Singapore Industry Focus

Singapore Banks

Refer to important disclosures at the end of this report

DBS Group Research . Equity

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A whole new digital world

- Some digital bank applicants can bring strategic value, leveraging on alternative data in their existing ecosystems to assess and provide credit to underserved segments
- A platform-based business model is likely to be more scalable and profitable
- Implications: S'pore banks to continue improving their value proposition; new digital banks unlikely to cannibalise S'pore banks' diversified profit streams in near-term
- Open banking developments, facilitated by MAS, may be a bigger disruption force than digital banks' entry

Some digital bank applicants can bring strategic value to the banking industry by leveraging on alternative data in their existing ecosystems to assess and provide credit to underserved segments. We believe the strategic value lies in the analysis of alternative data. Digital banks applicants with intelligent, real-time alternative data of large pool of customer base and/or customers' transactions in their existing ecosystems may be able to leverage on alternative data analytics to build internal credit scoring systems to determine credit worthiness and hence price credit risk more accurately. This can also enable these banks to provide credit to underserved segments, and possibly at lower credit spreads for those customers not deemed to be of a higher credit standing using traditional banking underwriting methodologies.

Platform-based business model is likely more scalable and profitable; expect to see both traditional banking offerings and platform-based offerings from new digital banks. We believe digital banks are able to turn profitable post initial losses arising from customer acquisition costs, though operating leverage may not be as high in Singapore due to a smaller population. A platform-based lending model, which is capital-light, is likely to see higher profitability than a traditional lending model. As banks and financial institutions may not choose to rely on digital banks' platforms, instead relying on their own traditional efforts to underwrite credit card and unsecured loans among other banking products, we expect to see both traditional banking and platform-based offerings offered together by the new digital banks.

Implications: Singapore banks to continue improving value proposition; we do not expect new digital banks to significantly cannibalise Singapore banks' diversified profit streams. Singapore banks have embarked on an extensive digital transformation journey in the last decade, resulting in wide-ranging digital offerings today for its retail and business banking customers. While it is possible for new digital banks to gain a small market share (market share is also a function of cost of customer acquisition) of 1-5% of unsecured retail and SME loan market in the initial years, this may not translate into immediate profitability. Initially, digital banks may embark on tactical promotions featuring higher fixed deposit rates to attract customers. We do not expect main bank accounts to be switched away from incumbents just yet. A win-win situation is possible where banks in Singapore collaborate with new digital banks to capture new market opportunities, resulting in a broader banking market overall. We believe the new digital banks will contribute positively to the overall banking system by accelerating digital developments and creating innovative products. In the medium term, open banking developments, facilitated by MAS, may be a bigger disruption force to traditional banks than digital banks' entry.

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STOCKS

	Price S$	Mkt Cap US$m	12-mth Target Price S$	Performance (%) 3 mth	12 mth	Rating
DBS	19.89	36,802	n.a	(5.7)	(20.2)	NR
OCBC Bank	8.45	27,125	9.30	(6.5)	(22.1)	HOLD
UOB	19.11	23,248	22.20	(7.4)	(25.2)	BUY

Source: DBS Bank, Bloomberg Finance L.P.

Closing price as of 23 Sep 2020

Table of Contents

Applications for Singapore's digital bank licences

Strong interest in digital bank licences; likely to be awarded by year-end. According to Monetary Authority of Singapore (MAS), 21 digital bank applications were submitted to MAS in January 2020, of which 14 applications are for wholesale bank licences and the remainder for digital full bank licences. This compares to 29 applications received by Hong Kong Monetary Authority (HKMA) in 2018. Out of the 21 applicants, 14 have progressed to the next stage of assessment (5 are digital full bank applicants, 9 are digital wholesale bank applicants) where eligible applicants will present their proposals via virtual meetings and be shortlisted based on (i) value proposition and business model, incorporating the innovative use of technology, (ii) ability to manage a prudent and sustainable digital banking business, as well as (iii) growth prospects and other contributions to Singapore's financial centre.

Up to six new digital banks? MAS could issue up to two full bank licences and up to three wholesale bank licenses to qualified applicants. In August 2020, MAS announced that it will award Significantly Rooted Foreign Bank (SRFB) privileges to Standard Chartered Bank (Singapore). Under the enhanced SRFB framework, MAS will consider granting an additional full bank licence to an SRFB that substantially exceeds the baseline criteria, which will allow an SRFB to establish subsidiaries, including under joint venture partnerships, and to operate new or alternative business models such as a digital-only bank.

Hong Kong's first digital bank began operations in 2020; Singapore digital banks expected to start operations by 2021. The first of eight digital banks awarded in Hong Kong, ZA Bank, backed by ZhongAn Online Insurance and Sinolink Group, kickstarted a pilot offering up to 6% p.a. interest rate on 3M HKD deposits in Jan 2020, which was c.4% p.a. higher than equivalent deposit rates offered by traditional banks. Current timeline is for MAS to award the licences by the end of this year and the new digital banks are slated to begin operations by 2021-2022.

Varying focus and strategies; potential target segments include youth, millennials, SMEs. Among the digital full bank applicants, Razer Youth Bank has stated that its focus would be on youth and millennials, while Beyond is taking a more diversified approach. The wholesale digital bank applicants also allude to different strategies. However, the consortium comprising OCBC, Validus Capital, Keppel Corp, Vertex Ventures, Revolut, Nium (previously known as Instarem) and Hong Leong Finance has pulled out.

Consortium partners shed light on possible offerings in new digital full banks. Insurance products are likely to be offered by digital full banks, as evidenced by Mitsui Sumitomo Insurance and FWD Group's proposed participation in the respective consortiums. Ecosystems relating to real estate financing, automotive financing, e-commerce and gaming may also be part of the plan, with respective stakes taken by Far East Organisation, Carro and Sea. Companies with a huge subscriber base such as Grab and Singtel are likely to adopt a mass market approach, with the broader view of becoming an everyday app for various kinds of transactions.

Singapore banks are launching digital banks in the region. DBS Digibank was introduced in India and Indonesia in 2016 and 2017 respectively, while UOB has launched TMRW in Thailand in 2019, and Indonesia in 2020, with Vietnam as the next potential market. OCBC does not have separate digital banks across its markets, while it embarks on a digital transformation journey such as in OCBC NISP Indonesia.

Digital bank licence applicants in Singapore

Applicants	Type of digital bank licence	Focus
Beyond: V3 Group, EZ-Link, Far East Organisation, Heliconia Capital, Mitsui Sumitomo Insurance	Full bank licence	SMEs; industry specific approach, reach out to companies and individuals in real estate, construction, mass transport, insurance and retail
Singapura Finance, MatchMove	Full bank licence	
Grab Holdings (60%), Singtel (40%)	Full bank licence	Mainstream
Razer Youth Bank: Razer (60%), Sheng Siong Holdings, FWD Group, Linksure Global Holdings, Insignia Ventures Partners, Carro (40%)	Full bank licence	Youth, millennials
Sea	Full bank licence	Millennials, SMEs
AMTD Group, SP Group, Xiaomi Finance, Funding Societies	Wholesale bank licence	SMEs and entrepreneurs focused on Southeast Asia and Greater China, in particular Greater Bay Area
Ant Financial	Wholesale bank licence	
Arival (spun out of Life.Sreda)	Wholesale bank licence	Higher risk clients, including tech startups including blockchain or crypto-related businesses, online businesses and entrepreneurs from co-working spaces
ByteDance Technology	Wholesale bank licence	
iFast, Hande Group, Yillion Group	Wholesale bank licence	SMEs
Sheng Ye Capital, Phillip Capital, Advance.AI	Wholesale bank licence	SMEs
Zall Smart Commerce, Marubeni and GeTs	Wholesale bank licence	Local SMEs, micro-SMEs in the region
Greenland Financial, MinIPO	Wholesale bank licence	SMEs
Asia Digital Bank Corporation: Shanghai Jifu, JIC Technology Investment	Wholesale bank licence	SMEs

Source: Companies, DBS Bank
For more details on companies' profiles, please refer to: Glossary: Singapore digital bank applicants' profiles

Approved virtual banks in Hong Kong

Virtual Bank	Shareholders
Airstar Bank Limited	Xiaomi Corporation, AMTD Group
Ant Bank	Ant Financial
Fusion Bank	Tencent Holdings, ICBC, Hong Kong Exchanges and Clearing Limited, Hillhouse Capital, Adrian Cheng (Perfect Ridge Limited)
Livi Bank Limited	BOC Hong Kong, JD.com, Jardine Matheson Group
Mox Bank Limited	Standard Chartered, HK Telecom, PCCW, Trip.com
Ping An OneConnect Bank Limited	Ping An Insurance
WeLab Bank Limited	WeLab Limited
ZA Bank Limited	ZhongAn Online Insurance, Sinolink Group

Source: Companies, Hong Kong Monetary Authority (HKMA), DBS Bank

Regulatory landscape

Asia's regulatory landscape in transition. As more digital-only banks emerge across Asia, several regulators have introduced various frameworks and guidelines, laying out the operating environment of digital banks. Following HKMA and MAS' respective frameworks for digital banking licences, Bank Negara Malaysia (BNM) issued an exposure draft on digital banks' licensing framework at the end of December 2019. To date, HKMA has issued 8 licences, while MAS saw 21 applicants. BNM has plans to issue up to five licences by the end of 2020. In the meantime, Bank of Thailand has expressed efforts in developing various foundations to build digital banks.

