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New Avatar – Banks Watch Out for Banks

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02

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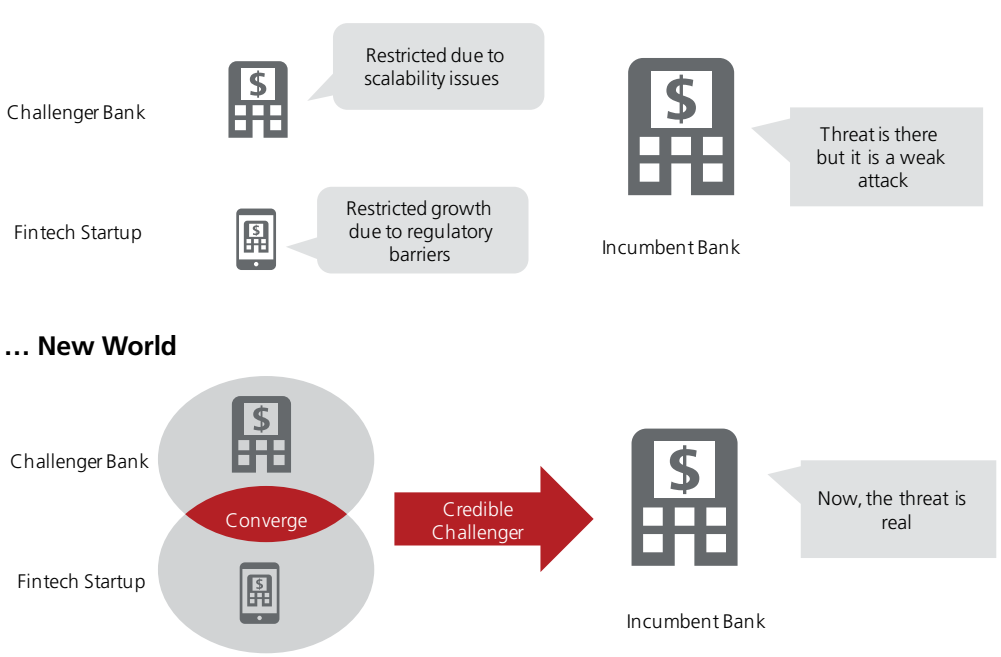
Executive Summary

Fintech investments more than doubled in 2015 and there are 19 fintech unicorns globally that are in a position to challenge banks

A storm is brewing in global retail banking. In the post-Global Financial Crisis era, financial technology (fintech) businesses have encroached not just upon the periphery of finance (such as payments), they have assumed a place in core banking activities like lending and wealth management. Fintech investments more than doubled in 2015 and there are 19 fintech unicorns (companies valued at US$1 billion or more) globally that are in a position to challenge banks[1].

Fintech companies have shown the way – technology can be a big differentiator in winning customers in chosen segments/products. However, fintech is not the only challenge big banks are facing. With technological evolution digitalising banking services, small- to mid-sized banks are presented with a unique opportunity to acquire/partner fintech companies. Through this collaboration with fintech firms, banks could overcome their smaller physical presence and limited banking functionality to launch attacks at the bigger and incumbent banks. Bigger banks will have to accelerate their digital transformation to defend their turf; they need to overcome their legacy technological issues and cultural challenges by completely reinventing their business model.

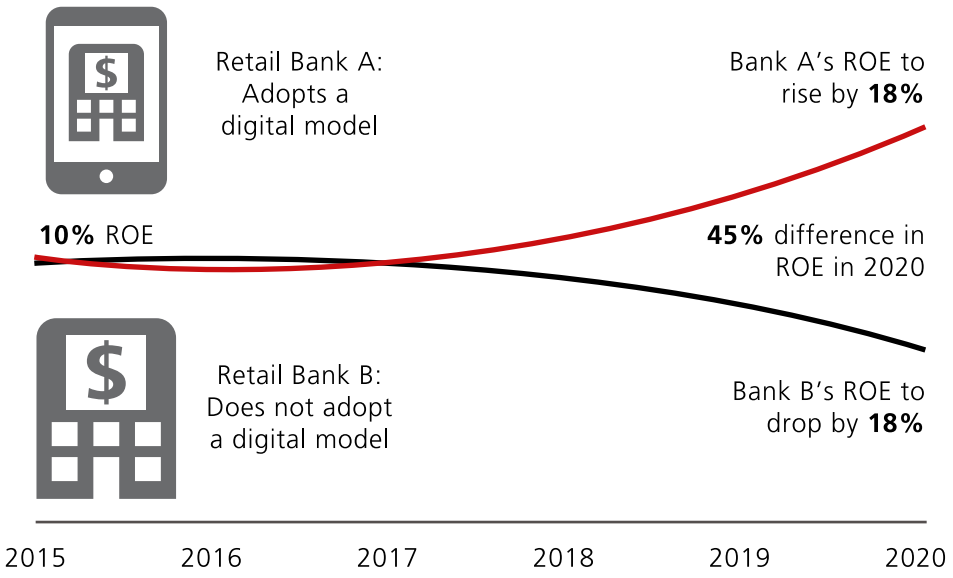
Diagram 1. New world brings real threat to incumbent banks



Source: DBS Bank

Broadly, there are two ways in which banks can respond: 1) serve existing products digitally so that they are faster, cheaper and easier; and/or 2) adopt a customer ecosystem approach which integrates banking into customers' daily lives. Retail banks that are not able to adopt a digital model may see a drop in return-on-equity (ROE) by around 18% over a five-year timeframe, mainly due to pressure from fintech firms and progressive banks. However, retail banks that are able to reinvent themselves could see a substantial increase in ROE of around 18%, largely driven by the lower cost of serving customers and the efficiencies they will reap. Most importantly, our analysis shows that the share price of a digital-savvy retail bank would be 50-80% higher than that of a non-digital bank in a similar timeframe. (See page 9 for more details.)

Diagram 2. Potential impact of digital banking on return on equity



Source: DBS Bank

Banks like Commonwealth Bank, BBVA, and Barclays are leading the digital wave, having already adopted technological platforms based on application programming interface (API). Many banks have invested in innovation labs which run hackathons and accelerator programmes in a bid to change the traditional mindset within their organisations. DBS has made strides toward digital adoption; for example, 18% of its wealth customers and more than half of small- to medium-sized enterprise (SME) customers were acquired in 2015 via digital platforms.

