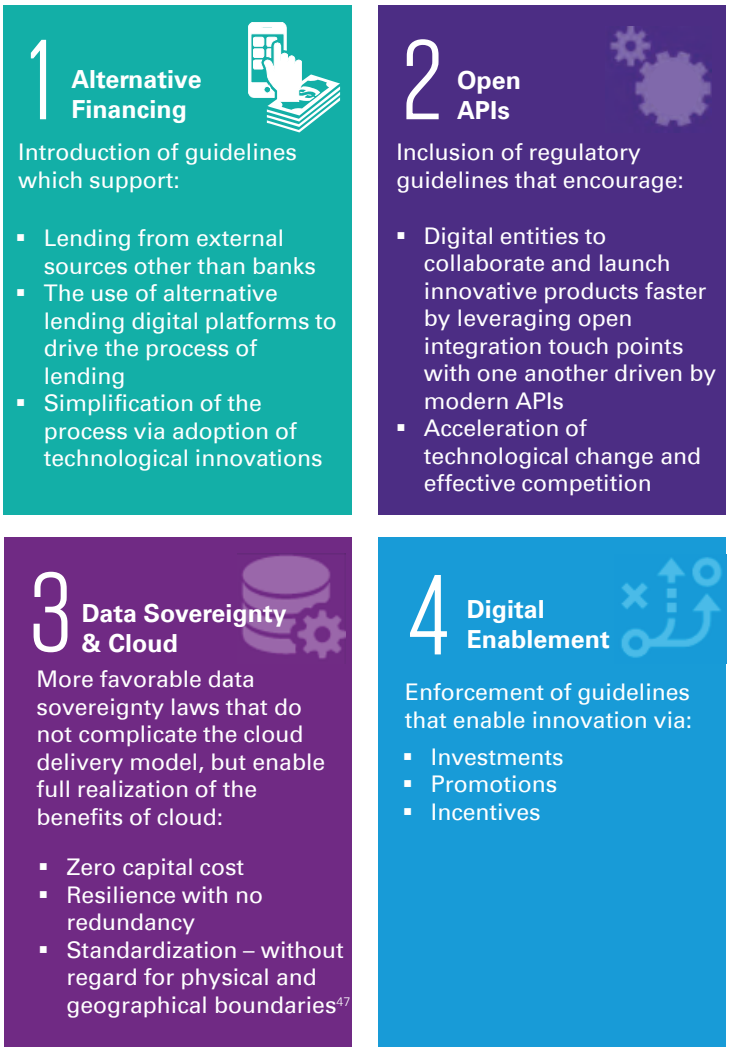
– Encouragement of Fintechs operating within the country to come together under an umbrella association (Financial Service Innovators) which will be responsible for driving policy advocacy, education, support, market intelligence, guidance and incubation of new entrants. This body is also expected to collaborate with the regulator to promote Fintech innovation in Nigeria, through relevant events and programs.

- In addition to the above, CBN is also collaborating with other financial services regulators and supervisors (such as Securities and Exchange Commission (SEC), National Insurance Commission (NAICOM), Nigeria Deposit Insurance Corporation (NDIC), National Pension Commission (PENCOM)) on matters that impact the entire financial services industry. Outside of Nigeria's shores, the CBN is also leveraging existing inter-regulatory collaboration arrangements to ensure that it keeps abreast of developments and emerging regulatory policies. Regulatory partners in this regard include – Bank for International Settlement (BIS), Federal Reserve Bank (US), Federal Deposit Insurance Corporation (FDIC) and BCEAO (Senegal).
- It is still early days for the CBN as far as putting in place formalized structures and guidelines for Fintech regulation and enablement. However, the apex bank is rapidly working with stakeholders to create an all-encompassing agenda to drive innovation in financial services while ensuring the stability of the financial system and appropriate consumer protection considerations."