Taiwan and Philippines issue first licences; Korea may see third digital bank by 2021. In July 2019, Taiwan issued three new digital banking licences to consortiums led by Taiwan and Japanese shareholders: 1) LINE Financial Taiwan (led by LINE Group, including Taipei Fubon Commercial Bank, Standard Chartered); 2) Next Commercial Bank (led by Chunghwa Telecom); and 3) Rakuten International Commercial Bank (Rakuten Inc, IBF Financial Holdings). Recently, Korea issued a preliminary licence to Toss Bank, owned by Viva Republica, creator of financial services platform Toss, in Dec 2019 with a final approval likely in 1H2021. This is the third licence issued in Korea. In January 2020, Philippines also issued a banking licence to its first pure-play digital bank, Tonik Digital Bank, which is set to launch in 2020.

Digital banks inject competition and pushes financial innovation, and to some extent, inclusiveness. From regulators' perspective, granting digital bank licences would inject some level of competition into the banking sector, which is generally welcomed as it encourages incumbents to pursue higher service standards. While traditional banks are largely weighed by huge legacy infrastructure systems, digital banks are thought to be nimbler and more adept to push financial innovation. Depending on the banking landscape of individual countries, we believe digital banks may be an effective solution, to some extent, to improve financial inclusiveness, especially for the unbanked population in locations which might have been previously uneconomical for banks to open a branch.

Singapore's digital bank framework is considerably measured. Compared against Hong Kong and Malaysia, we believe Singapore's digital bank framework is considerably measured with caps on deposit-taking, products, as well as the highest paid-up capital requirements for a full licence at S$1.5bn. Notably, the digital banks are only allowed to have one physical place of business and will not be given network access to automated teller machines (ATMs) or cash deposit machines (CDMs).

However, they are able to offer cashback services through electronic funds transfer at point of sale (EFTPOS) terminals at retail merchants which may have a broad store network across the country. According to MAS, the rationale for restricting ATM/CDM access is for digital banks to introduce innovative ways of serving customers digitally and supporting the future digital economy. Further, MAS is explicit that it "will not allow any bank, digital or not, to engage in value-destructive competition to gain market share".

Deposit caps paves way for gradual growth. For digital full banks at the restricted stage, aggregate deposits will be capped at S$50m and individual deposits will be capped at S$75k, and only deposits from small groups of persons such as business partners, staff and related parties can be accepted. According to MAS, this is to minimise risk to retail depositors and mitigate risks of untested business models. Digital wholesale banks are free to open deposit accounts from SMEs and corporates but will not be able to take Singapore dollar deposits from individuals, except for fixed deposits greater than S$250k.

Clear path to profitability. MAS expects digital banks to be profitable on a standalone basis. Applicants are required to submit financial projections for the first five years, including expected year of break-even, although MAS does not specify a definitive time period to achieve break-even profitability. Consistent or increasing trend of net loss will not meet MAS' criteria of demonstrating path to profitability.

Graduating to become a digital full bank. For restricted digital full banks, MAS will allow business and deposit restrictions to be relaxed once a digital bank has demonstrated its ability to manage risks well. The level of minimum paid-up capital will be in proportion to its risk profile, based on MAS' assessment on how the bank is delivering on its value propositions. Graduation to a digital full bank will occur once it has "met all relevant milestones and has been assessed to pose no significant supervisory concerns".

Given the importance of banking systems, regulators have to find the right regulatory balance. As regulators further liberalise the banking sector and hand out digital bank licences amid other fintech activities, we believe that regulators will consistently keep a close watch on digital banks. While digital banks are largely left to operate within some market constraints, any potential activities which could potentially destabilise the banking system will evoke regulatory actions from the regulators. For instance, since Yu'e Bao's launch in 2013 (albeit not a Digital Bank), the maximum personal investment ceiling has been cut twice and daily investment limits have been imposed, after Chinese regulators raised concerns over its rapid growth. Similarly, as more problematic peer-to-peer lending platforms surface in China, the regulators have recently announced plans to include such lending in its credit reference system, with more online lenders being told to scale down and exit the market entirely.

Introduction of/changes to recent regulatory frameworks

Framework	Hong Kong (2018)	Singapore (2019)	Malaysia (Exposure Draft) (2019)	Korea (amended, 2019)
Scope	Both financial firms (including existing banks in Hong Kong) and non-financial firms (including technology companies) may apply to own and operate a virtual bank in Hong Kong	In addition to any digital banks that the Singapore banking groups may also establish under the existing internet banking framework introduced in 2000. New digital bank licences extended to non-bank players	Licensed banks and licensed Islamic banks may apply to carry on digital or Islamic digital banking business in joint venture with other parties. Does not preclude existing banks from digitalising their businesses	Boost investment and innovation led by ICT companies in the banking sector; licence granted on three significant grounds: innovativeness, inclusiveness and stability
No. of licenses	8 licenses have already been issued. More applications for licenses are under consideration	A maximum of 5 licenses with two full-service commercial banking licenses and three wholesale banking licenses	n.a.	3 licenses have already been issued. 2 banks are currently operational. Financial Services Commission study suggested the need for third online-only bank focused on household loans, which lack competition
Ownership	Should be locally incorporated An entity with >50% ownership should be a bank or a financial institution (if not, the bank should be held by an intermediate holding company incorporated in Hong Kong)	Digital full bank licenses are available only to companies headquartered in Singapore and controlled by Singaporeans Wholesale banking licenses are open to both local and foreign companies	Preference will be accorded to an application where controlling equity interest in the proposed digital bank resides with Malaysians. Shareholder that owns >50% may be required to organise financial and financial-related entities under a licensed institution or financial holding company	Non-financial shareholding limit 34% (amended in 2018, previously 10% in 2015) Major shareholder in any bank must have no eligibility issues under five Acts on Corporate Governance of Financial Companies
Operational restrictions	None. Not expected to maintain physical branches and should not impose any minimum account balance requirement or low-balance fees on customers Business plan on building market share and the need to earn a reasonable return on assets and equity required; exit plan required	Digital banks will commence as restricted digital full banks and be subject to various deposit caps, business restrictions and a lower minimum paid-up capital in its initial one to two years; no prescribed time period in which restricted digital full bank must graduate to digital full bank No access to automated teller machines or cash deposit machines network though allowed to offer cashback services through electronic funds transfer at point of sale (EFTPOS) terminals at retail merchants Business plan submitted must show path towards profitability; exit plan required	Licensed digital bank shall operate with asset limit for period of minimum three years and up to five years from commencement of operations (foundation phase) where asset size cannot exceed RM 2 billion and simplified regulatory requirements apply including exemption from stress-testing May participate in Shared ATM Network and other cash-out services offered by PayNet Business plan submitted must show path towards profitability; exit plan required	Should operate banking businesses via electronic financial transactions only Prohibited to lend to major shareholder
Deposit taking restrictions	None	Restricted stage for digital full banks: Aggregate deposit cap of S$50m with an individual deposit cap of S$75,000. Deposits can only be secured from business partners, staff and related parties Wholesale banks: Can accept fixed deposits upwards of S$250,000 from individuals. Free to open and maintain business deposit accounts for SMEs and corporates.	None	None
Product restrictions	None	Restricted digital full bank: At entry point, can offer only simple, credit and investment products; banking operations in not more than 2 overseas market. Upon progression, no business restrictions after meeting MAS' criteria Wholesale banks: Can only serve SMEs and other non-retail segments	Permitted to offer financial services through agents, subjected to approval Allowanced to pay or collect cheques physically	Barred from corporate lending, only allowed to lend to SMEs
Capital and liquidity requirements	Minimum capital requirement for licensed banks: HK$300m Virtual banks must maintain adequate capital commensurate with the nature of their operations and the banking risks they are undertaking	Initial paid-up capital for restricted digital full bank: S$15m Paid-up capital for digital full bank: S$1.5bn Paid-up capital for digital wholesale bank: S$100m Both restricted and digital full banks are subject to similar capital requirements as local banks. Restricted full bank needs to maintain liquidity of 16% of minimum liquid assets, thereafter, subject to similar liquidity requirements as local banks	Capital funds required (foundation phase): RM 100m Simplified regulatory requirements (foundation phase): Minimum Total Capital Ratio of 8% with simplified Risk-Weighted Assets calculation and simplified liquidity requirements where Liquidity Coverage Ratio and Net Stable Funding Ratio may be imposed Capital funds required (end of foundation phase): RM 300m Equivalent regulatory requirements apply after foundation phase	Minimum capital required: KRW 25bn Basel II capital requirements to phase-in from fourth year: Minimum CET1 ratio 4.5%, Tier 1 ratio 6.0%, total capital ratio 8.0%; Basel I rules apply currently

Source: HKMA, MAS, BNM, FSC DBS Bank

Recent developments of digital-only banks in the region

Japan – Region's first internet-only banks started back in 2000s.

