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ABOUT

FINEX Research and Development Foundation, Inc.

FINEX Foundation is the social arm of FINEX that supports research and development programs and projects in financial and business management, information technology, and other related fields of endeavor.

FINEX Journal

FINEX Journal is a publication of the FINEX Foundation's Research Committee that is available online and printed copies. This journal is committed to publishing research articles on areas of finance and other topics that are relevant and timely.



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FOREWORD

The FINEX Foundation's Research Committee project is now on its second edition, covering another important and relevant theme touching the lives of everyone today. This Journal will continue to be an avenue for educators, experts, interest groups to share and publish their research studies and articles.

The Committee will continue to work with the authors, subject matter experts from various disciplines to deliver higher quality materials as part of the evolution of the FINEX Journal.

On behalf of the Committee members, our second edition editor, Mr. Reynaldo Lugtu Jr, our Liaison Director Romeo L. Bernardo, we are very grateful to the authors/contributors of these valuable articles. We look forward to partnering with more institutions to generate awareness and support for this endeavor. It is our vision that this Journal will one day become one of the respected platforms as we continue to evolve and innovate to be relevant to the present business environment.



Romeo B. Bachoco
Chairman, Research Committee



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FINANCIAL TECHNOLOGY: PAVING THE WAY FOR AN INCLUSIVE PHILIPPINE ECONOMY

Martha M. Sazon

President & CEO, GCash



Technology has made it possible for ordinary Filipinos to gain access to financial services and solutions which were previously beyond their reach. While this technology has been available for some time already, the Covid-19 pandemic further accelerated its adoption, ushering in the shift to a more digital economy.

This has also helped boost financial inclusion efforts by allowing previously unbanked individuals to have access to basic financial services. Just by using their mobile phones, they're now able to open an account, use cashless payment solutions, and apply for a loan, among others. Such convenient access to cashless payment solutions have also become vital in helping businesses and the economy stay afloat despite the health crisis.

What was once just an option became a necessity as more people shifted their day-to-day transactions to digital platforms. Now, 15% of Filipino consumers choose to transact using an electronic wallet, now the second most

preferred payment mode after cash, according to the Consumer Payments Attitudes Study 2021 by payments company Visa.

Building a financially inclusive ecosystem

In the Philippines, GCash has been leading the e-payments space as we make the shift to digital wallets more enticing to Filipinos by offering secure, convenient, and relevant financial products and services. This is aligned with our purpose of Making Filipinos Everyday Lives Better, which drives us as an organization and unites our efforts. By making these tools available to our users, we promote financial inclusion and empower the unbanked and underbanked sectors to achieve financial literacy and freedom.

By the end of 2021, we have grown our user base to over 55 million, 2.5 times since the pandemic started. At the height of the pandemic, GCash became vital in helping keep



the economy going by making various digital financial services easily accessible for Filipinos and small businesses. Today, we are proud to say that 70% of all Filipino adults have a GCash account.

With our vision of Finance for All, we aim to create a more inclusive financial ecosystem for all Filipinos. With our suite of products and services, we help Filipinos live better every day. On the app, GCash offers GSave, an online savings bank; GInvest, which offers accessible and affordable investment products; GInsure, which provides insurance coverage ranging from health insurance to vehicle and lifestyle insurance; GCredit, which lets users pay for products and services with a credit line as high as P30,000. We have also been rolling out GLife, an e-commerce feature on the app that allows users to shop exclusive deals from more than 290 merchants across 10 categories, including retail, food, gaming, and transport.

Recently, we have also added other lending options on GCash that feature flexible and friendly terms tailor-made for the Filipinos' purchasing behaviors. One new product is called GGives which allows users to shop from their favorite brands for up to P25,000 and pay later through bi-monthly payments over 12 months. Another new feature is GLoans, a financial tool that allows them to borrow funds at affordable rates for various purposes. We aim to offer a solution to the biggest pain point of the unbanked - which is **how to have money readily available whenever they need it**.

