



WAVESTONE

**VIRTUAL BANKING
AND OPEN BANKING:
COMPARING DIGITAL
DISRUPTIONS ACROSS
THE WORLD**

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In recent years, there has been an increasing need for more personalised and integrated services for banking customers, but traditional banks have not been able to meet these customers' expectations. Based on research from Wavestone, a global management consulting firm, 45% of the American population, 62% of the British population and 67% of the Hong Kong population believe that banks are not meeting their needs¹. As a result, each region in the world (and their respective regulator) has been making efforts to facilitate more innovation within their banking industry.

For example, in Hong Kong, the Hong Kong Monetary Authority ('HKMA'), the key banking regulator, announced in September 2017 its intention to upgrade the current banking system to a new Smart Banking Era through the launch of several initiatives, including the Virtual Banking license (which would allow an entity to deliver retail banking services primarily through digital channels instead of physical branches) and the Open API Framework (which is aimed at allowing third-party service providers ('TSP') to connect to and contact data exchange to the banks' IT systems). These initiatives will be accelerating the speed of innovation in the banking industry in Hong Kong. But the question remains whether these initiatives are sufficient to make Hong Kong a top innovative

player in the banking industry, whether they can address all the customers' needs, and whether other regions in the world remain ahead of Hong Kong.

Many other regions in the world have been launching similar regulations or activities around virtual banking and open banking in order to promote the convergence of technology and banking in their own region. However, each region has used a different approach with its own flavour, timing or implications. This report aims at **exploring whether virtual banking licenses or open banking regulation is the key to disrupt the retail banking industry, or whether it requires a bit of both**. It also serves to **explore and examine the different policies and regulations in place that disrupt the retail banking industry in the UK, Europe, US, Singapore and China** whilst also looking at what traditional banks are doing to cope with these specified regulations as well as their respective success stories. It will then **evaluate the impact and effectiveness of the different systems** and come to a general consensus of the main common element that seems to drive the change in the retail banking ecosystem in each of these countries, and infer what it means and what would cause a similar disruption in the Hong Kong retail banking market.

[1] - Wavestone / YouGov survey June 2018





SMART BANKING: LATEST HONG KONG INITIATIVES



In September 2017, the HKMA announced a series of initiatives to transform its banking industry and to move into a New Era of Smart Banking: Virtual Banking and Open API framework.

An overview of the initiatives is provided in Appendix A. Whilst each initiative plays an important role to disrupt the banking industry in Hong Kong, two initiatives stand out in order to facilitate the establishment of pure digital banks in Hong Kong and the increase of service offerings provided by banks in Hong Kong.

VIRTUAL BANKING: ANSWERING THE NEED TO DISRUPT THE CURRENT RETAIL BANKING INDUSTRY

A virtual bank is defined as a bank which delivers retail banking services primarily through the internet or other digital channels instead of physical branches. As such, this new Virtual Banking guideline offers a significant opportunity for new players to enter the Hong Kong banking market which is currently dominated by 3 major traditional banks HSBC, Bank of China & Hang Seng Bank. In May 2018,

the HKMA announced the new 'Guideline on Authorization of Virtual Banks' that authorises the establishment of virtual banks and sets out the guidelines for firms seeking to apply for a virtual banking license. Significant interest in this virtual banking license was reported and a total of 29 applications were submitted on or before August 31st 2018². The first round of virtual banking license applications includes Standard Chartered Bank, WeLab, Zhong An Bank, HKT, Airwallex and Sequoia Capital China just to name a few, and other entities like that of Yedpay! and fintech bank ITF funded by Jim Rogers are likely to apply in the second round³. Hong Kong is set to release the first batch of virtual banking licenses soon.

The initiative by HKMA to launch a new banking ordinance to permit virtual banking in Hong Kong is a result of the need to disrupt the current retail banking industry. However, as stated in the HKMA virtual banking guideline, virtual banks operating in Hong Kong will be subjected to the same supervisory requirements that govern existing traditional banks with only a few exceptions to adapt to the virtual banks' business model⁴. If this is the case, it implies that the only differences between

virtual banks and existing traditional banks in Hong Kong are that virtual banks lack physical brick-and-mortar branches and potentially are more focused on building out a unique and sophisticated technology platform. However, even that technology superiority may not exist. Indeed, we clearly see significant efforts made by traditional banks to integrate more technology into their business models to enhance their digital banking services to create better customer experiences. For instance HSBC – one of the dominant players in Hong Kong’s financial services industry- spent US\$2.3 billion between 2015 and 2017 with the aim of enhancing and expanding its digital banking platforms and capabilities to include AI, facial recognition, blockchain, advanced robotics, chatbot ‘Amy’ and other technologies to better serve its customers.⁵

OPEN API FRAMEWORK: AN OPPORTUNITY TO OFFER CUSTOMERS MORE INNOVATIVE PRODUCTS

The concept of open banking stems from leveraging on API to enable developers to build applications to allow financial information and data sharing across different financial institutions, fintechs and third

party providers under a customer’s consent. Customers will be offered better more efficient and customer-centric financial and non-financial products as traditional banks and other challengers will compete against one another to provide the most innovative services to maximize customer experience. For instance, with open banking API, customers can now conduct e-commerce payments directly from their bank account without the need to provide card payment information.

It is important to note that the Open API Framework is not mandated by HKMA and it remains to be seen how many traditional banks will engage in this initiative. While it is expected that HKMA will encourage banks to join the Open Banking initiative, some banks may be reluctant to do so due to the new uncertainties and risks that open banking policies create, especially around data usage violations, identity theft, fraud, money laundering risks and other cybercrime risk.

[2] - Yiu, Enoch; “Hong Kong draws 29 applications for virtual bank licenses,” South China Morning Post; Friday, 31st August 2018;

[3] - Ibid.

[4] - Hong Kong Monetary Authority; “Chapter 9: Authorization of Virtual Banks”

[5] - Yiu, Enoch; “HSBC spends US\$2.3b on digital platforms, AI and new technology to reach tech savvy customers,” South China Morning Post; Friday 6th April 2018;





UNITED KINGDOM AND EUROPE: INTERNET (DIGITAL CHALLENGER) BANKS AND THE RISE OF OPEN BANKING AND PSD2

THE SIGNIFICANT RISE OF INTERNET (DIGITAL CHALLENGER) BANKS

Despite the fact that UK and Europe do not have specific regulations or licenses that promote virtual banking, both regions have seen significant growth in Internet banks (or Digital Challengers) over the last few years. Internet banks such as Fidor (founded in 2009 in Germany), Revolut (founded in 2013 in the UK), N26 (founded in 2013 in Germany), Atom Bank (founded in 2014 in the UK), Monzo (founded in 2015 in the UK) and Orange Bank (founded in 2017 in France) just to name a few, are defined as retail banks that are established to compete with existing established traditional banks, where their unique distinguishing factors include the fact of operating under a digital-only platform and offering differentiating financial products by serving underserved customers by big banks especially: small medium-sized enterprises (SME) who often lack collateral and credit history and non-standard retail customers especially sub-prime customers which include over-indebted individuals, individuals with little to no credit history, or individuals with some missed payments in the past.

It is clear that these Internet banks have been growing steadily over the last few years and they have been able to capture a segment of the customer market, especially the underserved customer segment (over 5.5 mm customers since 2014 in Europe⁷. However, many of these digital banks have not been able to make profits yet and only a few are starting to break-even or report profits. OakNorth is an Internet bank in the UK that is focusing on lending to small businesses and is among one of the first digital banks that is profitable⁸. Revolut, a UK Challenger Bank has accumulated a customer base nearing three million accounts across Europe as of September 2018⁹. The firm focuses on offering currency exchange at a reduced fee and now also offers the trade of cryptocurrencies (buying, selling and exchange in-app)¹⁰. Revolut managed to break-even in December 2017¹¹. Monzo Bank, another digital bank, was able to accumulate 750,000 users within a year but is facing currently a loss of 42mm USD¹². N26 (launched in Germany) has doubled its customer base in 12 months to more than 1mm customers and is targeting to become profitable in Q2 2019 by generating revenues from products such as overdrafts and subscription revenues of their credit cards¹³.