The first form of "digital banks" can be traced back to Japan's internet-only banks which began operations in early 2000s. Japan's first internet-only banks emerged as a result of deregulation of Japan's banking industry in the late 1990s. Then, internet-only banks offered similar services to traditional banks without having physical branches, through the internet while some advanced traditional banks started to offer internet banking services. Subsequently, through the late 2000s, mobile-only banks emerged as mobile services started to proliferate.

Mixed shareholder profiles of internet banks. The four new banks have mixed shareholder profiles: Japan Net Bank was backed by Sakura Bank (subsequently merged into Sumitomo Mitsui Banking Corporation) and Fujitsu; IY Bank (now known as Seven Bank) was backed by Seven & I Holdings, the group behind 7-Eleven Japan; Sony Bank was backed by Sony. eBank (subsequently acquired by Rakuten, now known as Rakuten Bank) had Itochu Corporation, Mitsui Marine Fire Insurance, Yamoto Life Insurance, Yahoo Japan among its shareholders. SBI Sumishin Net Bank, launched in 2007 and backed by Sumitomo Mitsui Trust Bank, specialised in mortgages. Subsequent mobile banks like Jibun Bank, was launched in 2008 and backed by KDDI, a major telco and Mitsubishi UFJ Financial Group.

Required to achieve profitability within three years; IY Bank the only bank to attain profitability. Japan's Financial Services Agency (FSA) required internet banks to achieve net profit within three years of their establishment, by March 2004. Among the initial four banks, three were pure internet-only banks except IY Bank which had a different business model and relied on the provision of ATM services in 7-Eleven stores, the largest convenience store network across Japan. The pure internet-only banks, while unable to achieve profitability within three years as required by regulators, demonstrated narrowing losses and hence continued to operate.

Nearly two decades on, while profitable, pure online banks today include physical touchpoints to arrest slowing growth amidst competition. Pure online banks had advantages due to their low operating cost model which allowed for lower lending rates and higher deposits, enabling them to earn a margin over loans, as well as fees over retail transactions. Amid low interest rates and high degree of competition, pure online banks have been finding it increasingly hard to grow their customer base and profits, even though they are profitable. To overcome this, in 2017, SBI Sumishin Net Bank opened its first bricks-and-mortar office which enabled the bank to attract new customers and process more home loans, while Jibun Bank sold home loans through KDDI cellphone dealerships. Sony Bank also sold an increasing portion of mortgages through Sony Life Insurance's channels.

Arguably, Japan's internet-only and mobile-only banks' rise to profitability in the 2000s was on the wave of internet and mobile proliferation as new modes of banking emerged, leveraging on respective shareholders' strong ecosystems and growing trust in the shareholders. Today, as these banks now have varying degrees of physical presence, various business models have evolved as lines blurred.

China – technology giants planted first roots of success since mid-2010s.

China has granted online-only bank licences since 2014 to WeBank (Tencent), MYBank (Alibaba's Ant Group), AiBank (Baidu), and XWBank (Chengdu Hongqi). The success of WeBank and MYBank has been phenomenal, since turning profitable one year into operations. WeBank and MYBank leveraged on their huge user base and existing ecosystems including Alipay and WeChat Pay to step up and provide a wide range of banking services. In 2019, MYBank generated CNY 1.25bn net profit (+91% y-o-y), while WeBank posted net profit of CNY3.95bn (+60% y-o-y).

Japan's internet banks (FY2003)

	Japan Net Bank	IY Bank	Sony Bank	eBank
Started	Oct 2000	May 2001	Jun 2001	Jul 2001
Profit (bn yen)	-1.7	5.0	-2.2	-2.9
# customers ('000)	840	160	260	710
Deposit (bn yen)	153.4	122.4	378.8	158.0

Source: Companies, DBS Bank

MYBank and WeBank's financial highlights

CNY m	Revenue	Net income	Assets
MYBank	6,600	1,256	139,500
WeBank	148,700	3,950	291,240

CNY bn	Loan book	y-o-y (%)
MYBank	70	7
WeBank	163	36

Source: Companies, DBS Bank

Lower banking penetration; smartphone users can leapfrog directly into a digital marketplace. In 2013, World Bank had estimated that c.64% of Chinese adults held a formal individual bank account, while account penetration was much lower for rural adults. Another industry trend which contributed to the digital payments' gaining traction was increasing mobile penetration, with market share estimated at 84%by Ericsson in mid-2013. As smartphone penetration grew from c.40% and subsequently took off, this accelerated the adoption of digital payments (Alipay and WeChat pay), proliferating e-Commerce marketplaces (including Alibaba's Tmall and Taobao).

Large user base from existing ecosystems. As of end-2014, Tencent's ecosystem, comprising WeChat and QQ, saw c.500m and c.800m monthly active users, while Alibaba's ecosystem had c.300m monthly active users. These provided a strong customer acquisition pipeline for the subsequent success of WeBank and MYBank. Today, as of 2Q20, Tencent and Alibaba's ecosystem continues to see an increase in monthly active users: WeChat (1.1bn, QQ (c.800m), Alibaba (c.900m).

Alibaba Group's ecosystem: MYBank's important customer acquisition channels include Taobao, Tmall, Alipay

Ant Group's ecosystem

Source: Companies, DBS Bank

Tencent's high daily average user (DAU) platforms: WeBank's important customer acquisition channels include WeChat, QQ, WeChat Pay

Source: Tencent

Opportunities in clear underserved segments. Both MYBank and WeBank saw opportunities and rising credit appetite in clear underserved segments, including micro SMEs, blue-collar workforce, rural economy, many of which did not have access to credit and other banking product offerings, or kept away from the traditional banks due to high interest rates. MYBank targeted small and micro businesses, individual entrepreneurs, rural users, while WeBank saw opportunities in underbanked individuals and SMEs. Based on 2019 data, more than 75% of WeBank's individual borrowers are blue-collar workers, with average loan size of c.US$1,180, of which half of the borrowers do not have a credit history at People's Bank of China. In the case of MYBank, it provides loans (average loan size of US$4,300) to >20m small and micro businesses in China, of which 80% have no record of borrowing money from traditional banks.

Popular banking product offerings

	Weilidai 微粒贷	Wangshangdai 网商贷
Bank	WeBank	MYBank
Purpose	Personal unsecured loan to online customers	Unsecured loan to SMEs; up to 24 months
Loan size	CNY500 – CNY300k	Up to CNY200k
Interest rate	0.02% - 0.05% per day	0.016% - 0.047% per day

Source: WeBank, DBS Bank

Leveraging on enormous data from Alibaba and Tencent for credit underwriting and risk management; customers benefit from lower interest rates. Both MYBank and WeBank can leverage on data from their parent group's ecosystems to assess borrowers' credit worthiness as well as for ongoing risk-management purposes to drive loan book expansion. MYBank has a 3,000-variable risk management system that analyses real-time payment data of its borrowers. For instance, payment data can be derived from transactions made by small and micro businesses, amongst others. According to MYBank, the COVID-19 outbreak in 1Q2020 led to an uptick in it's non-performing loan ratio (ndisclosed), from 1.3% in the past.