Likewise, we have been enabling more accessible remittance services for Overseas Filipino Workers (OFWs) through an extensive network of global remittance partners, including TNG HK, Sendwave, and many more. This is to answer the huge demand for this service, with the Philippines having an estimated 2.2 million OFWs as of June 2020, as reported by the Philippine Statistics Authority.

Creating meaningful partnerships

To boost the local economy and help entrepreneurs thrive during the pandemic, we have tapped various institutions and MSMEs

to be official QR partners. These partners include the mixed-use development, Araneta City, making its Farmers Market a model for a cashless "wet market". GCash has also enabled 15,000 public utility jeepney drivers to receive alternative income sources through the app under the Service Contracting Program, in partnership with Sakay.Ph. The app also provides the jeepney drivers and commuters with a safe and cashless transaction option amid the pandemic via P2P QR Codes on the GCash app.

Apart from MSMEs, GCash has also partnered with companies like local airlines, pharmacies, key logistics companies and delivery services, as well as various US-based business process outsourcing companies, to name a few, for safer and seamless transactions.

Also in the portfolio to make financial services more accessible to more Filipinos is GCash Pro, which enables MSMEs with self-onboarding capabilities to access the app's B2B products. We have also been doubling down on GCash's goal to make its financial services available in local community-based shops called "sari-sari stores," which traditionally sell food and other essential products at affordable prices. GCash intends to transform these stores into GCash Pera Outlets (GCash PO) and enable the small business owners to earn additional income.

Moving towards a cashless society

With Philippine telecom networks like Globe Telecom helping facilitate these digital services, GCash can play an even bigger role in achieving financial inclusion.

In fact, through Globe's efforts at innovation and collaboration, it's been pushing for a more inclusive and sustainably responsible economy. As it continues to empower GCash, the company hopes to move closer to fulfilling its vision of enriching lives through technology.

As Southeast Asia continues to move toward a cashless society, GCash will continue to innovate products and services that will bring the fintech company closer to realizing its goal of financial inclusion for all Filipinos.



Striving for Sustainability

GCash's vision, "Finance for All", is at the core of our sustainability efforts as we aim to empower all Filipinos, especially those at the bottom of the pyramid.

These are incorporated in three main pillars of sustainability. For one, we strive to make a positive **environmental impact** by raising awareness on conservation and green practices. Our **social impact** is embodied in our wide and inclusive digital ecosystem of products and partners which enable us to connect Filipinos wherever they are and unlock a brighter future for them. Lastly, our digital solutions help build transparency and efficiencies in the public sector, showing our commitment to making a strong **governance impact** to nation-building.

Even when the pandemic eventually subsides, technology in finance is here to stay and evolve. For GCash in the Philippines, we will continue to innovate to serve the entire nation as we double down on our vision to financially empower all Filipinos. Ultimately, we aim to reach and make a positive impact on the lives of more riders, sari-sari store owners, tricycle drivers, wet market vendors, and other enterprising Pinoys, to help build a more inclusive and sustainable economy.



About Gcash

GCash (G-Xchange, Inc.) is the #1 Financial App in the Philippines. Through the GCash App, customers can easily purchase prepaid airtime; pay bills at over 1,300 partner billers; send and receive money anywhere in the Philippines, even to other bank accounts; purchase from over 4.5 million partner merchants and social sellers; cash-in and cash-out at over 170,000 partner agents; and get access to savings, credit, insurance and invest money all at the convenience of their smartphones. GCash is a wholly-owned subsidiary of Mynt (Globe Fintech Innovations, Inc.). GCash was recognized by The Asian Banker (TAB) and by the IDC in 2021 for its outstanding digital financial inclusion programs impacting more than 55 million Filipinos in the country today.

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FROM BRICKS TO CLICKS: CUSTOMER CENTRICITY AT THE CORE

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“Go Digital!”

This is no longer just a recommendation for financial institutions worldwide, but an imperative, traditional banks must learn to embrace, if they want to remain relevant in today’s global economy.