While these Internet banks are certainly growing, the customer growth may only be in the underserved or underbanked customer segments such as SMEs or students. It remains to be seen to what degree existing banking customers are switching their bank account from their traditional banks to these Internet banks, or simply adding another bank account in order to use some free services and/or make small payments. For example, the CEO of Monzo mentioned that only one out of five of its users are depositing their salary into the digital bank¹⁴. This means that customers may continue to rely on their primary bank account for savings and salary deposits and may simply decide to open a new account with an Internet bank for some specific or free services only.

It is true that over the last 12 months, there has been an increase of 6% in account holders in the UK who have switched their bank account¹⁵. Furthermore, research suggests that more customers have been joining virtual banks (19 percent) than leaving (8 percent)¹⁶. While the data is not conclusive to outline a move from traditional banks to Internet banks, this seems to insinuate that

virtual banks may indeed still have a lot of room for growth and potentially can steal customers away from those traditional banks that are not able to offer the same seamless customer experience as what the virtual banks can offer.

FINTECH CREDIT INSTITUTION LICENSE: A LEVER TO SUPERVISE AND REGULATE FINTECHS

In 2018, the European Central Bank (ECB) has published a guide to assess the bank license applications across the EU and at the same time a complementary guide was published to assess the fintech credit institution license applications.

The bank license guide explains the general application process and the assessment requirements regarding governance, risk management, capital etc. to acquire a bank license in the EU and the possibility to do EU wide passporting of the license. The guide to assess fintech credit institution licence applications complements the bank license guide and explains aspects of the supervisory assessment of licence applications that are particularly relevant to the

[7] - "How 60+ Startups Are Disrupting Retail And Commercial Banking Around The World," CB Insights; October 10th 2018;

[8] - Megaw, Nicholas; "OakNorth becomes first UK digital bank to report annual profit," Financial Times; Wednesday March 21st

[9] - "How 60+ Startups Are Disrupting Retail And Commercial Banking Around The World," CB Insights; October 10th 2018;

[10] - Maloney, Conor; "Revolut Launches Metal Debit Card With Cashback in Cryptocurrency," CNN; August 22nd 2018;

[11] - Dillet, Romain; "Revolut broke even in December, now has 1.5 million customers," February 2018; TechCrunch 2018;


[12] - Withers, Iain; "Monzo losses widen but the digital bank's user numbers surge," Telegraph; 1st July 2018;

[13] - White, Lawrence; "German digital bank N26 launches in Britain, sets sights on U.S.," Reuters; Thursday October 4th 2018;

[14] - Ibid.

[15] - Bacs - "Current Account Switch Service Dashboard", Issue No. 19. , Wednesday 25th July 2018 - Pg.1

[16] - Edmondson, David; Sadowski, Stephanie; Vogtle, James; "Banking on Value, Rewards, Robo-Advice and Relevance." Accenture Consulting, 2016 - Pg. 7



specific nature of banks with fintech business models. The objectives of the guides are to ensure consistent supervisory practices across the euro area by promoting a common interpretation of the licensing criteria.

THE RISE OF OPEN BANKING AND PSD2

The notion of open banking initiative has been in discussion in the UK for quite some time, but has only recently been officially launched on January 13th 2018 by the Competition and Markets Authority (CMA), which mandates the nine largest retail financial institutions in the UK — Royal Bank of Scotland Group, Santander, Barclays Bank, HSBC Group, Lloyds Group, Nationwide, Danske Bank, Bank of Ireland and Allied Irish Banks — to release customer financial data to authorised third-parties under a customer's consent. CMA's initiative to mandate open banking in the UK derives from the

aim of promoting innovation within the UK retail banking market.

Similar to UK's open banking policies, PSD2 (Payment Service Directive 2.0) is Europe's version of limited open banking and is an EU wide directive that has been transposed in EU national laws on 13th January 2018. The objective of PSD2 is a first step towards open banking regulation in the EU, and aims to stimulate innovation, competition and efficiency within Europe's banking industry, forcing banks to become an account servicing payment services provider (AS-PSP) to open up payment accounts infrastructure on the request of the payment services user to third party providers (TPP). Both the PSD2 directive in EU and open banking directive in the UK introduce two new licenses, namely the Account Information Service Provider License (AISP) and Payment Initiation Service Provider License (PISP), to the already broad range of licenses existing within both nations and can be summarised as follows:



L I C E N S E

**Bank or Credit Institution
including Fintech Credit Institution**

D E S C R I P T I O N

A normal traditional banking license with the option of a fintech specific banking license (known as the Fintech Credit Institution License – launched in June 2017 in recognition of increasing adoption of fintechs across Europe) and/or a neo-bank.

L I C E N S E

E-Money Institution (EMI)

D E S C R I P T I O N

An electronic money license that enables entities to create digital money wallet, receive, make and issue electronic money, following the directive of E-Money 2011

L I C E N S E

Payment Institution (PI)

D E S C R I P T I O N

A payment license that enables entities to provide, conduct and execute payment transaction following the directive of PSD 2009 / PSD 2018

L I C E N S E

**Account Information Service
Provider License (AISP)**

D E S C R I P T I O N

A third-party provider (TPP) license that enables entities or institutions to aggregate customer account information in one single platform, only under a customer's consent, following the directive of PSD2 2018

L I C E N S E

**Payment Initiation Service
Provider License (PISP)**

D E S C R I P T I O N

A third-party provider (TPP) license that enables entities or institutions to directly initiate and transfer payment from a customer's bank account to the merchant's bank account only under a customer's consent, following the directive of PSD2 2018



As the open banking policies within the UK and European banking market were effectively only launched in early 2018, the process of promoting innovation via open banking policies is still unfolding. There certainly is significant interest with hundreds of applications for AISP and PISP submitted on the first day to the FCA in the UK. Another example is the fact that, since the launch of the initiative, 2500 developers have registered to test Nordea's (a Swedish Bank) API¹⁸.

Whilst the open banking policies are fairly new, some fintechs and other non-banking entities have already been capitalising on open banking and PSD2 regulation to expand their product offerings and launch new technologies. For instance, Flux Systems Limited became the first AISP licensed fintech authorised by the FCA in the UK to aggregate all customer receipt information and loyalty rewards from different bank accounts into one mobile banking app platform¹⁹. On the other hand, Token.io Limited, a fintech company that leverages on APIs to create an open banking platform with the aim of removing friction in a customer's journey, became the first fintech to obtain a PISP license to enable TPP to connect to any EU banks to initiate payments²⁰.

Some digital banks are also embracing the open banking framework in a different way

and are providing Banking-as-a-Service. For example, Starling, a UK digital bank, besides offering its own products, allows companies to offer their own retail banking payment services using its Banking-as-a-Platform APIs²¹.

Traditional banks in the UK and Europe are also closely monitoring the evolution of open banking regulations and the reason is clear; it is reported that "as much as 10-20% of banking profits could be at risk of disruption [caused by open banking]."²² Moreover, it is reported by Oracle's insights that as much as 9% of retail payments revenues are projected to be lost to PISP services by 2020 due to PSD2²³. Also according to Fujitsu European Financial Services Survey of 2016, bank switching should be a major concern for mainstream banks as 37% of European consumers stated that they are likely to switch banks if they did not provide them with up-to-date technology,²⁴ which includes developing open API technologies. In fact, according to a survey of more than 4000 UK banking customers conducted by Bain, Salesforce and MaritzCX, switching is a main concern for traditional banks as approximately 63% of main customers with primary banking relationship have shown great interest in sharing their financial information to other banks, fintechs or other disruptors that offer more competitive rates²⁵.