Just How Big Is the Fintech Attack?

In an address to the US Congress in 1962, American President John F. Kennedy noted that "the time to repair a roof is when the sun is shining". He was talking about safeguarding the US economy from possible recessions in the future. Banks too have been basking in the sun with high entry barriers and stable competition over the past few decades. However, the light is fading due to the rise of fintech companies; and banks need to fix their "roofs".

Fintech investments more than doubled in 2015 and there are 19 unicorns already.[2] More than US$13.8 billion in venture capital (VC) was invested in a range of fintech companies globally in 2015, more than twice the amount invested in 2014. VC deal volume also jumped, from 587 in 2014 to 653 in 2015. Payments and lending have attracted the most number of investments. As investors grew more cautious, there was a slowdown in the fourth quarter of 2015 but we expect corporate investments to pick up as fintech brings long-term benefits to their organisations. There are already 19 fintech unicorns, of which 14 are operating in the payments and lending space.

Why is fintech making waves? Fintech is creating new efficiencies and personalised services in many countries. In China, the cost per payment transaction is 0.53 Chinese yuan for a fintech firm, versus 26 yuan for a traditional bank[3]. These efficiencies lead to cheaper money via peer-to-peer (P2) lending platforms, such as Lending Club, as opposed to borrowing on a credit card. It is cheaper to transfer money internationally through a fintech start-up than a bank branch. In developing countries, fintech firms are helping to reach the underbanked population and, hopefully, the unbanked population in the long term. Mobile applications are able to provide a wide array of services that may not be available in nearby bank branches. India's ICICI Bank, for instance, provides over 100 services through its mobile app[4].

Which banking services are unscathed? Fintech firms are attacking all products and lines of traditional banks. At the onset, these firms focused on a few products and services to address the unmet needs of customers or offered services with greater convenience and/or at lower cost. Once fintech firms have enough financial clout, they can then extend a full suite of services to customers. In China, for example, service portal Tencent is used by over 500 million people for daily communication, payments, and wealth management; consumers use search engine Baidu to look for wealth management products and can even buy one of Baidu's own funds on the platform[5]. These 500 million users already account for more than 45% of banked users in China[6].

In chosen segments, fintech firms are quite sizable and expanding into new services at a rapid pace. The heat map below shows the magnitude of disruption along with the percentage of banked users using fintech services. China is a clear leader with Alipay, the largest mobile payment company in the world[7]; Alipay users can put their money into Yu'e Bao, the largest money market fund in China[8].

Diagram 3. Penetration rate of fintech services

	China	India	Singapore	Indonesia	Malaysia	Thailand
Payments/ Remittances	<40%	<20%	<4%	<1%	<1%	<1%
Lending	<14%	<5%	>2%	>2%	>2%	>2%
Personal Wealth Mgt	<5%	<3%	<1%	>2%	>1%	>1%
Insurance	<35%	<2%	>2%	>1%	>1%	>1%

Highly Disruptive | Material Threat | Watch list | Emerging Threat | Remote possibility of disruption

Source: DBS Bank

According to US sociologist Everett Rogers and his diffusion of innovation theory[9], if the percentage of users exceeds 13.5% but is less than 34%, the product is at its tipping point – also known as the point where the product is broadly accepted by the mass market[10].

Globally, fintech has reached a tipping point and is a threat to banks. The 'fintech attack' has come at a rapid pace, with start-ups becoming unicorns in a matter of months. China's fintech industry is leading by huge margins in Asia Pacific, with segments like payments and insurance already beyond the tipping point. Digital insurance in China is led by an existing insurance player, Ping An, in partnership with Alibaba and Tencent. In India, PayTm has become a household name in the payments space with over 122 million users[11]. The country has the potential for further disruption and segments like lending – projected by Statista to grow at a compounded annual rate of 206.06% through to 2020[12] – can reach a tipping point soon.

Having a booming financial sector is both an advantage and a disadvantage for fintech start-ups in Singapore. Robo-advisors (online platforms that provide automated investment advice) can take advantage of Singapore's fast growth rate of ultra-high net worth individuals and the wealthy to drive adoption rates. Thanks to favourable demographics, fintech can reach a tipping point in just two years despite strong competition from major established banks.

As for Indonesia, Malaysia, and Thailand, which currently have a slow rate of adoption for fintech (i.e. an insignificant number of banked users have adopted fintech), things could reach a tipping point in 4-5 years given the high mobile penetration rates and government support. With fintech disruption in place, fintech companies are providing specialised banking services and pose a threat to banks as they grow bigger and bigger.

Once fintech firms grow enough financial clout, they can then extend a full suite of services to customers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A New World of Collaboration

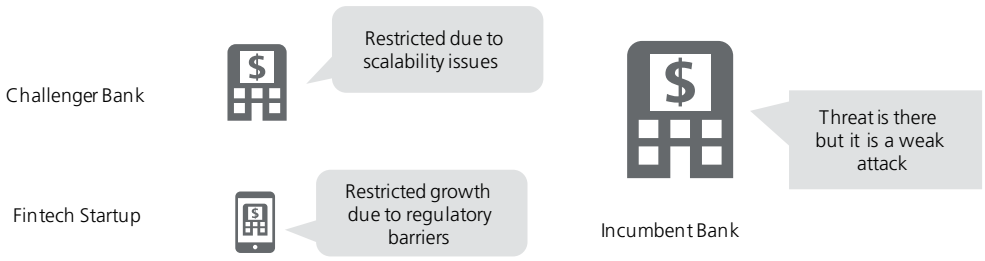
The growing trend of digitalisation has brought about the rise of fintech start-ups over the past five years. There are about 6,500 fintech start-ups in the world now – 2,500 from Asia and 4,000 from the UK and US . The financial sector is becoming crowded and competitive. Start-ups are struggling to grow and challenger banks are finding it hard to expand their services internationally. However, many of them are collaborating to provide better services to a larger customer pool.

Old World… Due to regulatory issues, fintech start-ups are unable to gain access to cheap retail deposits. This has restricted their growth and their potential to perform. On the other hand, challenger banks face scalability issues as it is expensive to grow their branch network into newer geographical regions due to their limited balance sheet. The barriers faced by both fintech start-ups and challenger banks had meant that they posed little threat to the large incumbent banks.