For the past two years, the pandemic has proven to be a great disruptor in all frontiers – medical, economic, and socio-political. The implementation of the necessary health protocols and lockdowns have shaken up various industries and businesses in a global scale, limiting operations and restricting face-to-face transactions or interactions

In the financial front, it was noted in the recent **2020 Digital Banking Maturity study** conducted by Deloitte Digital, that:

- 60% of legacy banks have either closed or shortened the operating hours of their physical branches

- 11% have turned off specific account opening methods, and,
- 6 % chose to limit the access of new clients to particular products and services.

Industry projections in the Philippines also reveal that 50% to 60% of branch-based over-the-counter transactions have shifted to digital platforms.

These figures are just snapshots of two glaring realities that the present health crisis has underscored:

1) that the traditional brick-and-mortar banking is a vulnerable reality unable to withstand a global disruptor such as a pandemic; and 2) that digital transformation is the solution which financial institutions must embrace to ensure that their businesses are agile and future-ready.

If there’s one pivotal thing this global health crisis has achieved, it is forcing industry leaders to re-examine the preparedness and the servicing



capabilities of their respective institutions. Some were even prompted to challenge their traditional banking structures and processes, and determine better strategies they can employ moving forward. It has also demanded newer business models and more innovative solutions from financial institutions, to address the changing needs of the market, and required the deconstruction of existing paradigms – or what we now consider as the radical shift from **bricks to clicks**.

What remains crystal clear, is that, there is no stopping the wave of digitalization. And to survive, we need to learn how to ride it.

Challenging the banking norm

This massive shift from **bricks to clicks** has been further highlighted by the emergence of challenger banks and cryptocurrencies.

Since 2010, around 256 neo-banks or challenger banks have been established worldwide. Their rise has been largely driven by wide-scale technological advancements, changing regional regulations, and rising customer demands and expectations that are even further accelerated by the pandemic. Their accessibility and responsiveness have led to massive customer adoption, which have ultimately changed the playing field.

In a recent 2020 study done by **Boston Consulting Group** commissioned by Google Cloud, digital challenger banks share the following key traits that make their market proposition highly-compelling:

1. Branchless – Unlike traditional legacy banks, digital challenger banks or fintech banks do not rely on physical branches to deliver their products and services to customers. Especially during the pandemic, we have seen how branch-based banking could be limited by certain factors that diminish both their engagement and efficiency when it comes to dealing with customers.

Fintech banks, offer convenience and flexibility to clients. Being run on cloud, customers can easily have access to different financial products and

services with just a few taps on their smartphones. Client onboarding is also done in real time with paperless and streamlined electronic Know Your Customer (eKYC) capabilities.

2. Tech-driven – With a better understanding of new technologies available such as cloud-based systems, modular design, artificial intelligence, machine learning, and advanced analytics; fintech banks can provide more efficient services with less friction. Because of this, many legacy banks, who are also working on their digital transformation, have turned their gaze to partnering with new fintech players that offer banking-as-a-service (BaaS) frameworks.

3. Customer-focused – Fintech banks/ neo-banks are also able to provide highly personalized services that enhance the overall customer experience. With the help of big data analytics, they have the capability to pool useful consumer information which allows them to develop value-added products and services that directly address the demands and pain points of their clients.

In the Philippines, challenger banks and new fintech players have started to reshape the country's financial ecosystem. This has also pushed regulators to drive re-emphasis on customer centricity and the need to roll out a standardized Code for Banks that will help them imbibe a customer centric culture.

The recently published Philippine Fintech Report 2022 by the Fintech Alliance.ph in cooperation with FinTech News Philippines, reveal that the country's fintech landscape is now composed of at least 222 industry players, broken down into the following categories:

- **Lending -27 %**
- **Payments- 20 %**
- **E-wallets 13%,**
- **Cryptocurrencies/blockchain - 12%,**
- **Insurtech- 4%,**
- **eKYC/RegTech - 4%,**
- **WealthTech - 4%,**
- **Crowdfunding - 1%.**

These figures are expected to shoot up in the coming years with more and more digital unicorns coming in, driven by growing interests and demands from the public.