[18] - Koskull, Casper Von, "CEO Comment: Customer Satisfaction, digital services and sustainability in focus," Nordea; 24th October 2018;

[19] - 2018 Flux Systems Limited, "Flux now authorized by the FCA" January 17th, 2018;

[20] - Cox, David; "Can the U.K's major banks do more to embrace open banking?" - PaymentsSource and Source Media, Inc. 2018; 21st August 2018

[21] - "Starling files into banking-as-a-service space" Finextra, August 3rd 2018,

[22] - Swinton, Stanford; Roma, Eduardo; "Why Big UK Banks are Worried about Open Banking." 2018 Forbes Media LLC, March 15th 2018,

[23] - Oracle, "Gain Insights into Current Trends and Challenges Impacting the Financial Services Industry," March 2nd 2017;

[24] - Fujitsu (2016) :The Fujitsu European Financial Services Survey 2016

[25] - Ibid.

These customers who display high-risk of switching banks are estimated to make up almost half of a traditional bank's profits.

What this means is that traditional banks are facing great challenges ahead caused by open banking and PSD2, and in order to confront these challenges, traditional banks need to redefine their business strategy and embrace open banking and PSD2 regulations.

One of the methods for traditional banks to adapt to open banking and PSD2 and to retain customers is for them to set up partnerships and collaborate with TPPs or fintechs to provide better and more competitive and customer-centric financial services. For instance, HSBC decided to partner with Bud — a fintech startup that obtained both an AISP and PISP license and specialises in accumulating data and putting relevant information into one single platform — to pursue and test out its open banking system such that customers can access greater money management tools and make better financial decisions²⁶. On the other hand, Santander UK, partnered with Kabbage — a fintech that offers online SME funding — to leverage on their automated lending platform to increase SME's convenience to access capitals²⁷. Another example is ABN AMRO that has developed a new lending solution Tweadle through collaborating with their fintech partner Cloud Lending Solutions

(CLS) that integrates their lending platform with third-party providers²⁸.

Another method for traditional banks to adapt to the open banking disruption is to apply for the new open banking licenses (AISP and PISP) themselves. For instance, HSBC launched a new app called Connected Money that enables its customers to view all their accounts ranging from current, savings to mortgage, from 21 different banks including Barclays Bank, Lloyds Group, Santander and Bank of America just to name a few, all on one platform²⁹. With this beta app, HSBC improves the convenience of banking for its customers whilst also providing them with a holistic and comprehensive overview of their financials, which means customers are able to make better financial decisions and better manage their money. Barclays is another example of a bank that has embraced the open banking policies and makes it possible for customers to view their current accounts from other banks in the Barclays app.

WHAT ARE THE BREXIT AND GDPR IMPLICATIONS?

It is noteworthy to mention that in the case for UK, Brexit may affect many of the rules and regulations that UK complies with. This could impact the ability of UK fintechs and

[26] - "HSBC Partners Bud for Open Banking Trial," Finextra, 19th October 2017;

[27] - Dunkley, Emma; "Santander UK Teams up with Kabbage to Offer Fast Loans to SME" The Financial Times LTD 2018; April 4th 2016;

[28] - Watterson, William; "2018 will be The Year of Open Banking. Here's Everything you need to know." The Next Web 2018; June 27th 2018

[29] - Browne, Ryan; "HSBC to let UK customers manage different bank accounts on one screen with new app." CNBC; Thursday 28th September 2017;



UK banks to expand across Europe as passporting may come to a halt.

The General Data Protection Regulation ('GDPR') is another uncertainty and could make it harder to achieve all the benefits of PSD2 regulations. This regulation has been effective from 25th May 2018 and consists of providing uniformed data

protection throughout the EU across all their 28 Member States. GDPR is applicable to any organization regardless of where the data is processed, and organizations are to determine if they are processing data of EU residents³⁰.

[30] - Data Protection, European Data Protection Supervisor,

CONCLUSION

It is conspicuous that both UK and Europe are experiencing major disruptions within the retail banking industry, where the mandate of open banking and PSD2 is the main driver of this change. Internet banks have been making significant inroads in the banking industry in the UK and Europe but tend to focus on the underserved customers such as SMEs, students and other sub-prime customers. Many of these Internet banks have seen a strong growth in customer base but few are profitable. This may be due to the fact that customers may keep their primary bank account with the traditional banks and simply add another account of an Internet bank in order to use its free services or to make small transactions.

The open banking mandate may create significantly more disruption in the retail banking industry as it has the potential to impact services across all customer segments (and not only the underserved). The new open banking regulation is forcing banks to open up access to valuable customer data. Customer research indicates that customers in Europe are looking for their banks to share their data so they can obtain more competitive products and services. As a result, there seems to be significant interest by many fintechs who believe that they can offer great new products and services by leveraging the open banking technology. Some traditional banks such as Barclays and HSBC are not waiting however for these new market entrants to move in but have embraced open banking themselves or partnered up with fintechs in order to retain their customers.



UK/EUROPE - KEY FINDINGS

Digital Challenger Banks:

- / Internet banks are growing fast (currently 5.5 million customers) but only in one niche market; underserved market segment (SMEs and students)
- / Few Internet banks are profitable or breaking even. Revenues include income generated via payment/financial product transactions, and (occasionally) add-on (lifestyle) services of merchants
- / Potential growth opportunity for Internet banks as customers become more open to switching (e.g. approximately 1,000,000 switched in the UK in 2017)

Impact of Licenses & Regulations:

- / ECB's **Fintech Credit Institution License** (launched in June 2017) has been receiving little interest from fintechs
- / Regulations around **Open Banking Initiatives** (CMA Open Banking Mandate & PSD2 Mandate) launched in the UK & Europe in January 2018 have generated significant interest by traditional banks and fintechs:
 - 2 additional licenses were introduced - **Account Information Services Provider License (AISP) & Payment Initiation Service Provider (PISP)**. These licenses have seen significant interest from fintechs.
 - Some traditional banks (e.g. HSBC & Barclays) are also embracing Open Banking Policies/ Licenses themselves to increase their product offering
 - Other traditional banks are engaging in partnerships with fintechs to provide better and more competitive and customer-centric products/services



UNITED STATES:

THE SPECIAL PROVISION NATIONAL BANKING CHARTERS AND THE RISE OF NON-MANDATED OPEN API

USA: THE PIONEER OF INTERNET BANKS

Amongst some of the first internet banks launched in the US were First Internet Bank & Bank of Internet USA (now known as Axos Bank) which were established in 1996 & 1999, respectively. They have assets accumulating to USD 8.5 billion & USD 2.4 billion respectively. However, these revenues are very minimal compared to large traditional banks such as JP Morgan, Citi, Bank of America, etc.^[31] Since then, there have been several digital banks that have been launched in the past 3-4 years. However, the number of people who use pure Internet banks in the U.S. (18.9 million) is small compared to people who use traditional banks (138.4 million). The customers of Internet banks are showing similar characteristics to those of traditional banks with one major exception; they are about 10 years younger (35-44 years old)^[32].

Due to the complex and fragmented banking regulatory system in the US, most 'Internet banks' are providing digital banking services

by either partnering with or are acquired by licensed banks. For instance, Simple Bank, founded in 2009 in the US and acquired by BBVA Compass in February 2014, has seen customer growth hit 50% in 2016^[33] where they acquire at least 30,000 customers a month^[34], mostly appealing to younger generations and millennials as its target market. The bank provides normal checking accounts and visa debit cards, as well as a budgeting service that enables users to see how much money is safe to spend. In essence, Simple Bank has experienced great success mainly because of its acquisition by BBVA Compass that enabled the bank to operate under a cost-effective digitalized model such that it was able to provide competitive rates, innovative and customer-centric banking products to typically underserved customers and a niche market that is usually untouched by traditional licensed banks.