On the other hand, WeBank leverages on a large amount of customer data accumulated at WeChat and QQ which is used for socialising and communication. WeChat Pay data also comes into play, providing insights to payments and transactions. WeBank's NPL ratio as of end-2019 was c.1.3%, which is below China's commercial banks NPL ratio of 1.86% for the same period. It continues to be seen if the banks' credit assessment and monitoring systems are robust enough to see them through their first credit cycle since inception.

Driving cost down with cloud computing and high operating leverage. According to WeChat, by leveraging on cloud computing on top of having high operating leverage due to its business model, the IT operation cost per account was approximately US$0.50 in 2019, compared to US$3-15 for traditional banks. Alibaba Cloud and Ant Group have similarly developed cloud solutions to aid Nanjing Bank to create its online finance open platform (Xinyun+) at a cost per account of c. US$0.60.

Source of capital and cooperation with banks for broader growth. As of 2017, 80% of WeBank's Weilidai loan capital has been syndicated from traditional banks which have partnered WeBank to provide loans. WeBank in turns splits profits with its partners. The remaining 20% of capital is financed via WeBank's balance sheet, which comprises deposits and interbank funding. Notably, WeBank has been able to improve its liquidity position since the introduction of a deposit service with Tencent in 2H2018. MYBank also works with other banks and financial institutions while financing some of the loans with its own capital. MYBank's funding model is such that it taps more substantially on inter-bank market to fund its loans, with less reliance on deposit-taking. We note that in Feb 2020, MYBank made agreements with 25 partner banks to continue pumping liquidity to SMEs amid the COVID-19 crisis.

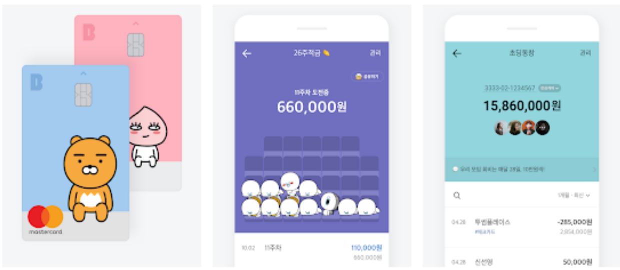
Market share of overall banking industry is still small; more liberalisation to come? As of 2019, MYBank and WeBank continued to dominate the private lenders market, accounting for c.50% market share. However, collectively, private banks only accounted for <0.5% of the enlarged banking system's asset base. Reportedly, in 2020, interested parties including foreign companies are in talks with Chinese regulators for a digital bank licence and UBS has indicated its interest to seek a China digital bank licence among others.

Korea – 2019 saw the emergence of a recently profitable digital-only bank in a well-penetrated banking market.

Similar to WeBank and MyBank, Korea's Kakao Bank's parentage stems from a technology company. In 2017, Kakao Bank was launched at almost at the same time as K-Bank in 2017, where the latter was backed by KT Corporation, formerly known as Korea Telecom. In 2019, Kakao Bank delivered its maiden profit and now stands out as the only profitable digital-only bank in a well-banked Asian country thus far. We believe Korea, which a similar banking penetration and population demographic to Singapore, on top of a smaller population compared to China, offers relevant insights.

Integrated interface drawing on KakaoTalk's user base. KakaoTalk is the largest messaging platform in Korea, used by c.90% of Korea's population. As of end-2016, Kakao Talk had c.30m users, of which >90% used the app at least once a day. Drawing on KakaoTalk's user base and public trust in Kakao, Kakao Bank garnered 300k new accounts on its first day of launch in July 2017. Within two weeks, Kakao Bank attracted 2 million customers with c. KRW 1trn in deposits and c. KRW 770bn in loans. Kakao Bank operates as a retail bank offering mainly unsecured loans, e.g. personal loans, overdrafts, with plans to extend to mortgages.

Kakao Bank's app interface



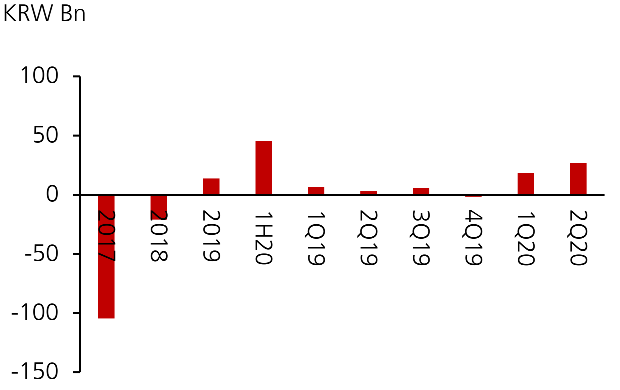
Source: Kakao Bank

Drawing on digital-savvy customers. Kakao Bank crossed 10 million customers in July 2019, two years post launch, with close to 90% of its customer base being in their 20s and 30s. In FY2019, Kakao Bank posted its first yearly profit with net income of KRW 13.7bn, after recording maiden profit in 1Q19. The NPL ratio of 0.20% as of FY2019 is also below Korea banks' average of c.1%.

Filling in gaps in existing banking industry. Korea banks' account opening process is cumbersome due to lengthy know-your-customer verifications, while Kakao Bank's easy interface and design has reduced the steps needed to open an account by half, and the process takes just five to seven minutes. This has pushed Korea's traditional banks to revamp their interface and authentication measures. Kakao Bank's offering of unsecured loans has also filled the gap in the banking industry as for years, Korea banks' retail loans have been difficult to obtain, pushing customers with middle level credit grade to non-bank institutions (i.e. customers with credit grade scores above 5), as banks had suffered from high default rates on unsecured lending previously.

Evolving business model. Kakao Bank continues to provide loan services and has partnered industry brokerage players for stock account opening and pursued growth in various credit card services with partners including Shinhan Card and Samsung Card to ramp up its non-interest income. Increasingly, Kakao Bank is seeking a financial platform business model as it seeks to connect customers to financial services of other companies, on top of its deposits and loans business.

Kakao Bank's path to profitability



Source: Kakao Bank, DBS Bank

Aggressive pricing strategy at the start. In the initial months of launch, Kakao Bank was offering 2.0% interest rates p.a. for time deposits (0.2-0.9ppts more than other major banks) and personal loans and overdrafts with a minimum rate of 2.8%, lowest in the industry. Kakao Bank has also waived the annual fee for its debit card, unlike most traditional banks. Further, Kakao Bank has stated that it would charge one-tenth the average fees by traditional banks on overseas transfers and does not charge withdrawal fees from all ATMs.

Forcing a re-think by traditional banks. The largely celebrated success of Kakao Bank has led Korea's traditional banks to launch their own mobile apps in an attempt to retain existing customers while attracting new ones. Since the end of 2018, KB Kookmin Bank, one of Korea's big four banks, embarked on extensive marketing for their mobile banking app, Star Banking, even using popular K-pop boy band BTS stars, to considerable success. Star Banking is reportedly the only app by Korea's traditional banks to have more monthly users than Kakao and Toss.

Gradual normalisation of deposits rate; savings cap. In 2020, Kakao Bank's savings limit was capped at KRW 10m, while K- Bank has increased its savings limit to KRW 100m as it seeks to regain market share. However, deposits rates have normalised to 0.5% (Kakao Bank's Safe Box) and 0.7% (K-Bank's Plus Box) since the heydays of offering high promotional interest rates to attract customers.

Capital becomes pertinent at later stage of growth. Between 2019 to 2020, K-Bank, despite having launched neck-to-neck with Kakao Bank, faced capital issues. Due to lack of capital, K- Bank had to suspend issuing loans since April 2019 for more than a year as it had difficulties securing capital. K-Bank is now back to resuming its aggressive growth plans to normalise its operations after K-Bank's board approved the issuance of new shares in April and June. The exercise raised KRW 400bn, bringing the bank's total capital to KRW 900bn. However, K-Bank's International Settlement (BIS) capital adequacy ratio (CAR) continues to track lower at 10.2% for June 2020 compared to the Korean bank industry average of 14.5%. On the other hand, Kakao Bank is now the most capitalised digital bank across Asia (other than WeBank and MYBank) with a total capital base of KRW 1.8 trn, with backing from its major shareholder Kakao Corporation.

COVID-19 may have accelerated growth for digital players like Kakao Bank. Against the backdrop of COVID-19, Kakao Bank continues to attract an increasing number of users, and has the highest number of monthly active users across Korea's banking industry at 11 million users as of June 2020, which makes up a substantial portion of its total 12.5 million user base. Kakao Bank has disclosed that users aged 50 years old and above have increasingly opened mobile banking accounts with Kakao since May 2020.