Taking the leap with open banking and APIs

Apart from these, digital challenger banks have also leveraged on the momentum gathered by breakthroughs in **open banking** and **API-driven structures**.

Because of open banking frameworks adopted by financial systems all over the world; banks can now maximize the use and sharing of user-permissioned data to come up with tailored products and services. Open banking has also enabled high levels of interoperability across different platforms, making banking processes more synergistic and the customer journey more seamless.

Moreover, the digital disruption caused by a largely API-driven financial ecosystem has cemented the place of digital challenger banks in this new banking landscape. It was published in the **August 2020 Banking Scene Report**, that 480 million API calls were made in the UK for July alone, revealing the massive scale of third-party providers requesting access to a customer's bank account via APIs.

With the fast-changing financial landscape, there is no doubt that fintech banks are here to stay. They have emerged at the most opportune time when the confluence of technological advancement, evolving customer expectations, and global disruptions has pushed the boundaries of traditional banking to new frontiers.

What remains to be seen is how aggressive established legacy banks will be in responding to this challenge.

Embracing transformational thinking

To survive, legacy banks must learn to welcome innovation and digital transformation as a process of deconstruction and reimagination.

Industry leaders, bank executives, innovators, and regulators must work synergistically as paragons of necessary transformation. But the heart of this transformation should still be a human-centric digital culture that puts the needs and demands of the customers first. This

will lead banking institutions to accelerate the improvement of banking processes, investing in upskills the workforce and employing new technologies when necessary. With frictionless and agile processes, digital platforms sustain customer engagement without reliance on physical branches by delivering value-added products and services that directly address the needs and demands of the market.

Even in an ecosystem highly driven by technology, customer centricity still remains king.

Bolstering cybersecurity

Customer centricity is not purely about servicing, it goes hand in hand with protection. This is why fintech players and financial institutions have to put premium on protecting their users and clients from cyberattacks and other forms of cyberfraud.

Financial crimes and cyberattacks have been challenging to combat. As the country experiences rapid digital acceleration, online fraudsters have also developed more sophisticated means in doing scams and cyberattacks. This poses risks and threats specially to segments of the population who have not been that familiar with digital banking, especially those who are also trying banking for the first time.

Mounting a massive informational campaign is key, but current efforts still prove to be wanting, not for lack of intent or action, but more of access. Help from government, media and communication networks are vital in pushing this into fruition.

Fintech innovations however, can help manage risks and cybersecurity attacks by protecting the consumer's data and by detecting potential cyberattacks from the get go. Through the use of Artificial Intelligence (AI), digital banking apps are able to act on suspicious account access even before the transaction is made. Far from the easily forgettable and potentially easier to steal PIN codes, with fingerprint sensor and facial recognition logins that store relevant data associated with specific users, digital banks are able to verify the person's identity quickly and





conveniently even before unwarranted access to the account is made.

Banking is a business of trust, and transparency and accountability remain keys to securing and maintaining the customer's trust. Financial institutions must assure customers that their data is safe and protected under their care and that protocols are compliant with the regulator's security and safety standards in terms of data management and usage.

In the end, a focus on cybersecurity will safeguard the most important currency in the industry – the loyalty and trust clients invest in our institutions.

Synergizing efforts through "coopetition"

Embracing the digital transformation is not just a matter of pushing for singular efforts

in digital migration, nor is it just a function of developing cutting-edge technology. What sustains a vibrant, secured and innovative digital finance landscape is the collaboration different players establish and nurture. It is also about transformation inside and out, from institutional mindset to execution and servicing.

While it is true that 2022 will be a fiercely competitive year for the fintech and financial industry as more and more players enter the field, it is also equally important to turn our gaze to the possibilities for better and more synergistic partnerships.

As the industry continues to shift from bricks to clicks, the New Year should become for us, an era of massive "coopetition," allowing our institutions to keep working towards the collective goals of digital acceleration, financial inclusion and shared prosperity.