— Dipo Fatokun, Director of Banking & Payment System, Central Bank of Nigeria, September 2017

The Four-Point Regulatory Agenda for Digital

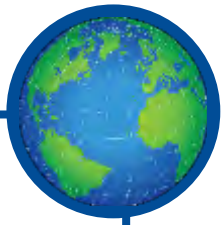
As investments in digital accelerate and more Fintechs and startups emerge, we see a need for a Regulatory Agenda to enable and shape the emerging digital landscape. We recommend a focus on four (4) distinct priorities viz:



47. https://techcrunch.com/2015/12/26/the-clouds-biggest-threat-are-data-sovereignty-laws/

The Four-Point Regulatory Agenda for Digital

Global Regulatory Outlook



1. Alternative Financing

- The Monetary Authority of Singapore (MAS) published a consultation paper setting out proposals and clarification to facilitate access by corporates to alternative sources of funding through securities-based crowdfunding. MAS has been studying how to facilitate SCF as it can potentially offer an alternative source of financing for startups and SME[48].
- In terms of P2P lending, the Australian Securities and Investments Commission (ASIC) requires investors to consider P2P lending platforms as managed investment schemes. These platforms therefore will need an Australian Financial Services License (AFSL)[49]. The Crowd Sourced Funding bill allows unlisted public companies to raise funds on licensed crowdfunding platforms.
- UK's Financial Conduct Authority (FCA) introduced the Innovative Finance ISA for loans arranged via P2P platforms in April 2016. In particular, crowd funding platforms need to comply with Client Assets and Money regulations (CASS).
- The Malaysia Securities Commission (SC) introduced the regulatory framework for P2P lending in May 2016, setting out the requirements and obligations for P2P operators in the revised Guidelines on Recognized Markets (Equity Crowdfunding/Peer-to-Peer Financing). The development of equity-based crowdfunding is outlined in the 11th Malaysia Plan which encourages the use of this method to increase fundraising options for startup companies or SMEs.
- In China, the Administrative Measures for the Online Payment Business of Non-bank Payment Institutions stipulates that third party platforms are required to be licensed, and with a narrow scope of permitted activities. Also, the Interim Measures for the Administration of the Business Activities of Online Lending Information Intermediary Institutions limits the scope of activities for online lending information intermediaries, including prohibiting them from direct lending as platforms. In addition, the borrowing balance of an individual must be no more than CNY200,000 (~$30,000) from an online lending platform and no more than an aggregate amount of CNY1 million (~$150,000) across all licensed platforms. Furthermore, an online lending platform is required to hold any funds received from borrowers or lenders in a segregated account of qualified banks. However, Equity-based investment via crowdfunding models remains illegal and this severely restricts the development of equity-based models, limiting online equity-based platforms to online private placement without permitting general retail investors to participate.

2. Open APIs

- UK's Competition and Markets Authority (CMA) requires banks to implement Open Banking by early 2018, to accelerate technological change and enable effective competition. This includes a requirement for the nine largest current account providers to make available to authorized third parties:
  - Standardised product and reference data;
  - With customer consent, secure access to specific current accounts to read the transaction data and initiate payments.

This information will be shared through an open Application Programming Interface (API) framework which will prioritize customer protection.

- Canada's department of finance said that it would investigate the merits of following the UK and Europe in pursuing an open banking model, making it easier for people to let third parties access their banking data[50].
- Through PSD2, European regulators are shaping the future collaboration between the big banks and the smaller agile players - with the Access-to-accounts (XS2A) provision, banks now have to build open APIs to provide third parties access to their customers' account information, thus kick-starting the digital ecosystem for financial services[50].

48. http://www.mas.gov.sg/news-and-publications/media-releases/2015/mas-sets-out-proposals-for-securities-based-crowdfunding.aspx
49. https://www.moneysmart.gov.au/investing/ managed-funds/peer-to-peer-lending (6 April 2017)
50. https://www.paymentsuk.org.uk/policy/payments-CMA-remedy-phase1/temporary

The Four-Point Regulatory Agenda for Digital

PSD2 – A Bold Regulatory Step

PSD2 is the revised version of PSD (Payment Services Directive) – regulation which was adopted in 2007 and provided the foundation for a Single Euro Payments Area. It entered into force in January 2016 and will apply from January 2018. The key drivers for PSD2 are technological – since PSD was launched in 2007, new players and new technologies in the payments industry have emerged which were not regulated under PSD. PSD2 aims to catch up with the fast technological advances and to further stimulate Europe's Fintech industry. The regulators want to level the playing field between the banks and the new entrants and "open up" the EU payments market by requiring banks to allow third-party access to their customers' account information.