Ultimately, banking is still a regulatory "game"; over-aggressiveness will not play out well in the longer run. As K-Bank seeks to regain its traction as it was forced to stop its loan services for over a year, K-Bank has started to aggressively launch new loan products since July 2020. However, it is largely expected that the Financial Supervisory Service (FSS) will announce regulations to disallow banks from increasing credit loans to individuals amid backdrop of surge in loans due to the increasing popularity of investing in the stock market.

Market share still small. As of the end of 2019, Kakao Bank has c. KRW 20trn deposits and c.15trn loans, representing c.1.6% of total deposits and c.0.4% of retail loans in Korea. In 1H2020, deposits and loans has continued to expand to c. KRW 22trn and KRW17trn respectively.

New banks to look out for in Hong Kong and Taiwan

Watching the launch of Hong Kong's and Taiwan's virtual banks. Hong Kong's eight virtual banks have launched to varying degrees during 2020, while Taiwan's virtual banks are experiencing delays from the planned launch in 1H20. Due to the ongoing pandemic, the three virtual banks - LINE Financial Taiwan, Next Commercial Bank, and Rakuten International Commercial Bank - have yet to start on the one-month operation stimulation tests required by the regulators. As such, launch dates are likely delayed into 2H20.

Attractive promotions by Hong Kong virtual banks' initial launches in 2020. Following ZA Bank's attractive 6% deposit promotional rates on 3M HKD deposits, the bank is now offering up to 2.2% on 12-month deposits. Airstar Bank is offering 3.6% interest rate to customers for the first HKD20,000 in customers' savings accounts, and personal loans starting from 2.99% annualised interest rate. WeLab Bank, the third to launch, has offered a deposit rate of 4.5% p.a. alongside a limited 8% spending rebate, in its launch in July 2020. Livi Bank's launch in August 2020 offers a cash reward of HKD100 upon successful registration and additional HKD100 for customer referrals (up to 10). Customers are also able to shake their phones for cash rewards upon transacting with UnionPay QR code. In September 2020, Mox Bank took a differentiated approach by onboarding the first 30,000 customers with a metal Mox card, with remaining registrants waitlisted.

Hong Kong virtual banks' offerings

Virtual bank	Offerings
Airstar Bank Limited	Retail banking: savings account, time deposit and personal loan products, financial planning analysis tools
Livi Bank Limited	Retail banking: Savings, payments, transfer Partner UnionPay to enable QR code transactions
Mox Bank Limited	Retail banking: Savings, credit card
Ping An OneConnect Bank Limited	Retail banking: Savings and transfer SME banking: Serve SMEs and micro companies, offer small trading companies trade financing and other loans Fintech solutions: provide fintech solutions for financial institutions
WeLab Bank Limited	Retail banking: savings account, time deposit, WeLab debit card
ZA Bank Limited	Retail banking: deposits and transfers Business banking ZA insure

Source: Companies, DBS Bank

Aggregating common factors of profitable digital banks

In conclusion, besides good application interfaces and user experience, and reliance on superior technology infrastructure, we posit some common factors that may have contributed to the profitability and success of digital banks mentioned above:

- **Technology parentage:** WeBank and MYBank are backed by China's technology giants, Tencent and Alibaba Group, respectively, while Kakao Bank is backed by Kakao Corp, a leading domestic internet company.

- **Huge active user base from parents' ecosystems, a good source for customer acquisition:** WeBank and MYBank have leveraged on Tencent and Alibaba's ecosystems, which had around 800m and 300m monthly active users back in end-2014 respectively (the respective licences were issued in 2014 with subsequent launch in 2015). Kakao Bank drew its customer from Kakao Talk's c.30m userbase during its launch.

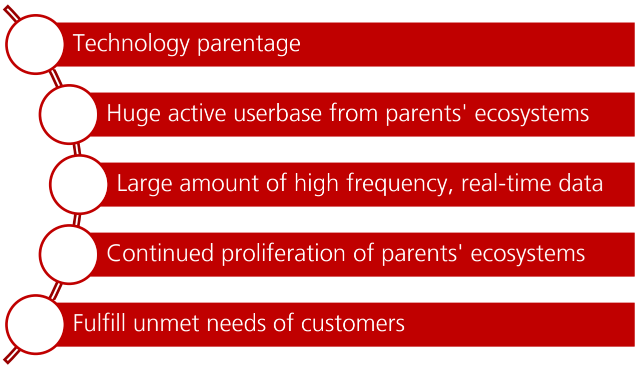
- **Large amount of high frequency, real-time data.** Tencent, Alibaba, and Kakao all possess large amount of high frequency, real-time data in their ecosystems. WeBank and MYBank leveraged on such data to develop reasonable and reliable internal credit models, which enabled both banks to continue growing their loan books aggressively while managing NPLs to reasonable levels beyond industry average since launch.

  Kakao Bank, on the other hand, relied heavily on the generic credit rating system in Korea (commercial banks rely on similar information) for loan underwriting since launch as it does not have a strong credit-rating score system. Kakao Bank is working on developing one within the next few years which includes social data and other alternative information.

- **Continued proliferation of parents' ecosystems.** WeBank, MYBank and Kakao Bank's parents' ecosystems continued to see huge expansion in similar periods as the abovementioned banks' increase in profitability. Today, Tencent and Alibaba's ecosystems have around 1.1bn and 900m monthly active users, while Kakao Talk has grown its monthly active users to c.45m. Increasing transactions alongside increasing userbase will continue to feed into the banks' customer pipeline and database. We posit that the continued relevance of parents' ecosystems and user engagement is pertinent for the survival of the above digital banks.

- **Fulfilling unmet needs of customers.** Japan's internet banks fulfilled demands of internet banking services, which were not readily available in the early 2000s. WeBank, MYBank and Kakao Bank's launches fulfilled unmet needs of an unbanked and/or underbanked population through various banking products. In the latter's case, the innovation of Kakao Bank's platforms was superior to those offered by traditional banks which resulted in positive customer banking experience and customer stickiness.

Common factors of profitable digital banks



Source: DBS Bank

Defining a Digital Bank

As "Digital Bank" becomes an increasingly used term, we attempt to break down what encompasses being a Digital Bank in today's context to different stakeholders.

From a customer's perspective (both retail and businesses):

- Trustworthiness: As the old saying goes, "banking is an industry of trust". From a customer's perspective, a good Digital Bank first and foremost must be trustworthy and that deposits and transactions going through the bank is safe and secure.

- User Experience (UX) and functionality: UX comprises of a user interface with high customer satisfaction, ease and intuitiveness of usage, design and functionality among others. Ultimately, a good digital bank is likely to have strong product offerings and functionality which allow for most, if not all, types of transactions to be done digitally with ease. This includes the choice of digital solutions to various processes.

- Strong customer support and interaction: While a digital banking model utilises online self-service technologies, strong customer support and interaction is likely to be a plus for a good digital bank.

- Unique value proposition: To a customer, a good digital bank is likely to bring on board some unique value proposition that sets it apart from others. This could come in the form of unique and/or increased access to product offerings, lower fees [if the digital bank is able to pass cost savings by adopting a digital model (assuming there are) to end customers, and not simply undercutting competition] among others.

From the bank's perspective, a leading digital bank should have the following attributes:

- Digital at the core, strong infrastructure. Banks today may face various legacy infrastructure and core banking systems, unlike digital banks, fintechs and startups. Digitising at its core across various internal processes and legacy infrastructures, core banking systems, and having a strong digital infrastructure are characteristics of a good digital bank.

- Providing digital solutions to customers. Digital solutions to replace current manual processes may include the development of various digital banking platforms, partnering ecosystems and the use of banking application programming interfaces (APIs) in offering digital solutions.

- Strong data analytics capability. Strong data analytics can aid internal credit analysis, credit monitoring and underwriting, as well as fraud detection. The bank should also be able to leverage on data analytics to monetise its existing customer and database and generate increased revenues. This may also involve the use of non-traditional data i.e. alternative data for credit monitoring and underwriting processes.

To a certain extent, to shareholders, a digital banking model may translate into lower cost and higher cost efficiency over time, which would be positive to shareholder's return.

Looking in Singapore's banking landscape

Singapore's banking industry continues to liberalise over the years. Since 2000, MAS has awarded six Qualifying Full Bank (QFB) licences, to HSBC Bank (Singapore) Limited (2002), Maybank Singapore Limited (2002), State Bank of India (2008), ICICI Bank Limited (2010), Industrial and Commercial Bank of China Limited (2012), Bank of China Limited (2012). Today, there are a total of nine QFBs in Singapore, amid >100 full banks, wholesale banks and merchant banks. Recently, MAS announced that Standard Chartered would become the first significantly rooted foreign bank (SRFB) in Singapore, thereby allowing Standard Chartered Bank Singapore to double its footprint in Singapore. Under the enhanced SRFB framework, MAS will consider granting an additional full bank licence to an SRFB that substantially exceeds the baseline criteria, which will allow an SRFB to establish subsidiaries, including joint venture partnerships, and to operate new or alternative business models such as a digital-only bank.