TECHNOLOGY IN FINANCE

Henry Rhoel R. Aguda

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Blockchain Initiatives in the Philippines

With all that's been said about the genesis of blockchain technology and its exodus into the global market, it's worth noting how the crypto market has developed in the Philippines. This trend is representative of how developing nations around the world are taking to the potential of Bitcoin and, consequently, blockchain technology.

In the US and many other leading nations, the primary interest in Bitcoin and most cryptocurrencies have been as a store of value. Users buy Bitcoin and "HODL" it—hold onto it and wait for it to appreciate in value. HODL is a word generated within the crypto community and a great window into the ironic tenor and humor of much of the conversations in the crypto sphere. It came from one Bitcoin user's drunken misspelling of the word "Hold" about a refusal to sell his Bitcoin during one of its crashes. HODL took hold, and a new verb was born. Outside of buying Bitcoin, HODLing it, and swapping it for other digital currencies, however, there is not much else users can do with it if they live in America.

Conversely, the Philippines' first ventures into Bitcoin were primarily interested in exploring its use as a medium of exchange. This makes perfect sense when one considers that the two pillars of the Philippine economy are Filipinos working abroad as overseas workers and Filipinos working for foreign companies in the business process outsourcing industry. In either case, overseas remittances still comprise an enormous amount of the country's annual economic flow. However, anyone who has ever sent money abroad can readily attest to the severe and steep fees that such services can entail. Bitcoin thus held an immediate appeal for financial technology developers in the Philippines because of its ability to decentralize the process of remitting money, as well as its built-in auditability. These

aspects allowed Filipino developers to envision a future where they could significantly cut down the costs of overseas payments by incorporating Bitcoin's blockchain into the remittance process.

Bitcoin and cryptocurrencies have a direct and immediate utility to address the financial inclusion problems in the Philippines. This unique focus has led to a much more open and collaborative relationship between the Bangko Sentral ng Pilipinas (BSP) and the wave of fintech companies and services that have emerged to facilitate Bitcoin's entry into the country's capital market. But with the emergence of smart contracts and Blockchain 2.0, the technology has also opened the door to address other systematic woes that have plagued the Philippines for a long time.

As a nation, the Philippines has been fraught with a myriad of challenges, from systemic issues, such as poverty, to extreme natural disasters that threaten homes and livelihoods, like super typhoons and volcanic eruptions. The challenges faced by the nation have shaped Filipinos into hardy and resilient people, finding ways to get by and making ends meet by being resourceful or *madiskarte*. Filipinos are known for somehow always finding a solution to the problem at hand, no matter what the odds are. Blockchain technology has the potential to become one such solution.

Through blockchains, systems can easily be stored and retrieved once digitized. This will help address many challenges and pain points that are unique to the country, including the proliferation of fraudulent credentials, falsified documents, and faulty record-keeping through provenance and immutability. Single point of failure issues, such as the Land Management Bureau fire of 2018, can have minimal effect on the day-to-day operations of government offices and the individuals that rely on their services. Likewise, supply chain issues can easily be



overcome, allowing donations and relief aid to get to their beneficiaries in times of calamity quickly. Especially considering that Philippine institutions are challenged by the lack of access to remote areas and islands, the reliance on a blockchain-based system can help to improve communication and coordination. Blockchain technology also connects disconnected areas with limited access to financial services, an all-too-common problem given the country's archipelagic nature.

Blockchain technology is powerful because it's another way for Filipinos to strive for a better life, opening the doors to opportunities previously unavailable to them. The use cases presented in the book "Opening the Archipelago: The Story of Blockchain in the Philippines" will show that Filipinos have begun to use blockchain technology to solve long-standing problems: creating opportunities to make money amidst the hardship of a pandemic through alternative ways of earning an income, providing faster and cheaper ways to send money to loved ones, and even establishing platforms to showcase Philippine art and creativity on the global stage.

Proof of Filipinos carving a space for themselves in the blockchain space is slowly getting easier to quantify. Metamask, one of the fastest-growing DeFi wallets, records 20% of its 10M base or 2 million users coming from the Philippines. Metamask is a browser extension and a mobile app that provides a token wallet for the Ethereum blockchain and any Ethereum-compatible network.