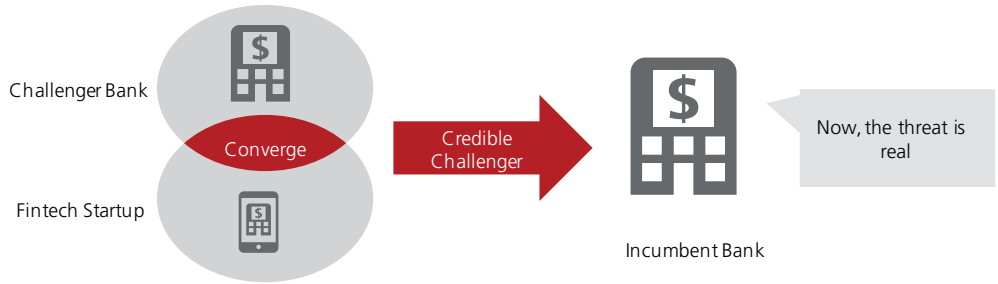
…New World. But now, challenger banks are acquiring or collaborating with fintech companies to deploy technology, which had been a key bottleneck. It has become much easier for challenger banks to reach a wider customer base without having to expand their physical footprint.

Diagram 4. New world brings real threat to incumbent banks

Old World…



…New World



Source: DBS Bank

In 2014, Spanish bank BBVA acquired US-based online direct bank Simple for US$117 million, immediately providing BBVA access to over 100,000 US customers. The group also acquired a 30% stake in Atom, the first mobile-only bank in the UK, which launched its services in early 2016. BBVA's most recent acquisition was Holvi, an online bank based in Finland catering only to entrepreneurs and SMEs in Europe.

Apart from strategic investments, traditional banks have also been keen to create synergetic partnerships to attack incumbents who are slow to react to the digital revolution. British lender Santander, for example, worked with online lending platform Kabbage to extend short-term loans to SMEs in the UK. This partnership will allow Santander to reduce the time taken to disburse a loan to a matter of hours from the average of 2-12 weeks spent now[14]. The bank would also be able to reduce office costs and improve loan processing while accessing a broader base of customers, posing a serious threat to the SME loan portfolios of bigger banks.

"Challenger banks are acquiring or collaborating with fintech companies to deploy technology to scale up their businesses"

How Can Banks Respond?

The banking industry is on the cusp of disruption. There are many ways existing banks can respond to this 'fintech attack', from providing their services digitally to completely reinventing their business models (since the same range of technology is broadly available).

Fintech companies are not only competitors but also potential partners that enable banks to harness technology. There are two ways in which banks can respond:

1 Serve digitally – provide existing banking services faster, cheaper, and easier

Banks can redesign their operations and delivery by leveraging broadly available technology. This can help lower their cost of acquiring and servicing clients, as well as offer cheaper and better user experience and products at the convenience of the customer. Over the last few years, banks around the world have adopted new technology across all of their services – deposit taking, lending, wealth management, and payments.

Digital account-opening has enabled banks to reduce the need for documentation and cut down on back-office operations. TD Bank in the US introduced a mobile account-opening functionality as early as 2014. Customers can open checking, savings or money market accounts through their smartphones, without the need for any physical documents. In Asia, Digibank by DBS allows customers to open savings accounts via a mobile phone using biometric authorisation.

Robo-advisors offer investors ease and simplicity at a very low price – much lower than the fee an investment adviser at Morgan Stanley or Bank of America Merrill Lynch would charge. With over US$10 billion up for grabs, robo-advisory platforms will play a major role in wealth management in the future[15]. Goldman Sachs, not known for wealth management solutions, announced in March 2016 that it will acquire Honest Dollar, a start-up that offers retirement savings plans for employees of small businesses. The platform uses algorithms to recommend the most suitable portfolio, out of six, for an employee, based on answers given to a set of predefined questions.

Almost a dozen banks, including Fidor Bank in Germany, and CBW Bank and Cross River Bank in the US, have tied up with blockchain start-up Ripples Labs to cut the cost and time taken for international payments. The blockchain payment protocol introduced by Ripples could lower fees and commissions from as much as 5% today to 0.50%, making payment facilitators like Western Union and the payments divisions of banks uncompetitive[16]. The tie-up will also allow these banks to compete with disruptive players like PayPal and Alipay.

2 Adopt a customer ecosystem approach to integrate banking into customers' daily lives

The financial economy also creates a completely transformational opportunity for banks to really make banking seamless by integrating it into customers' lives. This requires adopting a customer ecosystem approach where there is a deep and clear understanding of the tasks the customer is trying to get done and the full suite of services required to achieve that. Banks would need to completely re-imagine their go-to-market approach.

For example, DBS' Home Connect app provides a holistic service to homebuyers. It answers most of the questions clients will be asking when buying a home and allows users to check property prices in a particular area, based on recent property transactions and their location. It also provides information on different neighbourhoods and details on financing options. These services augment the bank's core functions such as lending. The app also allows clients to understand the possible financial burden they would incur by calculating mortgage payments on the spot.

One of China's biggest banks, ICBC, has built a cross-border e-commerce platform ICBC E-Mall that provides high-quality products. In India, HDFC Bank has an e-commerce platform SmartBuy available exclusively for its customers, where they have the option of paying through the bank's mobile wallet PayZapp. Another bank in Singapore, OCBC, has an app through which customers can access and set up insurance products through their phones. Malaysia's Maybank offers an app called M2U Pay Snap & Sell, where customers are able to list items they wish to sell on social media, with transactions completed using Maybank's online payment facility M2U Pay.

Will Banks Survive or Thrive?

There are looming questions on whether banks will survive. Well, banks do have strengths. The first is trust – given their reputation, built over many years, banks are more trusted than the newer fintech companies. Even today, most customers would unanimously choose to invest huge amounts, for example, US$1 million worth of shares, in banks as opposed to fintech unicorns. Secondly, banks have the payment and clearing house systems in place. Even Apple Pay uses banks' clearing systems at its back-end. There is huge value in the 'pipes' that banks have built over decades. Lastly, the big strength for banks lies in the area of risk management, for example, in liquidity and market risk.

Leading banks in Europe are spending 2-3% of their revenues on digital transformations. BBVA has announced plans to invest 1 billion euros on digital initiatives from 2013 to 2016. Assuming an average investment of 250 million euros per year, the digitisation budget represents around 3% of BBVA's annual revenues over the past two years. The Royal Bank of Scotland (RBS) also spent about 3% of its fiscal year 2015 revenues on digital initiatives. In 2014, RBS announced plans to invest around 1 billion euros over three years on digitisation, which amounts to an annual investment of 350 million euros..