Mature banking industry with high banking penetration. According to the World Bank, 98% and 92% of Singapore's population (aged 15 and above) has a bank account (or an account at a financial institution or with a mobile money service provider), and debit card as of 2017. In the credit card space, World Bank estimates close to 70% of the working population has at least one credit card and credit card ownership is at 49% of the population while a credit card consumer holds 4-5 credit cards, suggesting a highly competitive market. Further, Singapore continues to see high digital banking penetration amid high smartphone penetration of 82%[1] with more than 90% of the population having made digital payments and are digitally savvy.

Government's push towards a digital economy. The government continues to take the lead in driving digital outcomes, for example PayNow, launched in 2017 as a peer-to-peer funds transfer service that allows retail customers of nine participating banks to send and receive money using only their mobile number or Singapore NRIC or FIN. PayNow Corporate was subsequently launched in 2018 to allow businesses to transfer funds using their Unique Entity Number. In 2018, SGQR, the world's first unified payment QR code was launched which combines multiple payment QR codes into a single label, supported by a central infrastructure network, co-owned by MAS and Infocomm Media Development Authority (IMDA).

Local banks have sizeable market share and offer diversified services, while actively increasing cost efficiencies. Apart from a mature banking landscape with high banking penetration, the local banks have sizeable market share across SGD deposits, loans and mortgages. In the past decade, the local banks have also continued to build diversified income streams on top of net interest income, with non-interest income now accounting for a substantial portion of the banks' total income. Local banks have continued to increase their services offerings over the years, which are extremely extensive today, covering banking, credit cards, insurance, loans, investments, brokerage, trade financing, transaction banking, treasury services etc.

Singapore banks have had a headstart in both retail and wholesale banking in a relatively well-banked country. Since starting on their digital transformation journey in 2010, Singapore banks have launched their respective mobile banking apps, fine-tuning and adding more features along the way, alongside other bank app offerings.

On the wholesale banking front, the Singapore banks currently offer various business banking platforms and solutions. Since January 2019, Singapore banks have partnered with Enterprise Singapore (ESG) and Infocomm Media Development Authority's (IMDA) on the Start Digital initiative to help SMEs digitise their businesses, making use of various applications in accounting, payroll/ human resource management, cyber security, digital marketing and transactions in their daily operations. The local banks today offer hundreds of informational and transactional APIs for developers to work with, with DBS and OCBC having more than 200 and 400 APIs respectively (according to their websites).

Open banking is another key industry development to watch. Development of open banking has been largely facilitated by MAS, which has provided guidelines for open banking/ APIs. Today, MAS operates the Financial Industry API Register to make available Open APIs. We continue to keep watch on developments in open banking, where MAS is aiming at facilitating data portability in the interim. Eventually, open banking may enable consumers to aggregate their banking, insurance and investment information across banks and financial institutions on a single platform, which may allow for easier comparability and higher level of competitiveness in the banking industry.

[1] Statista (2020)

Singapore Banks: Online/ mobile banking products and services offered

	DBS		OCBC		UOB	
	Product	Purpose	Product	Purpose	Product	Purpose
Personal Banking	DBS Digibank DBS iWealth	Main mobile banking app, enables users to check account balances, transfer money and pay bills etc, For wealth customers, Includes wealth portfolio functions	OCBC SG Mobile Banking	Main mobile banking app, enables customers to check account balances, transfer money and pay bills etc; personalised wealth and money insights available	UOB Mighty	Main mobile banking app, enables users to check account balances, transfer money and pay bills etc; deals and coupons available
	DBS PayLah!	Payments app; Enables customers to perform variety of payments, money transfers, and purchases	OCBC Pay AnyoneTM	Enable customers to pay with QR code and PayNow via mobile number, or pay via email address		
	DBS Lifestyle	Enables DBS credit card members to redeem rewards and track past redemptions				
	DBS mTrading	Mobile trading platform for DBS Vickers customers				
Corporate/ SME Banking	DBS IDEAL Mobile	Mobile banking platform allowing management of account balances, fixed deposits, loans, cheque status and FX contracts	OCBC Business Mobile Banking	Online banking platform allowing the management of business account(s) transactions and balances	UOB Business	Online banking platform featuring business internet banking including cashflow management and trade services, FX rates and alerts
	DBS Max	QR payment collection solution for SMEs, allows for collections in real-time, access to funds with reconciliation notifications and end of day reports				

Source: Companies' websites, Apple App Store, DBS Bank

Value proposition of a digital bank licence for a new entrant

We believe a good starting point is to examine the value proposition of a digital bank licence from a new entrant in Singapore, given that Singapore has a mature banking industry with high banking penetration.

Access to highly regulated industry which has been profitable for incumbents. While a digital bank licence allows a new entrant to enter a new business which is highly regulated, profitability for incumbents does not necessarily ensure profitability for the new entrants. Some applicants may already have experience of operating profitable digital banks in other countries.

A bigger banking empire. Some applicants may be also interested in securing digital bank licences outside of Singapore, which may have a lower banking penetration and larger bankable population. Successful applicants would be able to leverage on its experience in Singapore, with a smaller banking population, to set up digital banks in other countries. Operating as a restricted digital full bank in Singapore has limitations as these should not establish banking operations in more than two overseas markets, according to MAS.

Synergies with existing businesses. Applicants may obtain synergies of operating a banking business with its existing ecosystems and businesses. Adding a banking dimension may allow them to increase customer stickiness across their existing businesses, driving profitable outcomes within and across the enlarged ecosystem.

Value proposition a new digital bank could bring to local customers and/or Singapore's banking industry

There are multiple dimensional groups of customers in our discussion: underserved segments and served segments, across retail as well as wholesale banking customers.

Provide access to credit where it is currently difficult to obtain … First and foremost, a strong value proposition would be that the new digital bank entrants are able to provide access to credit to underserved segments, where credit is currently difficult or not possible to obtain. Potential underserved segments could be SMEs and micro SMEs with no access to credit, mom-and-pop shops, start-ups with little financial track record and/or assets to pledge as collateral, self-employed workers, gig-economy workers, part-time workers among others. Potential new customers would be the younger generation.

According to MTI, as of Aug 2019, SMEs make up 99% of all businesses in Singapore, employing 72% of the workforce and contributing 47% of Singapore's GDP. However, based on MAS' SME Financing Survey in 2017, micro and small enterprises, including unclassified SMEs, only correspond to 57% of banks' outstanding SME loan portfolio, though they account for 91% of unique SME customers that banks lend to as loan limits for medium-sized SMEs tend to be higher. In 2019, according to MAS, c.80% of outstanding SME loans are secured, highlighting some preference for secured credit to mitigate potential loan losses. Today, local finance companies have a bigger share in the micro loans market, implying the continued relevance of finance companies in SME financing. While the proportion may have improved since, the MAS SME Financing Survey may still point towards some unaddressed gaps in SME financing.

… **based on superior alternative data analytics.** SMEs and certain segments of workers may not have easy access to credit due to perceived high risks, such as having little financial track record and/or assets to pledge for financing. As a result, loans may be unsecured and involve high credit spreads due to perceived high risks, resulting in SMEs turning away from lofty interest rates or being turned away as incumbents are unwilling to underwrite the perceived high risks. Digital banks with intelligent, real-time alternative data of retail or wholesale banking customers in their existing ecosystems, may be able to leverage on their superior alternative data analytics to determine credit worthiness and price risk more accurately. They would be able to provide credit not previously provided by traditional banks, on top of credit monitoring efforts. Ant Group has been successful in this front in China, leveraging on its credit scoring systems with voluminous transaction data of consumers and merchants via its Alipay payments infrastructure.

New and/or differentiated products and offerings with fast turnaround time. Digital banks could introduce new products and offerings with fast turnaround time, on top of the traditional deposits-and-lending banking model, and gain traction among the target group. Digital banks could also potentially offer investment products, and continue to drive digital adoption across SMEs, micro SMEs and mom and pop shops, encouraging cashless adoption. Today, there are still some segments of merchants still attached to cash transactions, possibly because of low willingness to adopt digital payments and/or infrastructure costs associated.