Meanwhile, play-to-earn (P2E) has become one of the biggest stories in adopting blockchain technology, with the top P2E game Axie Infinity having a significant number of Filipino players. The concept of P2E has been proven an effective driver of blockchain's global mass adoption partly through the Philippines' experience.

The Philippines is already writing its own story in the history books of blockchain, from innovation to experimentation and through adoption. We have a story to tell as innovators and entrepreneurs, as a people, and as a nation.

The Blockchain Proposition

Given its unique geographical, economic, political, and cultural characteristics, the Philippines is a natural beneficiary of a technological infrastructure upgrade. Disruptors from the private sector (such as fintechs) were the first to realize this, driven by business opportunities from new business models (hence the emergence of many blockchain-based remittance services). Eventually, the incumbents in the private sector (such as banks) and even government institutions realized the opportunities to be had with blockchain, with the BSP even launching formal studies into the possibility of a central-bank-issued digital currency.

Since blockchain has set foot in the Philippines, both the "enterprise blockchain" track and the "crypto" or "DeFi" track have independently progressed and have made their way to Filipino consumers through the services of institutions that chose to interact or use blockchain for either of the two, intentionally differentiating themselves from each other, until recently, where we are seeing attempts of a potential convergence, in a bid to remain relevant to the Filipino consumer, whose needs are constantly evolving.

PROMOTIONAL INSERT:

To understand more on how blockchain works in the context of cryptocurrency, you can read the full book of "Opening the Archipelago: The Story of Blockchain in the Philippines, which I co-authored with Ms. Catherine Casas and Atty. Nathan Marasigan.

EBOOK Link:

<https://bookshelf.com.ph/products/ebook-opening-the-archipelago-the-story-of-blockchain-in-the-philippines>

HARDBOUND Link:

<https://bookshelf.com.ph/products/opening-the-archipelago-the-story-of-blockchain-in-the-philippines>

³¹ Business World. (2021, September 1). Crypto wallet MetaMask user base surges, PHL makes up 20%. Retrieved October 26, 2021, from <https://www.bworldonline.com/sparkup-crypto-wallet-metamask-user-base-surges-phl-makes-up-20/>



FOR BUSINESSES WITH SOCIAL GOALS, TECHNOLOGY IS AT ITS HEART

Rose Marie M. King-Dominguez and Jose Florante M. Pamfilo¹

In the 2020 Bloomberg Data and Tech Summit, a key point of discussion was the increase in demand for ESG data, and how that demand was not just being driven by regulators, but by investors as well.² The idea of responsible investing has been around for some time but with growing focus on sustainability by the most established institutional investors, ESG appears to have outgrown its niche status.³ And technology is at its heart — whether this relates to preferring investment targets that are engaged in producing or that use renewable energy, the creation of applications that improve financial inclusion, education or availability of health services, or the implementation of laws that mandate privacy by design to protect human rights.

The ESG Trend and What is It

But what is ESG? The acronym stands for “environmental, social and governance”.⁴ Used in the context of investing, it refers to investing that takes into account ESG factors in making investment decisions. This could take several forms, from exclusionary screening (i.e., not investing in certain industries) to positive screening (i.e., investing in companies that demonstrate strong ESG performance) to thematic investing (i.e., investing in assets or funds focused on a specific sustainability-related theme, such as clean energy).⁵ From the

perspective of an enterprise, ESG investing has given rise to the expectation that enterprises should be able to identify, manage, address and report on the ESG risks and impacts to and of their business.