Similar as in Europe and the UK, the Internet banks in the US are facing a hard time to make profits. Chime, a US mobile bank that offers a Visa Debit Card with no monthly

[31] - Tin in-Yau, Ko; "Why virtual banking is far from being a disruptive force." Ejinisght; October 6th 2017;

[32] - Streeter, Bill; "Innovation Driving More Consumers to switch Banks Now," The Financial Brand; October 8th 2018;

[33] - Perez, Sarah; "Simple's new kind of shared bank account targets unmarried partners, roommates & more" - February 28th, 2017; Oath Tech Network 2018;

[34] - Spencer, Malia; "What banking giant BBVA had to say about Simple in its earnings call." Portland Business Journal, American City Business Journals 2018; February 2nd 2017;

fees, an automatic savings platform and cashback rewards on purchases was founded in 2013 and achieved more than 1.7 million customers and 4.5 billion USD in transaction volume in 2018. It partners with The Bancorp Bank to offer deposit accounts. However, it has not reached profitability yet.^{35,36}

While the US Internet banks have found a niche in the market, it will become important that they are able to convert customers who have an account with the traditional banks. The good news for those fintechs is that switching is becoming prevalent in the US retail banking market, whereby it is reported that 11% of North American consumers have already switched banks and that more than 15% of North American customers have switched to virtual banks or payment providers over the past year³⁷. Furthermore, US fintech personal loans grew significantly from 2013-2017 (940%), overshadowing personal loan growth in banks (93%) and credit unions (42%) over the same period, according to a survey by Credit Karma.³⁸

SPECIAL PROVISION NATIONAL BANKING (SPNB) CHARTER: A CHANGE, NOT A DISRUPTION

As of now, fintechs that are looking to offer banking services are often partnering with licensed banks due to the complex regulations in the US to apply for a banking

license. In response, the US regulators have launched the Special Provision National Banking (SPNB) charters in July 2018. The launch comes after the acknowledgement of the need to come to a compromise and end a legal dispute in regards to complex dual regulation system that fintechs have to comply with.

Under the new SPNB banking license, fintechs fall under the regulations and supervisory of the Office of the Comptroller of the Currency (OCC) as a national bank and therefore is exempt from state regulations and examinations³⁹. The purpose of launching SPNB banking charters also extends to providing consumers with greater choices as well as drive economic growth and modernization via disrupting existing federal banking system by increasing competition and introducing new fintech challengers.

In theory, the launch of SPNB licenses should encourage fintechs to apply for a banking license, one of the main reasons being that a fintech with an SPNB license would not require state-by-state licenses wherever it operates nationally. However, it is shown that the general reaction of fintechs to the launch of SPNB license seems rather apathetic. The reason why fintechs are reluctant to apply in mass for a SPNB license may be due to the fact that a SPNB licensed bank will initially be subjected to stricter and heightened supervision as it is relatively new, integrates more technology

[35] - Bhattacharyya, Suman; "1 million customers; Inside neobank Chime's growth strategy." Tearsheet; May 18th 2018;

[36] - Crosman, Penny; "Chime grows to 1.7M customers, acquires credit scoring app Pinch." American Banker; October 10th 2018;

[37] - Ibid - Pg. 11

[38] - Maizie Simpson, "Fintech personal loans saw explosive growth over last 4 years, analysis shows", Credit Karma, October 18 2018

[39] - Di Cioccio, Stphen; "Client Alert - Fintechs are now Eligible to Apply for National Bank Licenses: Should They?" - FisherBroyles, LLP 2018, August 7th 2018;





and therefore is susceptible to greater risk, uncertainty and volatility. In addition, fintechs who acquire a SPNB license will ultimately end up complying with the same supervisory requirements that oversee national banks, including demonstrating similar commitments to capital and liquidity standards as well as financial inclusion. Thus, fintechs may view the cost of applying for SPNB license far outweighing that of the benefits it incurs.

As of now, the new SPNB licenses are not causing much disruption in the US retail banking market as both fintechs and licensed banks are finding other means to provide and assist the growing demand for digital banking services in the US, where it is projected that by the end of 2019, there will be 161.6 million digital banking users in the US⁴⁰.

On a separate note, the SPNB does face some legal challenges with both the Department of Financial Services (NYDFS) and Conference of State Bank Supervisors filing lawsuits citing that the SPNB charter challenges 'state sovereignty'.

THE RISE OF NON-MANDATED OPEN API

Unlike the UK and Europe, US does not have an open banking regulation in place. In fact, US is arguably lagging in terms of enforcing legislations that bolster open banking.

This is perhaps due to the complex and fragmented banking regulatory system in the US, whereby banks will be subjected to both federal and state banking regulations dependent on the type of banking charters they have. Moreover, if there are any legislation conflicts between the federal and state level, the federal legislation always supersedes the state legislation. Thus, one can conspicuously see the complications US faces when trying to enforce open banking policies, as it is extremely difficult to create a unified standard or regulation for both banks and fintechs to comply with⁴¹.

Despite the lack of open banking regulations, the retail banking market in the US is pushing for the country to follow the footsteps taken by that of the UK and Europe. In fact, several US regulatory bodies have taken the initiative to create a unified guideline that follows the concept of open banking. For instance, the Consumer Financial Protection Bureau (CFPB) released a set of guidelines to clarify the principles of consumer data access, sharing and control⁴². In addition, the National Automated Clearing House Association (NACHA) has also recently created an API Standardization Industry Group (ASIG) that specialises in developing a unified community constituting different banks, associations and consultancy firms, that promotes innovation and open API within the US financial services industry⁴³. The creation of ASIG is not regulatorily established nor are its developed

[40] - Statista 2018 - "Number of digital banking users in the United States from 2014 to 2019 (in millions)"

[41] - Lalji, Farhan; "To Realize the Promise of Open Banking, US Banks Need to Think Like VCs" Banking Exchange; September 3rd 2018;

[42] - Courbe, Julien; Joyce, Sean; Lavine, Jeff ; Agarwal, Vikas ; Gimbert, Genevieve; "Open Banking: US is Next - Financial Crimes Observer" PWC 2017-2018., PwC's Financial Crimes Unit; April 2018.

[43] - Eroglu, Hakan; "The American Way of Open Banking Regulation." - Finextra; 16th August 2018;

open API solutions mandated, but is seen as a voluntary and market driven action aimed to capitalize on the benefits of open banking⁴⁴.

Most of the initiatives around open APIs in the US today are driven by market demand instead of regulations. This is attested by the fact most of the US population, specifically millennials and individuals with income greater than US\$100,000 (77%⁴⁵ and 76%⁴⁶ respectively), showed high willingness to share data amongst different financial institutions. Furthermore, customer account switching is gradually becoming an imminent issue in the US retail banking market, whereby it is reported that 11% of North American consumers have already switched banks and that more than 15% of North American customers have been acquired by virtual banks and other payment providers over the past year⁴⁷, most probably because they have greater capabilities of delivering a highly digitized and customer-centric financial product.