UX and customer experience. Lastly, a more intangible value proposition a digital bank could bring to customers would be in terms of UX and customer experience. Looking across to the local telco industry, Circles.Life has managed to attract customers partly due to the ease of sign-ups and usage where customers can modify and add-on to mobile plans' offerings in real time via its app.

Possible offerings of a digital bank in Singapore in the initial phase

Ongoing brand building. The new players are likely to spend marketing dollars on brand building and various campaigns to attract customers.

Expect varying promotion tactics and/or unique offerings to acquire retail customers. The new digital full banks are likely to leverage on their existing customer base as a start to acquire new retail banking customers. Applicants like Grab-Singtel consortium, Sea, Razer Youth Bank consortium all have a substantial existing customer base. Ultimately, the cost of retail customer acquisition is likely to vary across new players due to different starting points. While Mox Bank (Hong Kong) is willing to directly acquire customers for HKD 100, new digital full banks may have different considerations to determine a reasonable cost for acquiring new customers and assessing the lifetime value ascribed to each banking customer. Other ways of acquiring new customers could be to offer promotional rates for deposits. In the initial years, losses are likely as digital banks continue to spend on customer acquisition. We note that ride hailing players and payment apps such as Dash, Fave, Google Pay have been successful in acquiring customers with S$5-10 free sign-up credits.

Customer stickiness within the ecosystem. While it may be easy to attract new bank account sign-ups, **the uphill task would be to maintain and increase customer stickiness over time.** For applicants in an existing ecosystem, it may be easier to promote customer stickiness across the banking and non-banking platforms.

Direct versus indirect customer acquisition

Direct acquisition	Indirect acquisition
• Bank pays customer to open an account • Bank continues to engage with customer digitally, encouraging deposits and transactions to take place	• Bank attracts customer to open account via product offering e.g. higher-than-market interest rates on deposits • Customer "sticks" with bank for a period of time

Source: DBS Bank

Wholesale banking success depends on degree of penetration. Wholesale banking success would depend on the digital banks' ability to onboard customers, price risk appropriately, and generate appropriate returns on lending, and/or offer other relevant solutions for wholesale customers.

Potential business models of digital banks

Potential business models for the new digital banks could be a combination of all three models laid out below:

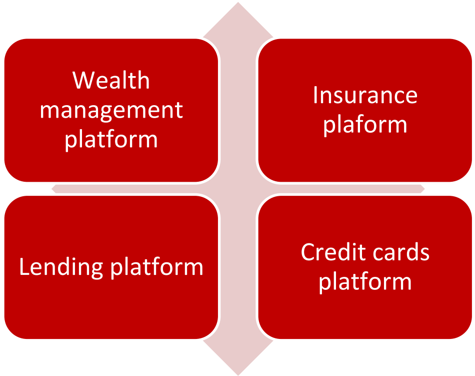
Basic banking services; other offerings to depend on digital banks' strategies. Digital full banks will most likely offer basic banking services such as payments, transactions, loans, cards. Other retail banking offerings could include investments and insurance. For wholesale banking, offering unsecured loans, working capital loans, trade financing, supply chain, inventory financing, among others, would enable them to secure customers.

A balanced business model in the traditional banking space should span across all areas, instead of relying on just one area, such as payments, for revenue. The pandemic has highlighted downside risks of such reliance, for instance, Monzo Bank generates most of its revenue from fees generated on card usage, and subsequently saw revenues dive due to the ongoing pandemic which led to reduced consumer spending.

Platform based model. An alternative business model could be such that on top of traditional banking offerings, the new digital bank acts as a platform to connect customers to various financial providers, and earns commissions on such transactions. For instance, Ant Group operates Ant Fortune, its wealth management platform where it offers its flagship Yu'e Bao product, on top of products from ~80 Chinese fund institutions. Huabei and Jiebei are Ant Group's consumer credit platforms, leveraging on Ant's internal credit model for credit assessment of small unsecured loans. The platform obtains capital from financial institutions and other institutional investors for lending. Separately, there are now more than 60 insurance companies that sell their policies on Ant's insurance platform.

Recently, Kakao Bank announced plans to transform to a comprehensive financial services platform. This year, it has launched four credit card programs with various credit card companies where customers apply for the card via Kakao Bank's platform and credit card companies take care of credit assessment and card issuance, with the cards bearing its mascot. Kakao Bank has also ushered in >2 million brokerage account sign-ups through its platform for two domestic stock brokerages.

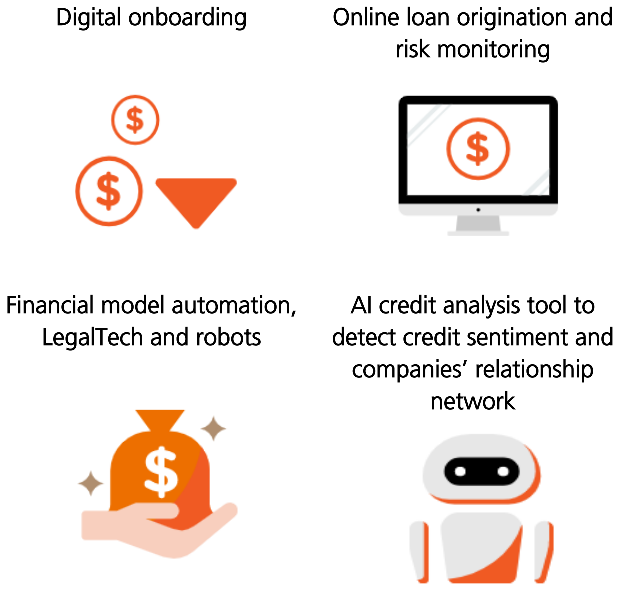
Financial services platform business model



Source: DBS Bank

Digital solutions. Another plausible business model could take the form of selling digital solutions. For instance, Ping An OneConnect Bank has a separate fintech arm which provides digital solutions for financial institutions.

Ping An OneConnect Bank's Fintech solutions



Source: Company, DBS Bank

Limitations a new digital bank entrant might face in Singapore

As discussed in previous sections, we believe that new digital bank entrants are able to leverage on various value propositions to grow organically. At the same time, we list out potential limitations that a new entrant might face in Singapore:

Higher cost of funds. Today, anecdotally, due to QFBs' narrower customer base, QFBs may at times have to pay a premium to attract local SGD deposits from existing or new customers to maintain liquidity requirements as well as market presence. Notably, the premiums of fixed deposits that QFBs and local finance companies (which rely on fixed deposits as primary source of funds) have to pay on top of local banks' fixed deposit rates might be as high as >1%. Hence, the new digital banks are likely to have higher overall cost of funds compared to the three local banks, or even QFBs. This may affect their ability to price loans affordably.

Existing competition from foreign banks and finance companies. According to MAS' observations in the SME Financing Survey in 2017, foreign banks tend to lend more to medium-sized SMEs and offer larger loan amounts than the local banks. Meanwhile, finance companies like Hong Leong Finance, Sing Investments and Finance, and Singapura Finance have vast client relationships in the SME space. Digital full banks as well as new digital wholesale banks are likely to compete with these existing players, as well as other lending platforms (e.g. P2P) which have made headway into SME financing, to some extent.

Unlikely to see radically low cost to serve. While the digital banking model has often been touted as one that might generate superior returns due to lower cost-to-serve, we posit that due to inherent limitations of Singapore's small population, the new digital banks are unlikely to see radically lower cost-to-serve, despite cost savings from absence of physical branches. Moreover, compliance costs and backhaul infrastructure, in addition to personnel costs, are likely to increase as scale of business grows on top of high initial marketing expenses to acquire customers.

Limitations to setting up. Digital banks will not be allowed network access to automated teller machines (ATMs) or cash deposit machines (CDMs) though they are able to offer cashback services through electronic funds transfer at point of sale (EFTPOS) terminals at retail merchants which may have a broad network across the island.

According to MAS, the rationale for restricting ATM/CDM access is to encourage digital banks to adopt innovative digital ways of serving customers and supporting the future digital economy. While digital payments are gaining strong traction, ATMs are still a very much a way of life, given there is still attachment to cash transactions as seen in long queues sometimes seen at local banks' ATMs. However, we do not view this as a big deterrent as retail customers of digital full banks are likely to retain other bank accounts with ATM access.

Credit assessment is still a core function of lending, one that digital banks must get right. While some digital bank applicants may be able to rely on alternative data and real-time analytics to underwrite credit risk, not all digital banks may have access to such data. Ultimately, digital banks must have a viable credit underwriting process which produces sustainable returns and ensures that non-performing loans ratio across different credit cycles is manageable. The pandemic has highlighted asset quality risks for new digital banks which were not in the spotlight. While it is not difficult to lend out money per se, ensuring collectability is much more difficult. Monzo Bank now expects credit losses to climb to £20m from £4m due to the pandemic, after lending out a substantial £144m in 2019.