Retail banks in the US may spend up to 4% of their revenue on digital initiatives by 2020. IDC estimates that US retail banks spent US$16.6 billion on digital transformation in 2015 and expects this to grow at a compound annual growth rate (CAGR) of 10.4% through to 2019[19]. This outpaces the growth rate of 3.9% for overall information technology (IT) spending by US banks. Assuming this CAGR of 10.4% continues through to 2020, US retail banks could spend US$27.2 billion on digital transformation by then. With US retail banking revenues projected to reach US$750 billion in 2020[20], we estimate that this segment will, on average, spend 4% of their revenues to digitise banking operations.

However, there are a few obstacles standing in the way of banks:

1. **Large mainframe legacy systems:** Banks have seemingly understood the importance of digitising but are slow to move from legacy systems to API-based systems, which will allow them to access services from external parties. We estimate only 20-40% of bank processes in developed countries have been digitised so far. Developing countries lag in upgrading their legacy IT systems due to the substantial investment required.

2. **Regulation oversight is high and continues to be an area that banks need to invest in:** Today, the cost of regulatory non-compliance is high but so is the cost of compliance. For example, one of the main outcomes of Basel III will be a significant rise in the banking industry's capital requirements (and potentially, borrowing costs). Some estimates put the additional capital required by the European banking industry to comply with Basel III at around 700 billion euros, reducing ROE by up to 30%[19].

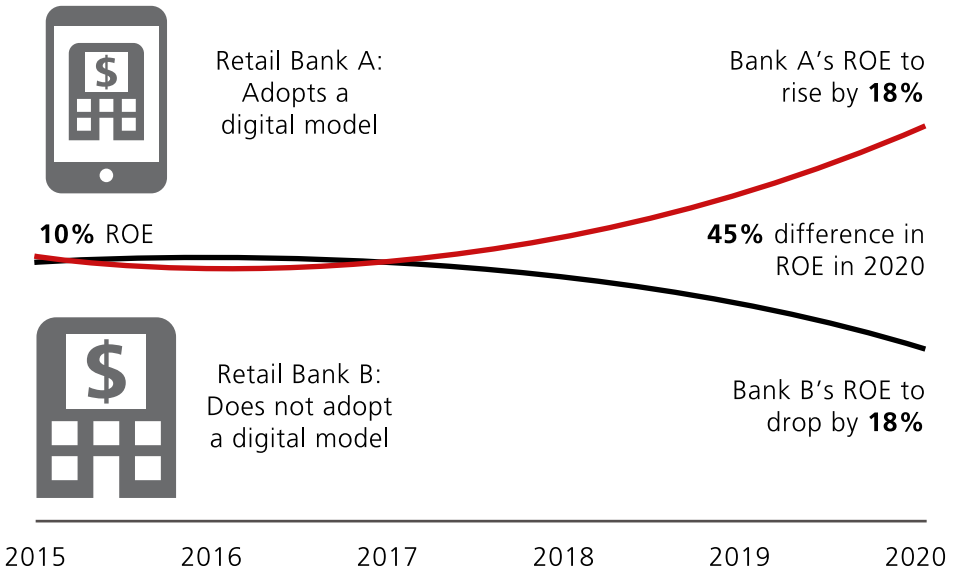
3. **The traditional bank lacks nimbleness:** A study conducted in mid-2015 of over 100 banking executives in Spain justifies this claim[20]. As many as 78% of participants admitted that banks are not yet fully prepared for the digitisation that is being demanded by customers.

"Banks that are able to reinvent themselves could see a substantial increase in ROE"

Impact of Digitisation on the Bottom Line

According to our analysis, banks that are unable to adopt a digital model may see a drop in ROEs by about 25% – mainly due to lower margins as they face pressure from fintech firms and progressive banks – and that could threaten their survival. However, banks that are able to reinvent themselves could see a substantial increase in ROEs (by 23%) largely driven by the lower cost to serve.

Diagram 5. Potential impact of digital banking on return on equity



Source: DBS Bank

We take a hypothetical Singapore retail bank with total deposits of S$90 and total equity of S$10, generating 10% ROE in 2015, to simulate potential impact on the bottom line in 2020. For banks that do not adopt digital drivers, assumptions are:

- We consider 1.8% net interest margins (NIM) in 2015 and project NIMs to decline by 15% by 2020 due to increasing competition from fintech firms and digital banks (this does not factor in the impact of interest-rate changes by the central bank).
- We project non-interest income to decline by 25% for non-digital banks by 2020, due to new products introduced by fintech companies and digitally savvy banks.
- We project cost-to-income ratio to remain stable at 45% in 2020 due to the lack of automation and stable customer acquisition costs.

Diagram 6. Digital versus non-digital: Impact on bottom line by 2020

	2015	2020 (Digital Bank)	2020 (Non-Digital Bank)
Total Common Equity	S$10	S$10	S$10
Total Deposits	S$90	S$90	S$90
Average Deposit Rate	1.0%	1.0%	1.1%
Average Lending Rate	2.8%	2.8%	2.6%
Net Interest Margin	1.8%	1.8%	1.5%
Interest Income	S$1.6	S$1.6	S$1.4
Non Interest Income	S$0.8	S$0.8	S$0.6
Total Income	S$2.4	S$2.4	S$2.0
Cost to Income	45%	35%	45%
Profit Before Provisions	S$1.3	S$1.6	S$1.1
Provisions	10%	10%	10%
Pre-Tax Profit	S$1.2	S$1.4	S$1.0
Tax Rate	17%	17%	17%
Net Profit	S$0.99	S$1.183	S$0.81
Return on Equity	10%	12%	8%