US banks, despite the lack of mandated regulations, are listening and responding to changing customer demographic and market demands via building their very own API platforms and collaborating with fintechs and TPPs, knowing very well that if they do not find methods to innovate and digitize banking solutions to enhance a customer's banking lifestyle, they will

fall behind other players in the retail banking market, let alone falling behind other countries who are already ahead in terms of complying with open banking. As such, US banks have been developing their own open API platforms as well as partnering with fintechs or other TPPs. For instance, the four largest depository banks in the US by asset size — that is Bank of America Merrill Lynch, Citigroup, JPMorgan Chase and Wells Fargo — who together holds 40.5% of the US banking market's assets,⁴⁸ all have voluntarily developed their own open API platform and embraced the idea of partnering with fintechs or TPPs. For example, Bank of America Merrill Lynch launched their API gateway on January 2018 to enable collaborations between clients, fintechs and TPP such that customers can easily manage and access their banking information and initiate payments on a real-time basis.⁴⁹ Citigroup in the US launched Citi's Pay with Points API that enabled Citigroup customers who are a members of Citi ThankYou® Rewards to cover part, if not all, of their purchase cost when using a Citi credit card to make a purchase on BestBuy.com and Wonder App.⁵⁰ JPMorgan Chase launched a digital-mobile only bank, Finn by Chase, in June 2018 which enables customers to sign up and access banking services via their smartphone instantaneously. The launch of the parallel digital bank is geared towards tech-savvy young millennials who prefer

[44] - Ibid

[45] - Helin, David W.; Sadowski, Stephanie; "Banking on Value, Rewards, Robo-Advice and Relevance - North America Consumer Digital Banking Survey," Accenture Consulting, Tuesday, 25th July 2017 - Pg.9

[46] - Ibid.

[47] - Ibid - Pg. 11

[48] - Klinger, Robert; Hightower, Jonathan; "Landscape of the US Banking Industry" Bryan Cave Leighton Paisner, April 7th 2017;

[49] - Hennessy, Louise; "Bank of America Merrill Lynch Launches API Gateway," Bank of America Merrill Lynch 2018; January 24th, 2018;

[50] - Fintech Innovation "Citi releases APIs to Third Party Developers," 2018 Questex Asia Ltd; November 13th 2016,





to bank on smartphones and are typically underserved by traditional banks.⁵¹

Overall, it would seem that open API and the partnerships formed between banks, fintechs and TPP are creating more visible

and impactful transformation in the US retail banking market as of today than that of SPNB fintech licenses.

[51] - Henry, David; "JPMorgan Chase takes smartphone account 'Finn' nationwide" Reuters 2018; June 28th, 2018;

CONCLUSION

The US does not have an open banking regulation in place. The US did release a new regulation for fintechs to apply for a banking license namely the Special Provision National Banking (SPNB) charter. However, the effectiveness of SPNB Fintech Licenses is questionable as it does not seem to be the most cost-efficient and easy way for fintechs to provide innovative, digitized customer-centric financial services. In fact, the Government Accountability Office (GAO) recommends that US regulators should follow the steps and initiative taken by foreign countries like that of UK or Europe to facilitate communication between fintechs, banks and regulators to promote innovation,⁵² which means implementing open banking regulations.

As a result, Fintechs tend to partner up traditional banks in order to provide their banking solutions. These Internet banks have been focusing mostly on a younger group of customers and not many seem to have achieved profitability yet. However, there may be significant room for growth as US consumers are starting to switch their bank accounts more rapidly, especially towards virtual banks and payment providers.

Traditional banks in the US, despite the lack of mandated regulations, are responding to changing customer demographic and market demands via building their very own API platforms and collaborating with fintechs and TPPs, knowing very well that if they do not find methods to innovate and digitize banking solutions to enhance a customer's banking lifestyle, they will fall behind other players in the retail banking market.

The fact that the segment of US customers who are using pure Internet banks is small, consists of a younger population and may be difficult to serve in a profitable way are important lessons to consider for the Hong Kong market. However, the fact that more customers from traditional banks are switching their account to virtual banks are potentially positive signs for the Hong Kong banking participants.

It is also noteworthy that the SPNB license in the US (similar to the recently enacted Virtual Banking license in Hong Kong) does not seem to generate much interest. On the other hand, the Hong Kong retail banking industry may have some advantages compared to the US as the Hong Kong regulator has been more forthcoming around open banking regulations.

[52] - ibid



USA – KEY FINDINGS

Digital Challenger Banks:

- / Internet banks have been growing quickly since 2014, but are mainly targeting the underserved market (younger generation and small enterprises)
- / Market size addressed by Internet banks is minimal compared to large traditional banks and majority of Internet Banks are not profitable yet
- / Internet Banks mainly provide services through partnering with traditional banks or are acquired by licensed banks, due to complex and fragmented banking regulatory system in the US
- / Positive outlook for Internet Banks going forward; 15% of customers have already switched from traditional banks to virtual banks/payment providers over the past year

Impact of Licenses & Regulations:

- / The Special Provision National Banking (SPNB) License launched in July 2018 received little interest from fintechs due to stricter supervision from regulators
- / Traditional US banks are collaborating with Fintech's/Third Party Service providers and developing their own API platforms to offer innovative solutions
- / Open Banking regulations are currently not mandated and is driven by market demand. However, regulatory bodies (CFPB and NACHA) have taken initiatives to create unified guidelines regarding open banking.



SINGAPORE:

THE RISE OF NON-MANDATED FINANCIAL INDUSTRY API

Singapore is arguably the forefront player in terms of developing an open banking framework in the APAC region. Unlike the UK and Europe whereby regulators are accelerating the spread of open banking through mandating the adoption of the framework, and unlike the US whereby there is lack of regulations around open banking, Singapore regulators are actively encouraging the organic development of an open API infrastructure.

The Monetary Authority of Singapore (MAS) has been experimenting with the idea of open banking since November 2016 when they issued a 'Finance as a Service (FaaS) API playbook' specifically for financial institutions, fintechs and other interested parties to adopt an open API system. The push for an open API framework is due to a shift in market demand from physical brick-and mortar banking to digital banking that provides a greater enhancement in customer experience. Digital banking in Singapore is recorded to have a whopping 97% penetration rate, and that eight out of ten banking customers would consider opening an account with a branchless bank. In addition, banking customers in Singapore have reported that they are willing to move at least 35% of their assets into a digital wallet^[53]. This is perhaps why both mainstream banks, start-up

fintechs and TPP see open API as a strategic opportunity for them to deliver greater value to their customers, either through collaboration and/or developing their own open API platform in-house.

For instance, DBS Bank developed their own open API platform, where their platform is the largest open API platform existing in the world today. DBS Bank strives for digital transformation in banking services via directly engaging and interacting with their customers through fintech innovation, and in doing so they aim to improve a customer's experience and lifestyle by delivering added-value and customer-centric financial products. For example, it was found that over two-thirds of SME in Singapore (or 67%) reported that manual bank statement reconciliation as one of the main challenges that hinders their daily business operations^[54]. Thus, DBS Bank formed a partnership with Xero to provide an API-driven service that enables SME to reconcile all transaction and bank statement data into one platform, making it more efficient for them to understand their financial position and helping them make better financial decisions.

Similarly, fintechs in Singapore are collaborating with banks and capitalizing on open API to develop new technologies.

[53] - Singapore Business Review; April 18th 2018; Charlton Media Group 2018;

[54] - DBS Bank Ltd 2017; "DBS and Xero launch new service for SMEs to instantly link their DBS bank accounts with Xero's cloud accounting platform." 1st August 2017;

For instance, SoCash is a cash and liquidity management, distribution and circulation mobile app that has formed partnerships with DBS, POSB and Standard Chartered. SoCash's mobile app works by directly plugging into a bank's API such that customers

can easily order and pick-up cash from the nearest cash outlet without having to visit an ATM branch, making it more efficient for consumers to acquire physical cash⁵⁵.

[55] - Seth, Samiksha; "Open Banking Initiatives in Singapore, Australia, Hong Kong and India," Teknospire Software services Private Limited 2018; July 4th 2018;

CONCLUSION

Even without any specific licenses for virtual banks or fintechs, we see open API transforming Singapore's retail banking industry. It remains to be seen however to what degree an open banking ecosystem and its corresponding benefits can be rolled out without mandated compliance and standardization. As such, Hong Kong is aligned in many ways with Singapore around its retail banking industry.