Let's take a look at the new payment service providers - Payment Initiation Services Providers (PISP) and Account Information Services Providers (AISP). PISPs help customers make direct credit transfers from their online payment account for online transactions (thus eliminating the need for credit cards) and AISP are account information aggregators, consolidating different current accounts for customers, but could also provide financial management tools for those accounts. Under PSD2, banks (or Account Servicing Payment Service Providers - ASPSPs) must provide secured access to their customers' account information when those customers decide to use the services of PISP or AISP. Even though the regulation does not specify the exact information to be shared, it does mention it must be only the information necessary to execute the services.

Through PSD2, regulators are shaping the future collaboration between the big banks and the smaller agile players - with the Access-to-accounts (XS2A) provision, banks now have to build open APIs in order to provide third parties access to their customers' account information, thus kick starting the ***digital ecosystem for financial services.***

Banks are to make a strategic choice where in the new ecosystem they will like to position themselves

Lessons for Nigeria

In Nigeria, the current approach that has been adopted by Fintechs to get integrated with Nigerian banks is "one-to-one" integration - not by consuming an existing bank API, but by setting up a server within the bank's internal network to integrate with the payment engines at their end. Fintechs (like InterSwitch) and other entities (like the Nigerian Inter-Bank Settlement System Plc.) adopt this approach.

The downside to this approach is that it is cumbersome. It will be more complicated and discouraging for new Fintech startups, who will then have to spend a significant percentage of their resources on integration in the early stages instead of focusing on their products. Another not so favorable option might then be to integrate with Fintechs who have presence in the banks, in which case they incur a further revenue cut by way of revenue sharing.

mVisa was able to quickly penetrate Nigeria following their official launch in July 2017 because of the existence of mVisa APIs which enable banks easily integrate to them and get the product running. By so doing, mVisa has not put itself on the verge of a loss, but on the path to more revenue powered by Open APIs. In the same vein, such benefits can be enjoyed by both Fintechs and banks, if both parties were to embrace Open APIs.

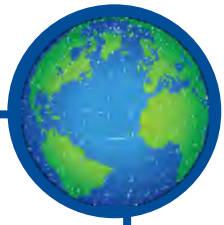
While many other Nigerian banks are looking to expose their APIs only to startups and companies working closely with them, GTB has already taken the lead here by opening up some of its APIs to the public[51].

Regulations like PSD2, if implemented in Nigeria, will go a long way to spur the required level of innovation that will transform the financial services landscape.

51. https://developer.gtbank.com/

The Four-Point Regulatory Agenda for Digital

Global Regulatory Outlook



3. Data Sovereignty & Cloud

- Japan's amended Personal Information Protection Act (New PIPA) to become effective soon.
- This would allow cross-border transfer of personal information even to countries which do not have a system for protecting personal information that is equivalent to that of Japan – albeit, on the basis that a prior consent of the individual is obtained[52].
- These guidelines will clarify further conditions for cross-border transfer of personal information to be legitimate (e.g., the company receiving personal information has a privacy policy that is equivalent to the protection level under the New PIPA), to achieve the smooth cross-border transfer of personal information.
- Germany allows cross-border data transfer with the person's consent and subject to the fulfillment of a contract between the person and the responsible party[53].
- The Trans-Pacific Partnership (TPP), comprising Japan, Canada, Australia, Mexico, Singapore, amongst others. TPP Parties agree to permit free transfer of funds related to the cross-border supply of a service[54].
- The EU-U.S. and Swiss-U.S. Privacy Shield Frameworks were designed by the U.S. Department of Commerce and the European Commission and Swiss Administration to provide companies on both sides of the Atlantic with a mechanism to comply with data protection requirements when transferring personal data from the European Union and Switzerland to the United States in support of transatlantic commerce[55.]
- Australian Privacy Principles (APP 8) strives to ensure that overseas organisations will handle personal data according to their guidelines. It also makes the entities responsible for mishandling personal information[56].

4. Digital Enablement

- Investment
- In 2015, the Monetary Authority of Singapore (MAS) committed 225 million Singapore Dollars (around US$166 million) to support the development of the Fintech industry, particularly, for establishing research and development centers and other infrastructure for Fintech development in Singapore[57,58].
- In November 2016, UK government pledged £2 billion a year in investment by 2020 for projects and businesses conducting research and developing cutting-edge technology such as Artificial Intelligence and robotics..
- Promotion
- InvestHK hosted the first Hong Kong Fintech Week in November 2016 and was supported by government agencies including the Securities and Futures Commission (SFC) and the Hong Kong Monetary Authority amongst others
- UK's FCA promotes innovative technologies and supports companies in developing new business models through their Project Innovate (October 2014) and the Innovation Hub. It also launched a 'regulatory sandbox' in May 2016 to foster innovation in the UK financial services market
- Incentives
- The Patent Box scheme (UK, April 2013) allows companies to pay a lower rate of Corporation Tax on profits earned from patent innovations.