Capital requirements. At a later stage, upon graduation from a restricted digital full bank, the required paid-up capital for digital full banks would be S$1.5bn, a sharp increase from the initial paid-up capital for restricted digital full bank of S$15m. The ability to raise sufficient capital for growth in the future may vary, depending on the shareholder profiles of the successful applicants.

How are incumbents likely to react and a peek into 2025

Singapore digital banks likely to require more effort to acquire and develop meaningful customer stickiness to turn profitable within a small and relatively well-banked population, and well-regulated banking industry in Singapore. Kakao Bank's success in attracting and monetising its 12 million customer base can be explained by the high proportion of underserved retail customers, amid relative difficulties in obtaining financing from rigid traditional banks which were also late to offer good UX on its banking platforms. We believe that Singapore digital banks are likely to require more effort to acquire and develop meaningful customer stickiness to turn profitable, given that a large part of the population and businesses in Singapore are relatively well-banked. Further, with only ~3.2 million of the population aged 20 and above, the total addressable retail customer population remains small. MAS has also most recently in 2019, reduced the limit on unsecured credit facilities to 12x monthly income, to reduce outstanding consumer debt in Singapore.

A platform-based lending model is likely to see higher profitability, though an evolved business model would include aspects of traditional banking features. We believe that it is possible for digital banks to turn profitable eventually and a platform-based lending model is likely to see higher profitability compared to a traditional lending model. Currently, Ant Group's take rate on its lending platform is estimated at 2.5%. The funds are from other financial institutions and Ant Group merely serves as a lending platform, which utilises its credit scoring system with its alternative data analytics and internal credit score. We believe that a platform-based model is likely to deliver higher profitability and is much more scalable, requiring less capital and operational expenses, compared to a traditional deposit-taking and lending banking business model.

However, whether this model can take off also depends on the willingness of other banks and financial institutions to partner the new digital bank to provide capital for its lending business. Incumbents may believe they are better off leveraging on their traditional lending capability and credit cards and unsecured loans business, rather than relying on the new digital bank. Hence, we believe that an evolved business model is likely to see the new digital bank concurrently offering traditional banking services as well.

Singapore banks are likely to continue to deliver value propositions that digital banks can bring to the table. In the meantime, we believe Singapore banks, having started on their digital journeys for several years now, are likely to continue working on delivering value propositions that digital banks can bring to the table. Compared to banks in other countries, we believe that Singapore banks have garnered relatively good traction in their digital journeys and are well-positioned to enhance their value propositions.

What Singapore Banks can offer

	Value proposition from new digital banks	Possible responses from Singapore Banks
1	Provide access to credit where it is difficult to obtain currently	Explore possible ways of extending credit to underserved segments
2	Superior alternative data analytics; high frequency real-time data to determine credit worthiness	Singapore Banks already have huge data and payments transactions of individuals and corporates which they can leverage on; alternative non-financial data may be sourced from partnerships
3	New and/or differentiated products and offerings with fast turnaround time; digital banks have potential to become platform/ marketplace	Continue to work with various partners to enhance customer stickiness across multiple products and offerings throughout a customer's lifetime value and increase speed of turnaround with digital tools
4	UX and customer experience	Enhancing UX and customer experience; increasing ease in using self-serve channels

Source: DBS Bank

Market sizing the addressable loan market for digital banks

As of July 2020, outstanding domestic credit card loans and other professional and private individual loans amounted S$9.7bn and S$36.1bn respectively, totalling S$45.8bn. The outstanding loans to businesses by finance companies was S$10.9bn. We further estimate the SME domestic loan book to be ~S$150bn (SME loans accounted for 22% of banking system's domestic corporate loans in 2017 according to MAS SME Financing Survey). We estimate the addressable market to be worth c.S$205bn. Digital banks may catalyse loan growth in the underserved segments. Assuming 1.5-3.5% CAGR through 2025, the addressable market may be c.S$220-243bn.

Market share	1%	3%	5%
Potential loan book size (S$bn)	2.2 - 2.4	6.6 – 7.3	11.0 – 12.2

Source: MAS, DBS Bank

Glossary: Singapore digital bank applicants' profiles

Beyond:	
V3 Group	Brand creator and developer and an Asian luxury group in the lifestyle and wellness markets that owns two leading luxury brands — OSIM and TWG Tea
EZ-Link	Subsidiary of Singapore's Land Transport Authority
Far East Organisation	One of Asia's largest real estate group, with a range of products in residential, commercial, hospitality and retail space segments
Heliconia Capital	Investment firm that focuses on growth-oriented Singapore companies
Mitsui Sumitomo Insurance	Japanese insurance holding company headquartered in Tokyo, Japan
Singapura Finance	Singapore finance company providing a comprehensive range of excellent financial services
MatchMove	Fintech platform to enable fast, secure and regulated money-moving experiences; democratizing essential financial services by using advanced cloud and mobile technologies
Grab Holdings	Singapore-based technology company offering ride-hailing transport services, food delivery and payment solutions
Singtel	Asia's leading communications group provides a diverse range of services including fixed, mobile, data, internet, TV, infocomms technology
Razer Youth Bank:	
Razer	Singaporean–American multinational technology company that designs, develops, and sells consumer electronics, financial services, and gaming hardware
Sheng Siong Holdings	Investment holding company which operates supermarket retail stores in Singapore
FWD Group	Insurance business of investment group, Pacific Century Group
Linksure Global Holding	Mobile Internet company that specializes in providing internet to enable connectivity
Insignia Ventures Partners	Early stage technology venture fund focusing on Southeast Asia started in 2017 and manages capital from premier institutional investors
Carro	Automotive marketplace and car financing startup based in Singapore
Sea	A global consumer internet company
AMTD Group	Leading Hong Kong-headquartered comprehensive financial institution
SP Group	Singapore Power, a government-owned electricity and gas distribution company in Singapore
Xiaomi Finance	Affiliate company of Chinese multinational electronics company, Xiaomi
Funding Societies	South-East-Asia based SME digital financing platform, headquartered in Singapore
Ant Financial	Affiliate company of the Chinese Alibaba Group
Arival (spun out of Life.Sreda)	An internal venture spun out of Life.SREDA, a venture capital fund that invested in & sold digital banks that were pioneers in the space
ByteDance Technology	Technology company operating a range of content platforms that inform, educate, entertain and inspire people across languages, cultures, and geographies
iFast	A wealth management fintech platform headquartered in Singapore
Hande Group	Fintech company in China, founded by Dr Cao Tong, the former president of Webank, China's first digital bank
Yillion Group	Operates one of the four digital banks in China
Sheng Ye Capital	Data driven supply chain financial services provider; fintech platform for SMEs
Phillip Capital	Integrated Asian financial house with a global presence that offers a full range of quality and innovative services to retail and high net worth individuals, family offices, as well as corporate and institutional customers
Advance.AI	A leading big data and AI company in Asia, helping to solve digital transformation, fraud prevention and process automation for enterprise clients
Zall Smart Commerce	China-based investment holding company principally engaged in the development and operation of shopping malls, management of supply chains, provision of e-commerce services and others
Marubeni	Major Japanese integrated trading and investment business conglomerate that handles products and provides services in broad range of business activities across wide-ranging fields, including food, consumer products, chemicals, energy, power plants, transportation and industrial machinery
GeTs	Global leading trade platform company; innovative use of technology and deep G2B and B2B domain expertise
Greenland Financial	Investment arm of Chinese real estate developer and state-owned enterprise Greenland Group
MinIPO	Chinese financing platform
Shanghai Jifu	Leading fintech solution provider for investment consulting and asset management industry
JIC Technology Investment	Part of China Jiantou Group, focuses on IoT and new information technology investment and asset management

Source: Companies, DBS Bank

DBS Bank recommendations are based on an Absolute Total Return* Rating system, defined as follows:
STRONG BUY (>20% total return over the next 3 months, with identifiable share price catalysts within this time frame)
BUY (>15% total return over the next 12 months for small caps, >10% for large caps)
HOLD (-10% to +15% total return over the next 12 months for small caps, -10% to +10% for large caps)
FULLY VALUED (negative total return, i.e., > -10% over the next 12 months)
SELL (negative total return of > -20% over the next 3 months, with identifiable share price catalysts within this time frame)

**Share price appreciation + dividends*

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