SINGAPORE – KEY FINDINGS

Fintechs and banks:

- / Digital banking has a high customer adoption rate and customers are open to moving assets into digital wallets
- / Open API is perceived as a huge opportunity; banks, fintechs & TPP's are collaborating with each other or developing their own in-house API platform to deliver a seamless & digitalized customer experience

Impact of Licenses & Regulations:

- / No specific licenses for Virtual Banking/fintechs are launched in Singapore, but regulators such as Monetary Authority of Singapore (MAS) encourage the development of Open API Infrastructure:
 - 'Finance as a Service (Faas) API playbook' initiative was launched in 2016



MAINLAND CHINA:

CREATING SUCCESS STORIES BY COMBINING BANKING AND NON-BANKING SERVICES IN ONE ECOSYSTEM?

Mainland China does not have open banking nor virtual banking regulations. Mainland China arguably does not require these policies as big-tech players like Alibaba and Tencent, are rapidly becoming dominant digital providers within the banking and payments industry, and are operating under a system that resembles the open banking and virtual banking systems found in other regions in the world.

To put this into context, both Alibaba and Tencent alone controls almost 92%⁵⁶ of the \$16 trillion Chinese mobile payments market, whereby the number of mobile payments in China totalled up to \$9 trillion in 2016, that is 80 times more than the number of mobile payments recorded in the US in 2016, which only totalled up to \$112 billion⁵⁷. Ant Financial (whose parent organization is Alibaba Group) operates Alipay, which is a third-party mobile and online payment platform, and is recorded to have 500 million monthly active users.⁵⁸ Since Ant Financial operates as a full-scale financial services company, it enables Alipay to offer a vast array of financial products including “money market investing (Yu’e Bao), insurance

services (Zhong An), credit rating services (Sesame Credit), personal credit lines (Ant Micro Loans) and online banking (MYbank).”⁵⁹ In summary, Alipay has become a ‘global lifestyle super app’ allowing consumers not only to pay for goods and services on a cashless way but also to easily invest, to book travel, to pay utility bills, to transfer money to other consumers, to get food delivery and many other activities.

On the other hand, WeChat pay, operated by Tencent, is recorded to have 900 million monthly active users,⁶⁰ and also leverages on WeBank, an online bank whose major shareholder is Tencent. WeBank was founded in 2018 and is considered to be the first Internet bank in China. WeBank is focusing on individuals and small and medium enterprises that often lack credit history required to become customers of traditional banks in China. The bank is using sophisticated credit analysis based on WeChat social media usage and online purchase patterns and this way of leveraging data resulted in WeBank making a decent profit of \$205 million in 2017, about 2 years

[56] - Aveni, Tyler; Roest, Joep; “China’s Alipay and WeChat Pay: Reaching Rural Users” CGAP 2017, December 2017

[57] - Jacobs, Harrison; “One Photo Shows that China is Already in a Cashless Future.” Business Insider, Insider Inc. 2018; May 29th 2018;

[58] - *ibid*

[59] - Dudarenok, Ashley G; “Alipay vs Wechat Pay: Mobile Payment Giants Driving China’s Cashless Transformation,” Jumpstart Magazine, April 30th, 2018

[60] - *ibid*

[61] - Hua, Chai; “WeBank to build blockchain-based business ecosystem”, China Daily Europe, September 11 2018,

of going live.⁶¹ Furthermore, both Alipay and WeChat pay have the ability to link users' e-wallets to in-app platforms that offer low-barrier-to-entry investment and insurance products. More indirectly, a combination of online and proximity payment transactions provides data on users that ultimately enable Ant Financial and Tencent to offer users a host of credit products across their businesses.⁶² The above examples not only reveal that China is gearing towards building a digitalized and cashless ecosystem, but it also shows that China's big tech firms, specifically Alibaba and Tencent,

is a gold mine for consumer data. Their massive consumer data enables them to fully deliver an enhancement in a customer's lifestyle even without open banking or virtual banking regulations. Their success is also attributed to their ability of digitalizing financial, banking and payment services on a wide-scale that addresses the issue of banking accessibility, offers solutions for both e-commerce and merchants, and penetrates both the urban and rural population in China.

[62] - Aveni, Tyler; Roest, Joep; "China's Alipay and WeChat Pay: Reaching Rural Users" CGAP 2017, December 2017

CONCLUSION

It is fascinating to see how Mainland China has been able to deploy rapidly open-banking and digital banking type models without relying on too many regulations and policies. A few Big Tech firms have been able to successfully build integrated eco-systems that provide non-banking and banking services to customers and they have done this by leveraging huge amount of customer data.





MAINLAND CHINA – KEY FINDINGS

Market participants:

- / Big tech players (e.g. Alibaba & Tencent) are quickly emerging in the banking and payments industry by offering digitalized banking services (in a system that resembles the open banking and virtual banking systems of other regions)
- / Volume of payment transactions and monthly active users is fast growing and is significantly larger than the West (UK & US)
- / China is rapidly steering towards becoming a cashless eco-system
- / Big tech players are able to leverage vast amounts of data creating ecosystem that integrate banking and non-banking services resulting in a seamless customer experience. Examples such as Alipay are becoming 'global lifestyle super apps' allowing consumers not only to pay for goods and services on a cashless way but also to easily invest, to book travel, to pay utility bills, to transfer money to other consumers, to get food delivery and many other activities

Impact of Licenses & Regulations:

- / No specific licenses are launched around Virtual Banking/ Open Banking in China, however big-tech players have strongly leveraged on customers data and a digitalized eco-system



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HOW DOES HONG KONG COMPARE WITH OTHER REGIONS?



Market research indicates that the Hong Kong population is looking for significant changes with their current banking services. In response to this, with the HKMA announcement in September 2017, Hong Kong has made major progress towards a New Era of Smart Banking. Several initiatives including the Virtual Banking guidelines and the Open API Framework are key building blocks towards disrupting the retail banking industry in Hong Kong. The interest in Virtual Banking license has been significant and market participants are embracing the Open API Framework. However, based on a comparison with other regions in the world, Hong Kong may not be running at the right pace yet to truly disrupt its retail banking industry.

It is noteworthy for Hong Kong to leverage some best practices from other regions in the world. Mainland China can be used as an example in which the convergence of banking and non-banking services into a few integrated ecosystems is revolutionizing its banking world. The success of the WeChat ecosystem that integrates a large number of services including banking services can serve as an example for Hong Kong. However, Mainland China's unique characteristic of a population of 1.4 billion and its lack of clear regulations perhaps may not serve as a fair comparison for Hong Kong.

Potentially Europe, UK, US and Singapore may serve as better comparisons. Internet Banks in Europe/UK have been signing up



customers rapidly but it is fact that most of their customers tend to be underserved customers such as SMEs, students and other subprime customers. A similar situation exists in the US with Internet banks mostly serving this same niche of underserved customers. On the other hand, in both regions, there are indications that customers of traditional banks are starting to switch to those virtual banks. The virtual banking license in Hong Kong will allow new (and existing) entities to launch an 'Internet bank' and the trends in Europe, UK and US around Internet Banks may be repeated for those virtual banks in Hong Kong.