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List of Abbreviations

2/3/4G	Second, Third, Fourth Generation
ADIs	Authorized Deposit-taking Institutions
AFF	Africa Fintech Foundry
AFSL	Australian Financial Services License
AI	Artificial Intelligence
AISP	Account Information Service Provider
AML	Anti-Money Laundering
AML/CFT	Anti-Money Laundering and Countering Financing of Terrorism
API	Application Programming Interface
APX	API User Experience
ASIC	Australian Securities and Investments Commission
ATM	Automated Teller Machine
AWM	Amazon Web Services
B2B	Business to Business
B2C	Business to Customer
BDUF	Big Design Up Front
BMPI	Bitcoins Market Potential Index
BOFIA	Banks and Other Financial Institutions Act
BVN	Bank Verification Number
CAF	Credit Agricole, France
CBN	Central Bank of Nigeria
CIO	Chief Information Officer
COTS	Commercial off the Shelf
CSEF	Crowd-sourced equity funding
CTO	Chief Technology Officer
CX	Customer Experience
D&A	Data & Analytics
DDoS	Distributed Denial of Service
DMZ	Demilitarized zone
DLT	Distributed Ledger Technologies
E2E	Exchange to Exchange
EMA	Europe Middle East & Africa
ESB	Enterprise Service Bus
EU	European Union
FAA	Financial Advisers Act
FCA	Financial Conduct Authority
FI	Financial Institution
FIEA	Financial Instrument and Exchange Act
FS	Financial Services
FSC	Korean Financial Services Commission
FSCMA	Financial Investment Services and Capital Markets Act
FSI	Financial Services Industry
GDP	Gross Domestic Product
GSM	Global System for Mobile Communications)
GST	Goods and Services Tax (in Australia)
HK	Hong Kong
HNI	High Net Worth Individual
HTTP	Hypertext Transfer Protocol
IaaS	Infrastructure as a Service
IBM	International Business Machines
ICBC	Industrial & Commercial Bank of China
ICT	Information and Communication Technology
IDC	International Data Corporation
IFC	International Finance Corporation
IoT	Internet of Things
IPO	Initial Public Offering

ISA	Investments and Securities Act
IT	Information Technology
KYC	Know Your Customer
LSE	London School of Economics
MAS	Monetary Authority of Singapore
MFG	Mizhuo Financial Group
MFI	Microfinance Institution
ML	Machine Learning
MPOS	Mobile Point of Sale
MVP	Minimum Viable Product
NAICOM	National Insurance Commission
NBFC	Non-Bank Financial Corporation
NCC	Nigerian Communications Commission
NFC	Near Field Communication
NIBSS	Nigeria Inter-Bank Settlement System
NIP	NIBSS Instant Payment
P2P	Peer to Peer
PaaS	Platform as a Service
PE	Private Equity
PII	Personal Identifiable Information
PIN	Personal Identification Number
PISP	Payment Initiation Service Provider
POC	Proof of Concept
POS	Point of Sale
PSD2	Payment Services Directive
PSV	Payments System Vision
QR	Quick Response
REST	Representation State Transfer
RESTful	Representational State Transfer
RBI	Reserved Bank of India
RPA	Robotic Process Automation
ROI	Return on Investment
R&D	Research and Development
SaaS	Software as a Service
SDLC	Software Development Life Cycle
SEC	Securities and Exchange Commission
SEBI	Securities and Exchange Board of India
SFA	Securities and Future Act
SFC	Securities and Future Commission
SGD	Singapore Dollar
SIV	Significant Investor Visa (in Australia)
SME	Small and Medium Scale Enterprises
SMFG	Sumitomo Mitsui Financial Group
SMU	Singapore Management University
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SPOF	Single point of failure
VAS	Value Added Services
VC	Venture Capital
TPS	Transactions Per Second
TTS	Treasury and Trade Solutions
UI	User Interface
UHNI	Ultra High Net Worth Individual
UX	User Experience
UK	United Kingdom
UPS	United Parcel Service
USD	United States Dollar
USSD	Unstructured Supplementary Service Data
XS2A	Access to accounts

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