Lower net interest margins from lower lending and higher deposit rates

Higher fee income from new products

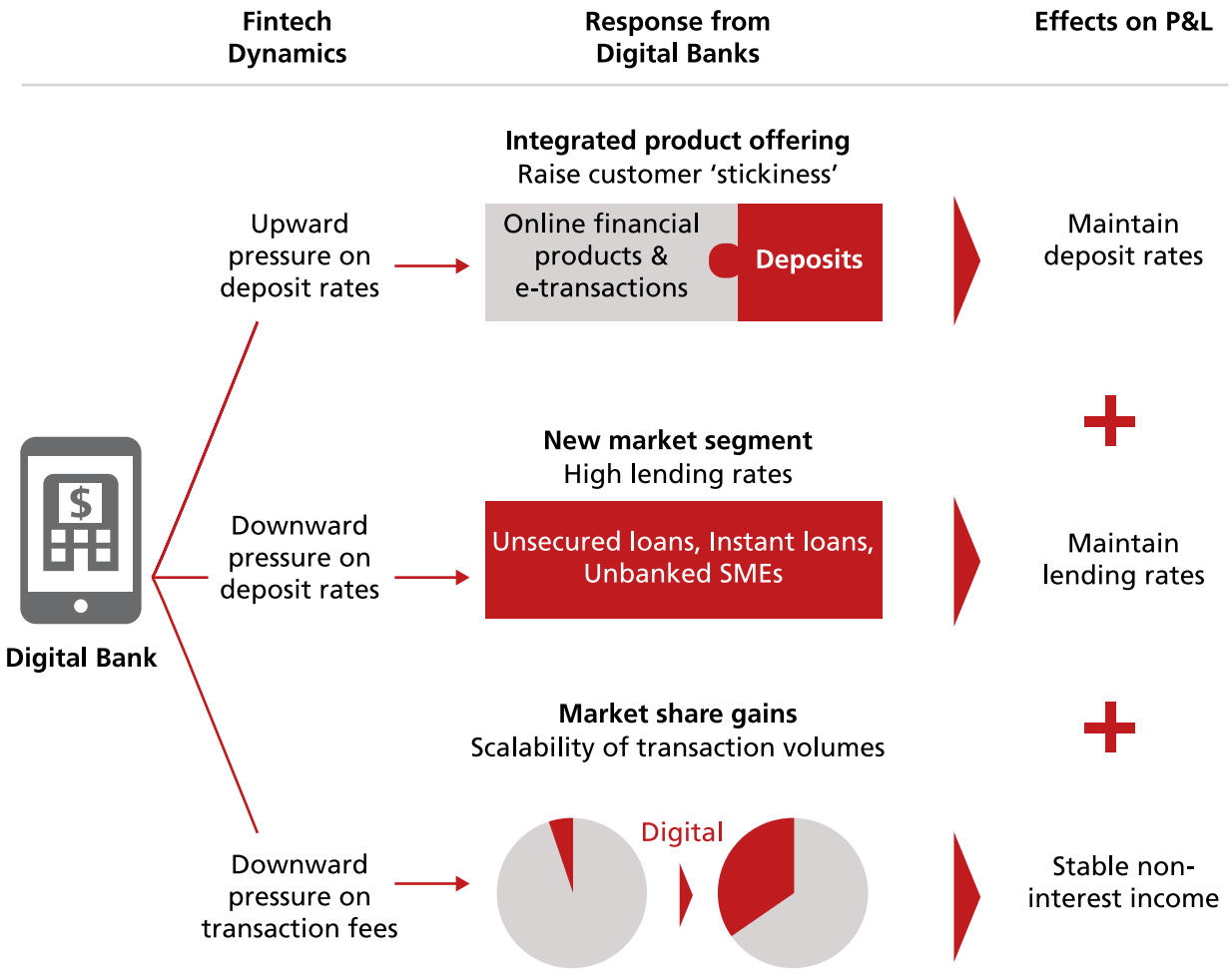
Significant drop from back-office automation, digitisation of document management & automation of credit decisions

Source: DBS Bank

Conversely, retail banks that transform their business models to adopt a customer ecosystem approach are likely to see a 45% rise in ROE versus a non-digital bank. Assumptions and drivers are:

- That these banks maintain NIMs in 2020 (at 2015 levels) versus the decline observed by banks that do not adopt a digital strategy.
- That non-interest income remains stable since these banks are able to scale up transaction volumes on a wider variety of financial products.
- That their cost-to-income drops to 35% in 2020 (versus 45% in 2015), on the back of technological upgrades as well as the low cost-to-serve from back-office automation and automated credit decisions.

Diagram 7. How a digital bank would defend its income in the face of challenges



Source: DBS Bank

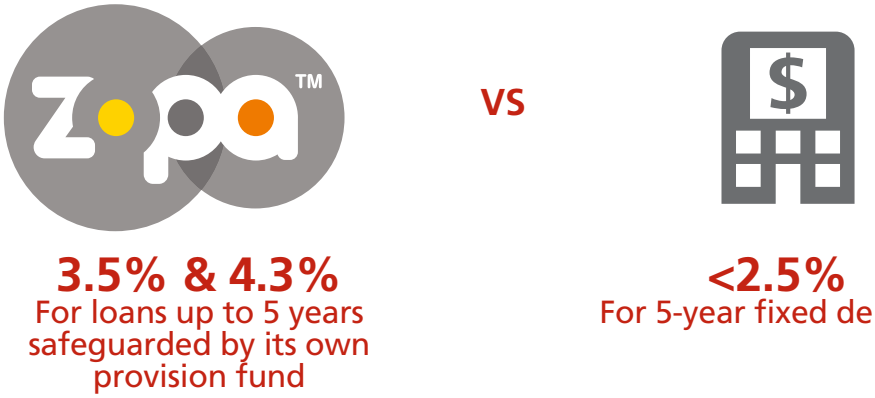
1 Net Interest Margins (NIMs)

While it is still too early to quantify exactly the impact of such initiatives on the NIMs of banks, we estimate that digitally savvy banks can at least sustain their NIMs versus a 15% drop in NIMs for non-digital banks.

Deposit Rates

Zopa – the largest P2P player in UK – advertises expected rates of 3.5%[21] and 4.3% for investors on its platform for loans up to five years. The money lent out is safeguarded by its own provisional fund. This rate – 180 basis points (bps) – is 100 bps higher than five-year fixed deposit rates.