Environmental factors encompass matters such as resource management and utilization, ecosystem and biodiversity impacts, and emissions and waste generation.⁶ Social factors pertain to a company’s relationship with its various stakeholders — its employees, customers, suppliers, communities, the public and government, and can cover human rights, workplace conditions, diversity and inclusion, and business practices in marketing and data privacy.⁷ On the other hand, governance is a very broad term that refers to how a corporation is directed and controlled (including its board and management structures, policies, performance standards and ethical guidelines).⁸

Apart from investor demand, regulatory requirements (such as those on corporate governance, enterprise risk management and public disclosures), global supply chain requirements, international developments (such as the Paris Agreement on Climate Change) and increasingly discerning customers have contributed to and continue to propel the importance of ESG.⁹ More importantly, while ESG may have started out as form of external pressure from investors, there is a growing

¹ The authors are partners of SyCip Salazar Hernandez and Gatmaitan. Rose King-Dominguez is in the firm’s TMT and Data team, and Jayjay Pamfilo in SyCipLaw’s Environment, Social and Governance practice group.

² Bloomberg Professional Services, How ESG data is going mainstream, available at <https://www.bloomberg.com/professional/blog/how-esg-data-is-going-mainstream/> (last accessed Oct. 7, 2021).

³ See Organisation for Economic Cooperation and Development, ESG Investing: Practices, Progress and Challenges, available at <https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf> (last accessed Oct. 7, 2021).

⁴ Id. at 11.

⁵ See Amir Amel-Zadeh & George Serafeim, Why and How Investors Use ESG Information: Evidence from a Global Survey, 74 FIN. ANALYSTS J. 87 (2018).

⁶ Organisation for Economic Cooperation and Development, *supra* note 3.

⁷ Id.

⁸ Id.

⁹ Id.



consensus that managing ESG risks and impacts is essential to business resilience and sustainability.¹⁰ For instance, the Philippine Securities and Exchange Commission (SEC) has observed that companies that initiated ESG reforms ahead of any prompting from corporate regulators are proving to be more resilient to the effects of the COVID-19 pandemic.¹¹

Technology and ESG

Technology has become a key and necessary aspect of ESG-sensitive investment and corporate policies.

More and more, funds, insurers, investors and even consumers are looking at whether a business uses green technology, and enterprises are being expected to have the agility to innovate towards a smaller carbon footprint.

Critics of Bitcoin, for example, say that the tremendous amount of energy needed to power mining of the cryptocurrency has a deleterious impact on the environment, and that Bitcoin miners will tend to go where the electricity is cheapest, such as places where energy is coal-powered.¹² Meanwhile, the Cardano platform has sought to differentiate itself as the most environmentally sustainable cryptocurrency that relies more on “its innovative proof-of-stake blockchain protocol that values the percentage of coins a miner holds rather than the processing power they possess.”¹³

The concern is not just about the environment and climate change. There is also a growing focus on governance and whether a company’s activities or systems may result in social harm. Calls for action, from both regulators and investors, may not be lightweight. For instance, data privacy compliance has become an important aspect of due diligence for investments and financing. For Philippine personal data controllers that have expanded their business footprint outside the country and process data of non-residents, compliance requirements expand as well. The EU General Data Protection Regulation,¹⁴ for one, and like the Philippine Data Privacy Act of 2012,¹⁵ has extraterritorial application.

In response to the trend, analysts have seen a growth in the number of organizations that have adopted sustainability policies.¹⁶ Of course, where entities are just trying to be precisely that, trendy, those policies could be seen as merely cosmetic and ultimately ineffective. To improve corporate efforts in this regard, experts suggest that companies take into more serious consideration the technology aspect of their businesses and make their tech teams part of the over-all planning process.¹⁷ Typically, sustainability policies are prepared by senior executives and even “sustainability officers”. But as noted by a technical director of Google Cloud, “CTOs are a crucial part of the planning process, and in fact, can be the secret weapon to help their organization supercharge their ESG targets.”¹⁸ This is especially true considering that a focus on ESG will likely trigger a higher need and more spending for safety and cybersecurity.

¹⁰ Amel-Zadeh & Serafeim, supra note 6.

¹¹ Doris Dumlaog-Abadilla, SEC: Early ESG adopters more resilient amid pandemic, PHIL. DAILY INQ., Sep. 3, 2021, available at [https://business.inquirer.net/330009/sec-early-esg-adopters-more-resilient-amid-pandemic#:~:text=Companies%20that%20initiated%20environmental%2C%20social,Commission%20\(SEC\)%20official%20said](https://business.inquirer.net/330009/sec-early-esg-adopters-more-resilient-amid-pandemic#:~:text=Companies%20that%20initiated%20environmental%2C%20social,Commission%20(SEC)%20official%20said) (last accessed Oct. 7, 2021).