While the regulator in Hong Kong has launched an open banking initiative in July 2018, the Europe and UK region has been more aggressive by mandating open banking policies in the form of PSD2 regulations. The announcement of PSD2 in January 2018 has created significant interest for account aggregation and direct payment licenses from fintechs across Europe. A few good examples of fintechs embracing the open banking API are up and running and more are expected soon. Furthermore, and more importantly, PSD2 has arguably created a true sense of emergency with some traditional banks to jump on the bandwagon and to enhance their own new apps leveraging on open banking API. While these

traditional banks are currently offering only banking products and data that enhance the customer experience within their own app, these banks are also aggressively pursuing options to integrate non-banking products and information as well. This would allow them to achieve what some of the big-tech providers in Mainland China have achieved, namely a truly integrated ecosystem that provides banking and non-banking services in their own app by leveraging huge amount of data. This may be a good benchmark for Hong Kong participants to follow especially as market research indicates that 86% of the Hong Kong population expects their banks to increase their offerings beyond the typical banking services.⁶³

Transforming a retail banking industry means creating a highly customer-centric financial and non-financial product and service that enriches a customer's experience. Today, we do see efforts made by the HKMA to launch a virtual banking license and to promote open API. However, HKMA is still trying to define the timeline to deploy some of the services such as account information aggregation and payment and transactions initiations. In the meantime, traditional banks in Hong Kong are welcome to adopt and create their own API programme or platforms. Despite welcoming banks to build their own API

programmes or platforms, there is a slow rate of adoption for open API by banks in Hong Kong. Perhaps the reasons justifying this slow rate of adoption for open API in Hong Kong is due to the fact that banks, businesses and the general Hong Kong population lack the understanding of open API and believe that adopting open API is equivalent to taking on more risk⁶⁴. In Hong Kong, innovation and digitization are sacrificed at the expense of greater security, compliance and data control. A look at the evolution in UK and Europe may indicate that traditional banks should embrace open API more rapidly to retain their customers and offer innovative customer experiences.

If traditional banks in Hong Kong can change their mindset, take on new risks, embrace more rapidly the numerous opportunities provided by the open API framework, and leverage data of fintechs and non-banking entities, while also maintaining high levels of security and controls, then they would be able to fully deliver a financial product and service (or even create an integrated ecosystem) that encompasses a customer's lifestyle.

[63] - Wavestone Research June 2018

[64] - Chen, Laurie; "Businesses in Hong Kong slow to adopt digital tech despite growing demand, finds HSBC survey," The South China Morning Post, Thursday 21st June 2018,



FOCUS:

CREATING A DIGITAL BANK

Based on our experience with launching digital banks across the world, the following items need to be considered when launching a virtual or digital bank:

IT ARCHITECTURE AND OPERATING MODEL

- Platform and customer centric: Open Modular Platform approach, allowing B2B2C business models (Uber / Amazon / Tesla / ...), customer intimacy focus, and a clear separation between distribution (customer intimacy) and production (industrialized and modular)
- Security and regulation anticipated by design through architecture / data design
- Data management and advanced analytics enabling 360° Vision, Next Best Action, Next Best product, robot-advising, automated fraud detection, churn prevention mechanism, event driven real time marketing loop
- New agile operating model and governance at scale. Embedding and sustaining culture agility
- Collaboration with other tech partners

PRODUCTS AND SERVICES

- Offering differentiating banking services and products from traditional banks
- Leveraging consumer data and providing 'lifestyle services' versus the standard banking products/services. Creation of unique customer experience
- Offering special incentives to attract new customers (e.g. cash credit with account opening, retail coupons, etc.)
- Creating unique customer experience

DISTRIBUTION

- Finding innovative ways to reach a wide distribution

OPERATIONS

- Developing an efficient operating model (Target Operating Model), especially in the customer service area (e.g. contact centre, advanced AI chatbots)

CYBERSECURITY

- Assessing cybersecurity risks during the initial stages of setting up a virtual bank. Business continuity plan.

FINANCIALS

- Detailed cost model and efficient Program Management Office (PMO) that tracks the program plan, technology rollout, and performance KPIs

APPENDIX A

In order to achieve a new Smart Banking Era, HKMA announced the launch of the following 7 initiatives in September 2017^{65, 66}:

1 Full connectivity of Digital Retail Payments through Faster Payment System

Faster Payment System (FPS) focusses on providing the required infrastructure for a full person to person and person to business connectivity amongst retail customers, businesses and between bank and non-bank payment service providers. This is very user friendly and payments for HKD or RMB funds can be accommodated through mobile phone numbers or email addresses. Also, the HKMA has a group working towards facilitating a common QR code standard to encourage a wider use of mobile retail payments providing more convenience to customers.

2 Supervisory Sandbox 2.0

The HKMA plans to upgrade the current Fintech Supervisory Sandbox to Sandbox 2.0 with three new features consisting of the following:

- / Fintech Supervisory Chatroom — this will be organised to quickly provide feedback to banks and technology firms at the early stages of the Fintech project. For this, tech firms have already accessed the Sandbox's Chatroom for more than 110 cases for HKMA's regulatory feedback for projects.

- / Tech Firms may have direct access to the sandbox by seeking feedback from the chatroom without having to go to the bank

- / Sandboxes of HKMA, the SFC and the IA (Insurance Authority) will be launching their own sandboxes and will be linked up through a common interface in aim for one single point of access by the stakeholders for Fintech solutions covering multiple sectors.

3 Facilitating Virtual Banking in Hong Kong

Virtual Banking is defined as bank which delivers retail banking services through the internet or other digital channels instead of physical branches/brick or mortar stores. The HKMA aims to facilitate the adoption of virtual banks through announcing new guidelines on the authorization of virtual banks to obtain a license in May 2018. It is believed that virtual banks can help promote financial inclusion for clients such as SME's or individuals and offer a more customer centric experience, leveraging on the advancements of technologies, fintech and digital banking space⁶⁷.

4 Banking Made Easy

The 'Banking Made Easy' initiative launched by the HKMA aims to identify and minimize regulatory frictions that restrict technological innovation and the ability of providing a more enhanced digitalized customer experience for clients in financial services. A taskforce has been set up with the focus of remote onboarding

and account maintenance, online finance, wealth management and robo advisors. Identifying and streamlining supervisory requirements relating to remote or digital onboarding of customers is one of the key work streams under this initiative, which has already had some successful launches and more than 10 banks are planning to launch similar services. 10 more banks also plan to launch online personal lending services which make use of machine learning technologies and data analytics. This enables banks to cater to the delivery of more services with better user experience through mobile phones and other channels. In addition, discussions around how personal data protection will be applicable are in progress and as part of this initiative, the HKMA plans to launch a number Regtech specific projects⁶⁸, focusing on the following:

/ **AML/CFT surveillance technologies** — Managing financial crime is now crucial for compliance purposes and by leveraging on technologies including Data Analytics and Machine Learning, there is potential to complement banks' processes in AML/CFT surveillance for improved efficiency.

/ **Regtech for prudential risk management and compliance** — There have been recent developments with the Regtech community and some financial institutions, where innovative ideas have been produced through using advanced technology in Prudential Risk Management and Compliance (i.e. Capital Optimization, Model Risk Management, Stress Testing, etc.)

/ **Study on machine-readable regulations** — Machine readable regulations involves new concepts with a key objective of facilitating banks to automate their interpretations of regulatory requirements by leveraging on technology. This would be highly beneficial for any changes in the regulatory requirements, where banks would be required to revise their compliance processes and reporting arrangements. As a result, this would eliminate manual efforts and minimize the risk of errors due to less human interaction.

/ **HKMA exploration of Suptech** — Suptech can be defined as the use of new technology to support and develop supervisory processes and activities. This would enable technology firms to obtain a better overview of regulatory requirements and supervisory processes, enhancing the development of the Regtech ecosystem in Hong Kong. The HKMA aims to explore the use of Suptech to assess the effectiveness and capabilities of the supervisory process going forward (i.e. automation of interactions with banks through streamlining banks' regulatory data collection mechanism, digitalizing information, etc.)

5 Open API Framework

An open API in Banking refers to a set of publicly available coding information that allows recognised third-party service providers (TSPs) along with customers consent to

connect to and conduct data exchange with the Banks IT systems. This can be between banks and other industries including lifestyle, health care and retail services. In addition, with effective API implementation, enhanced client centric experiences can be provided such as displaying all relevant banks products and services information under one platform for convenient comparison and analysis purposes.