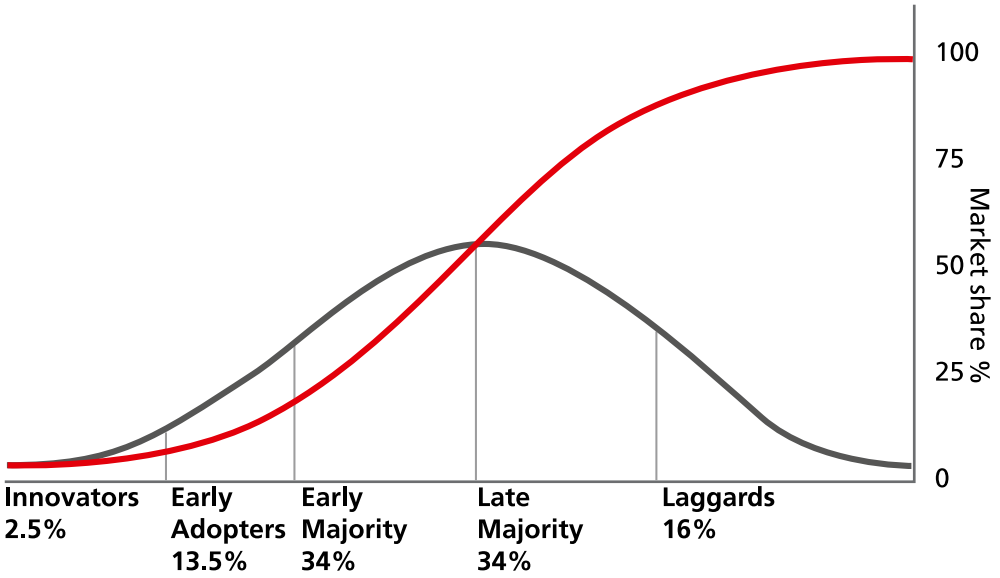
Diagram 8. Products launched by fintech firms advertise higher returns than fixed-deposit rates



Source: Zopa, DBS Bank

Zopa's Safeguard Fund had accumulated provisions of above £11 million against a stock of loans of around £625 million as at the end of third quarter 2015.

Diagram 9. Fixed Deposits – Innovators and early adopters may switch to the new players for higher returns



Source: Rogers, Everett (16 August 2003)[22]

The innovators and early adopters among their retail customers[23] (15-16% of the total) who tend to have higher risk appetite are likely to switch to the new players who offer superior returns, coupled with higher risk. Non-digital banks will probably need to offer over higher fixed-deposit rates (of more than 100 bps) to retain these customers. This could increase average deposit rates by 10-15 bps in our estimates.

Digital banks, on the other hand, should be able to maintain average deposit rates due to their e-transaction capabilities over mobile platforms and ability to integrate deposits with online financial products. This greater ease of accessing investment products and attractive transaction fees would entrench customers' preference for digital banks. This influences customer behaviour and creates 'stickiness' of customer deposits towards digital banks.

Lending Rates

In US, for example, a borrower with a good credit score can secure a loan at just 5.23% from Lending Club – largest P2P player in US – instead of having to pay 5.50% at a traditional bank. This margin only widens with the additional fees and charges applicable at traditional banks. Non-digital banks will have to reduce their lending rates by 15-25 bps to retain their retail customers. We see greater willingness on the part of consumers to borrow from new digital players due to the lower cost of borrowing.

Diagram 10. Lending rates are under pressure due to the new competition

The high lending rates of the burgeoning new market segment would alleviate the downward pressure on the lending rates. In comparison, non-digital banks with traditional credit risk management processes would not have access to this new market segment and as a result, experience declining lending rates.

Banks like HDFC and China Minsheng Bank are already offering personal loans to customers within five minutes of application, with the help of fully automated credit analytics. Ceska Sporitelna, the largest bank in the Czech Republic, managed to increase profits on pre-approved loans and new sales by 26% and 29%, respectively, with the help of data analytics[24]. The bank identified the optimal offer price and initial credit limit for each borrower based on his/her risk profile, loan appetite, price sensitivity, and personal wealth.

2 Non-Interest Income

We project non-interest income to decline by 25% for a non-digital retail bank by 2020. We have assumed that two-thirds of non-interest income comes from investment products, including insurance, while the remaining third comes from payments, including credit cards, and remittance. The income from investment products could be hit the hardest, in our estimates.

Investment Products

Betterment, a robo-advisory platform, allows investors to choose from a wide range of portfolios while charging lower fees than a traditional index fund. Betterment's fees could range from 0.15-0.35%[25] and present an attractive offering as fees on managed funds often range from 0.75-1%+. More than half of Betterment's US$3.3 billion of assets under management comes from people who have more than US$100,000 with the firm[26]. About 15% of Schwab's robo-clients have at least US$1 million, showing that robo-advisors do not merely serve the low-end segment of the market.

Diagram 11. Financial advisories fee comparison

Source: Betterment, DBS Bank

Insurance

MetroMile, offering automobile insurance, allows customers to insure their vehicles based on the number of miles driven as opposed to paying traditional fixed premiums.

Diagram 12. Insurance fee comparison

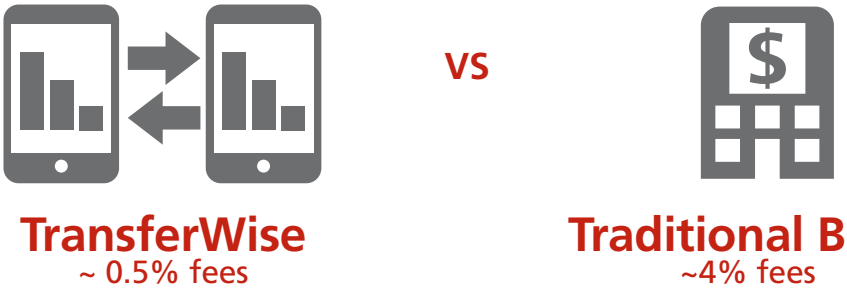
Source: MetroMile, DBS Bank

According to the company[27], vehicle owners who drive less than 4,000 miles per year could save up to US$480 on annual premiums, making it nearly 40% cheaper than the national average automobile insurance premium of US$1,325[28]. Customers are also provided with a dashboard with an overview of the vehicle's health and receive notifications of any potential problems. The app also allows customers to track their vehicles. Internet publisher Owler[29] estimates that MetroMile generates annual premiums close to US$7.5 million.

Remittance

A recent price-comparison study commissioned by TransferWise[30] suggests that small businesses could save up to seven times in fees when using TransferWise instead of UK banks. For instance, a payment of £2,000 to the US costs £9.95 with TransferWise, but £89.10 on average with the banks. Sending £10,000 to the Eurozone costs £49.75 with TransferWise, but £248.64 on average with the banks.