The HKMA published an Open API Framework for the Banking Sector in Hong Kong and recently announced the launch of the Open API on their website (July 2018). This is aimed to enhance services provided in the financial sector, by fostering collaboration between Banks & Technology firms. The framework devised is based on 41 responses received from Banks, Technology/Fintech Firms, Industry Associations, etc. and follows a risk-based principle with a four-phase

approach, that has been developed to implement various Open API functions. The framework recommends following international technical standards, ensuring fast adoption & security and focusses on striking a balance between innovation and risk. The three key objectives consist of ⁷⁰ :

- / Ensuring competitiveness and relevance of the banking sector
- / Providing a secure, controlled and convenient operating environment allowing banks and third-party service providers (TSPs) to work together and develop innovative/integrated banking services for enhanced customer experience
- / Keeping up with international developments in the delivery of Banking Services

Four Phase Approach⁷¹

	CATEGORY TITLE	DESCRIPTION	TIMELINE
1	Product Information	“Read only” information offered by banks on details of their products and services, which would help financial product comparison sites.	6 months (by end of 2018)
2	Customer Acquisitions	Customer acquisition process through TSP’s which includes process such as: allowing submissions/application of credit cards, loans or other banking products.	12 – 15 months (by end of 2019)
3	Account Information	Retrieval and amendment of account information (account balance, transaction history, limits, payment schedules, etc. of authenticated customers for stand-alone or aggregated views. Thus, assisting TSP’s to perform analytics to gain customer insights.	To be defined in next 12 months
4	Transactions	Allowing TSP’s to conduct authenticated customer payments instructions transactions to banks.	To be defined in next 12 months

⁷¹The timeline indicated here is the latest expected date the banks are to make available the Open API. However individual banks can accelerate their process by launching their Open API as individual phases or completion, where Banks can enable the Open API’s for conducting transaction on their product and services during phase I. It is essential that the Banks ensure that the level of protection and the relevant third party service provider governance arrangements are aligned with the contracts.

Currently, the Open API Framework focusses on the retail banking operation in Hong Kong, as this segment has the largest customer base. One key element to note is that international/industry practices have been leveraged in the framework ensuring that the processes can be smoothly implemented and there is a development of the Open APIs. Looking ahead, as the ecosystem for the Open API is constantly evolving, thus this framework only indicates a guide and the HKMA plans to work with the industry to regularly review the framework to ensure the implementations by banks and development of innovative products are aligned with customer needs.

6 Cross-border Collaboration in Fintech⁷²

The HKMA focusses their efforts on collaborating with various authorities and jurisdictions in the development of Fintech. Some initiatives that have been conducted include the development of a Distributed Ledger Technology (DLT) platform to digitalize banks trade finance processes in Hong Kong and is in discussion on developing cross-border infrastructure to connect with of potential connectivity with a similar trade platform in Singapore. As of September 2017, 7 Banks have commercialised the DLT

based, trade finance proof-of-concept into the production system called, Hong Kong Trade Finance Platform (HKTFP). This would help in digitalize and automate trade processes, thereby reducing risk and fraud.

7 Enhancing research and talent development

The HKMA aims to foster greater collaboration with the Hong Kong Applied Science and Technology Research Institute, Science Park and Cyberport to encourage leveraging of new technologies and processes that can enhance the efficiency and convenience of clients in the banking sector. It also aims to develop the Fintech talent in Hong Kong.

[65] - A New Era of Smart Banking, Opening Keynote Speech at HKIB Annual Banking Conference 2017, Hong Kong Monetary Authority (HKMA); 29th September 2017;

[66] - A New Era of Smart Banking, Press Release, Hong Kong Monetary Authority (HKMA); 29th September 2017;

[67] - Ibid.

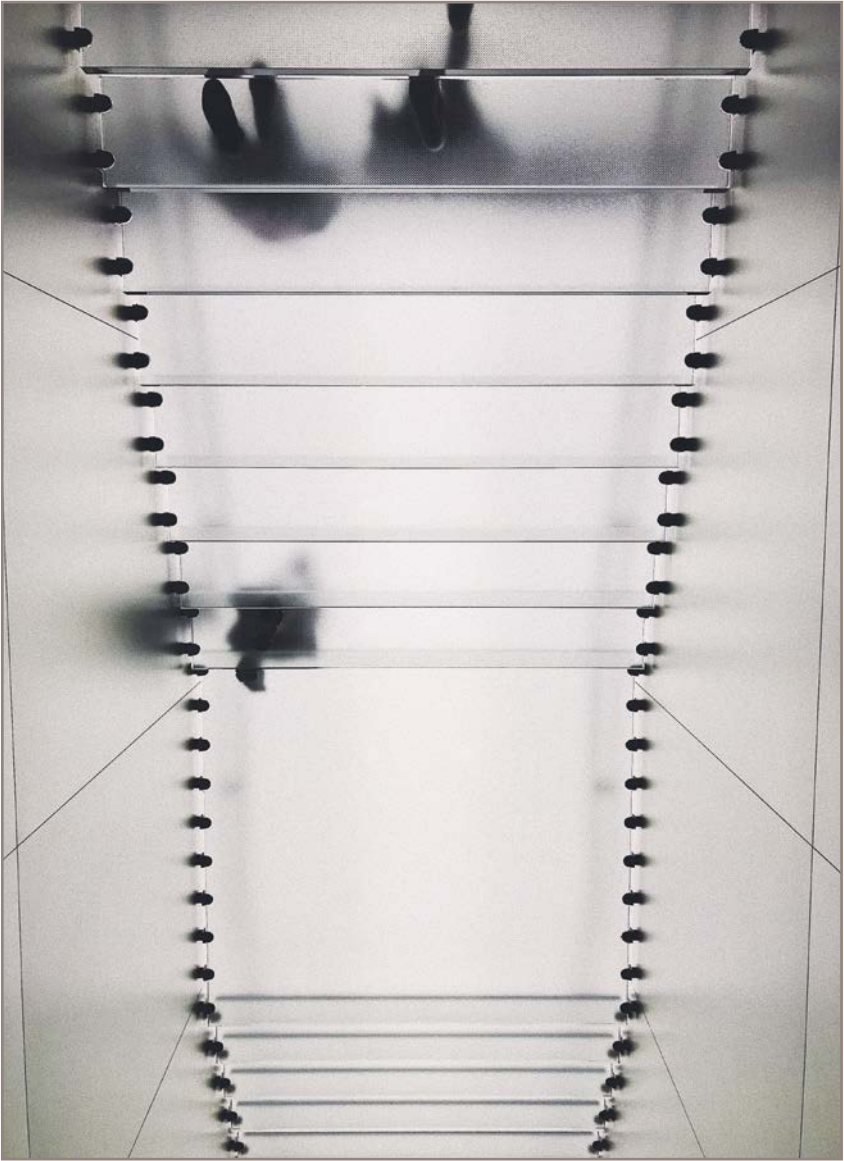
[68] - Regtech in the Smart Banking Era - A Supervisors Perspective, Regulatory Key Note Speech at HKIB Annual Banking Conference 2018, Hong Kong Monetary Authority (HKMA); 27th September 2018;

[69] - A New Era of Smart Banking, Press Release, Hong Kong Monetary Authority (HKMA); 29th September 2017;

[70] - HKMA launches industry consultation on Open API framework, Hong Kong Monetary Authority (HKMA); 11th January 2018;

[71] - Open API Framework for the Hong Kong Banking Sector, Hong Kong Monetary Authority (HKMA); 18th July 2018;

[72] - Latest Development on the Era of Smart Banking, Press Release, Hong Kong Monetary Authority (HKMA); 25th October 2017;





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In a world where knowing how to drive transformation is the key to success, Wavestone's mission is to guide large companies and organizations in shedding new light on their most critical transformation projects, with the ambition of creating a positive impact for all stakeholders. That's what we call "The Positive Way".

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