Diagram 13. Remittance fee comparison



Source: TransferWise, DBS Bank

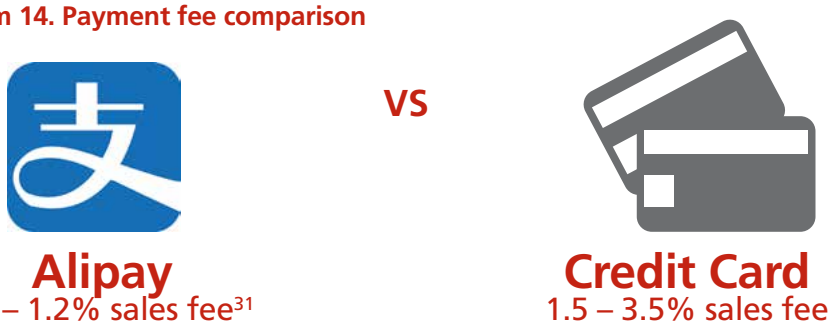
Payments

The buyer can choose between immediate payment and Escrow (money held by a third-party on behalf of transacting parties). For example:

(i) Hotel room/flight bookings etc. are usually paid for at the moment of booking.

(ii) Payment is made by the buyer prior to shipment of the product and payment is released by Alipay to the seller when product is received. This can be considered a form of Escrow service. Chinese companies have to pay a 0.7-1.2% sales fee, cheaper than fees charged by credit card companies. US$5,000 is the minimum amount that can be withdrawn at a time.

Diagram 14. Payment fee comparison



Source: Alipay, DBS Bank

Impact on Non-Interest Income

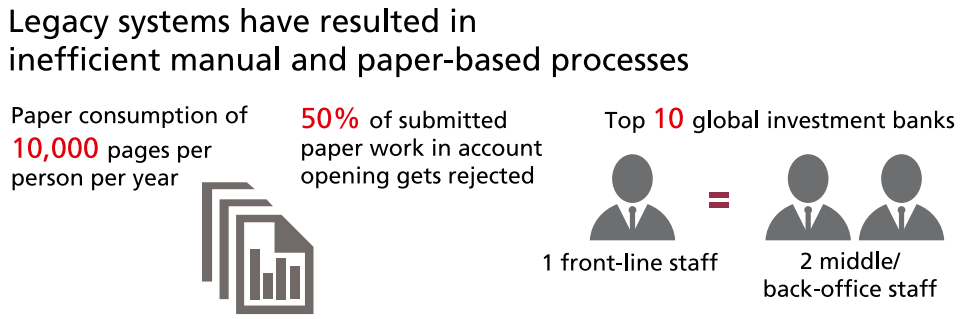
From the above instances, we expect more widespread impact on the non-interest income segment thanks to the 70-90% lower fee offered by the new players and perception of lower risk. Innovators, early adopters, and 50-60% of early majority customers[32], who make up 30-35% of the total, are likely to switch to the new players. Non-digital banks would need to reduce their fees by 70-90% in order to retain these customers. That may cause non-interest income to decline 25% for a non-digital retail bank by 2020, in our estimates. Digital banks should be in a position to gain market share due to their highly scalable and automated platforms offsetting the impact of lower fees.

3 Cost-to-Income

We project cost-to-income to remain stable at 45% in 2020 for a non-digital bank while for a digital bank, it could drop to 35% in 2020 on the back of technology upgrades and the low cost-to-serve from back-office automation and automated credit decisions.

Despite much of the front-end operations and customer touch points becoming digital, back-office processes are still manual, disjointed, and paper-based. On average, a retail bank has 500 back-end manual processes, of which 60-70% can potentially be fully automated[33].

Diagram 15. Inefficient paper-based back-end systems plague legacy systems



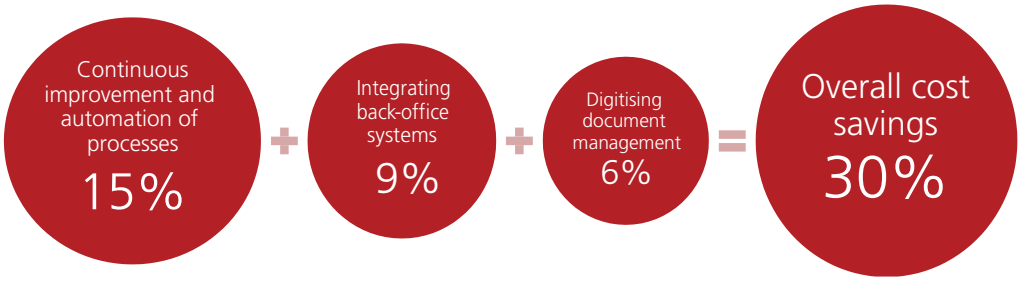
Source: Capgernini

Automation should also result in near-zero human errors and faster operations. Lloyds Banking Group, for example, was able to reduce its 700-odd processes to just 23, allowing the bank to reduce the time taken to close accounts from 30 minutes to 3 minutes.

Another area where cost savings can be achieved is through integration of systems. This can help in reducing back-office headcount and IT maintenance costs, in addition to offering a seamless omni-channel experience. HDFC Bank, for example, consolidates data of customers to eliminate the need for human intervention in credit scoring. With the help of integrated systems and data analytics, the bank is capable of offering personal loans to customers within 10 seconds – this has made HDFC the leading personal loan provider in India. To achieve that, documentation has to be fully digitised and banks will need to use digital signatures and biometric authorisation to help with the process. Banks can also optimise the use of upcoming technologies like the Internet-of-Things and blockchain to simplify back-end operations.

Replacing these legacy systems with automated systems that are better integrated and account for less paperwork can help banks realise 30% cost savings[34]. We estimate a 28-30% decline in cost-to-income ratios from 45% to 35% by 2020 in developed countries such as Singapore, where savings from the reduction of back-end staff and integration of back-office systems could be substantial.

Diagram 16. Impact of digitising back-office processes on banks' bottom lines



Source: Capgemini, DBS Bank

4 Impact on Stock Prices

Based on the Gordon Growth Model and assuming a 11.8% ROE and long-term growth of 4% (around 30% retention ratio) for a digitally savvy bank versus an 8.1% ROE and 0% long-term growth rate for a non-digital bank, we estimate the stock price of a digitally savvy bank to be around 60% higher than the stock price of a non-digital bank, assuming that they have the same book values in 2020.

"Automated systems… can help banks realise 30% cost savings"

Diagram 17. Digital versus non-digital: Sharp difference in future share prices

	Digital Bank	Non-Digital Bank
Net Profit in 2020	$1.18	$0.81
Total Common Equity	$10.00	$10.00
Return on Equity in 2020	11.80%	8.10%
Retention Ratio	30%	30%
Long-Term Growth Rate	4%	0%
Cost of Equity	10%	10%
Book Value in 2020	$10.00	$10.00
Price to Book Value Multiple	1.30	0.81
Share Price in 2020	$13.00	$8.10

Long-term growth of non-digital banks may stall as they fail to allocate capital to areas of growth driven by technology

Source: DBS Bank

Even with a more conservative estimate of an 11.5% ROE and a mediocre long-term growth rate of 3.0%, a digital bank will command a share price premium of 62% vis-à-vis a non-digital bank by 2020. On a more optimistic note, with a 13% ROE with 4% long-term growth rate, a digital bank will command a share price premium of 100% vis-à-vis a non-digital bank. With such a sharp difference in share prices in the future, the key question is: Can banks afford to underspend in their digital banking efforts?

Diagram 18. Sensitivity of share price premium of digital banks versus non-digital banks in 2020

Long-term growth rate of the digital bank	ROE of the Digital Bank				
	11.0%	11.5%	11.8%	12.8%	13.0%
3.0%	41%	49%	55%	71%	76%
3.5%	42%	52%	57%	75%	80%
4.0%	44%	54%	60%	80%	85%
4.5%	45%	57%	63%	85%	90%
5.0%	48%	60%	67%	91%	97%

Source: DBS Bank

In summary, there are certain banks that are leading the pack in light of the digital opportunity, for example, Commonwealth Bank of Australia, BBVA, and Barclays have already adopted API-based technology platforms. Many banks have invested in innovation labs running hackathons and accelerator programmes to change the traditional mindset in the banks. DBS has made strides toward digital adoption, for example, 18% of wealth customers and over 50% of SME customers were acquired in 2015 via digital platforms. It is unclear which banks will emerge as winners but there will be a few that will transform the way banking is done and some that may not survive this "fintech attack".

Notes

1 "The Pulse of Fintech 2015 Review" by KPMG and CB Insights. http://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/pulse-of-fintech-2015-in-review.pdf
2 "The Pulse of Fintech 2015 Review" by KPMG and CB Insights. http://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/pulse-of-fintech-2015-in-review.pdf
3 http://www.thenational.ae/business/economy/china-leads-way-in-financial-technology-investments
4 http://www.icicibank.com/aboutus/article.page?identifier=news-icici-bank-upgrades-its-mobile-banking-app-offers-more-than-100-services-20150707124217641
5 http://www.forbes.com/sites/zennonkapron/2016/03/01/why-chinas-fintech-will-change-how-the-world-thinks-about-banking/#33d39038642d
6 Banking in Asia-Pacific – http://www.ey.com/Publication/vwLUAssets/EY-banking-in-asia-pacific/$FILE/EY-banking-in-asia-pacific.pdf
7 http://www.businessinsider.com/alipay-overtakes-paypal-as-the-largest-mobile-payments-platform-in-the-world-2014-2
8 http://www.cnbc.com/2015/07/16/how-chinas-rout-disrupted-online-funds-like-alibabas-yue-bao-in-a-good-way.html
9 https://en.wikipedia.org/wiki/Diffusion_of_innovations
10 "Understanding Social Change. Diffusion of Innovation, Tipping Point And Critical Mass. Hundredth Monkey Effect and Bandwagon Effect."http://analysisbyrs.com/understanding-social-change-diffusion-of-innovation-tipping-point-and-critical-mass-hundredth-monkey-effect-and-bandwagon-effect/
11 http://timesofindia.indiatimes.com/tech/tech-news/Paytm-registers-122-million-active-users/articleshow/51838389.cms
12 https://www.statista.com/outlook/334/119/business-lending-platforms/india#
13 "The Fintech Boom And Bank Innovation" http://www.forbes.com/sites/falgunidesai/2015/12/14/the-fintech-revolution/#1803d68736da
14 http://www.ft.com/cms/s/0/9925cc9e-f9a4-11e5-8f41-df5bda8beb40.html#axzz4AzD7GRKK
15 "Hype vs. Reality: The Coming Waves of "Robo" Adoption" by A.T. Kearney. https://www.atkearney.com/documents/10192/7132014/Hype+vs.+Reality_The+Coming+Waves+of+Robo+Adoption.pdf/9 667a470-7ce9-4659-a104-375e4144421d
16 http://www.tsys.com/ngenuity-journal/cross-border-payments-due-for-disruption.cfm
17 http://www.businesswire.com/news/home/20150629006038/en/Retail-Banks-Spend-16.6-Billion-Digital-Transformation
18 Next-generation retail banking in China - McKinsey & Company.
19 Basel III and European banking - McKinsey & Company
20 "Industrialized and Ready for Digital Transformation?" by IESE Business School and Synpulse Management consulting. http://www.iese.edu/research/pdfs/ST-0373-E.pdf
21 https://www.zopa.com/lending
22 Rogers, Everett (16 August 2003). Diffusion of Innovations, 5th Edition. Simon and Schuster. ISBN 978-0-7432-5823-4.
23 https://en.wikipedia.org/wiki/Diffusion_of_innovations
24 http://www.fico.com/en/newsroom/esk-spoitelna-increases-portfolio-profit-26-percent-using--fico-optimization-technology-12-01-2015
25 https://support.betterment.com/customer/portal/articles/934265
26 http://www.fico.com/en/newsroom/esk-spoitelna-increases-portfolio-profit-26-percent-using--fico-optimization-technology-12-01-2015
27 https://techcrunch.com/2014/07/16/per-mile-car-insurance/
28 http://www.insure.com/car-insurance/car-insurance-rates.html
29 https://www.owler.com/iaApp/1007933/metromile-company-profile
30 https://transferwise.com/help/article/2444485/other/why-is-transferwise-up-to-7x-cheaper-for-businesses
31 https://letstalkpayments.com/alipay-vs-tenpay-the-china-payments-rivalry-2/
32 https://en.wikipedia.org/wiki/Diffusion_of_innovations
33 https://www.capgemini.com/resource-file-access/resource/pdf/backing_up_the_digital_front25_11_0.pdf
34 https://www.capgemini.com/resource-file-access/resource/pdf/backing_up_the_digital_front25_11_0.pdf

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