¹² See, e.g., Lauren Aratani, Electricity needed to mine bitcoin is more than used by 'entire countries', GUARDIAN, Feb. 7, 2021, available at <https://www.theguardian.com/technology/2021/feb/27/bitcoin-mining-electricity-use-environmental-impact> (last accessed Oct. 7, 2021).

¹³ Anthony Cuthbertson, What is Cardano? The ‘Green’ Crypto That Defied Musk’s Bitcoin Crash – and Hopes to Surpass Facebook and Netflix, INDEPENDENT, May 18, 2021, available at <https://www.independent.co.uk/life-style/gadgets-and-tech/cardano-crypto-bitcoin-elon-musk-b1849021.html> (last accessed Oct. 7, 2021).

¹⁴ EU General Data Protection Regulation (GDPR): Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), art. 3, OJ 2016 L 119/1.

¹⁵ An Act Protecting Individual Personal Information in Information and Communications Systems in the Government and the Private Sector, Creating for this Purpose a National Privacy Commission, and for Other Purposes (Data Privacy Act of 2012), Republic Act No. 10173, §4 (2012).

¹⁶ See Andrew J. Hoffman, The Next Phase of Business Sustainability, 16 STAN. SOC’L INNOV. REV. 35 (2018).

¹⁷ See, e.g., Jeff Steinberg, Tech leaders can be the secret weapon for supercharging ESG goals, available at <https://techcrunch.com/2021/08/02/tech-leaders-can-be-the-secret-weapon-for-supercharging-esg-goals/> (last accessed Oct. 7, 2021); Maged S. Morcos, A Two-Dimensional Performance Measurement Approach for Modeling Technological Strategic Decisions in Organisations, ICSIE 2020: Proceedings of the 2020 9th International Conference on Software and Information Engineering (ICSIE), at 209-23 (Nov. 2020).

¹⁸ Steinberg, supra note 18.



An often-overlooked challenge for businesses serious about their sustainability policy would be — how do we know if it's working? There is a growing body of studies on and advisory services for identifying, calculating and presenting metrics for ESG, and hence an interest in the production of ESG data.¹⁹ In this regard, the World Economic Forum released a paper entitled “Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation” with a set of universal ESG metrics and disclosures.²⁰ The paper is a result of the work of the forum in collaboration with the Big Four accounting firms (Deloitte, EY, KPMG and PwC) and numerous consultations with various stakeholders,²¹ and can be an important tool for guiding corporates. However, beyond identifying ESG requirements or factors, a company will need to be able to collect and process the relevant ESG data, and for larger enterprises this will trigger a need to turn to technology to put into place the appropriate data architecture for their systems.

ESG for Philippine Enterprises

Many Philippine companies have included an ESG component in their business planning; the interest in a “green label” can be readily seen in the rise of issuances of green bonds such as the Mabuhay Bond issued by the International Finance Corporation and the PhP3 billion green bonds issued by Arthaland Corporation.²² This has led the SEC to tout the country as “one of the most dominant in Southeast Asia when it comes to the green and sustainability bond market.”²³

The concept of “materiality” is central to an enterprise’s being able to manage its ESG risks and impacts effectively. Different businesses are bound to have different ESG impacts and face different ESG risks. Thus, for those who would like to start or improve their ESG programs, here are some suggested steps:

- Review materials on ESG factors such as the World Economic Forum paper.
- Identify which impacts and risks are most material to the company in the context of its activities, products, services and business relationships. Identifying material impacts and risks will entail obtaining inputs from and having a conversation with its various stakeholders.
- Consider the laws that apply to the enterprise but recognize that ESG goals may entail going beyond legal compliance.
- Once the company has identified its material impacts and risks, an enterprise would be in a position to craft its ESG strategy, goals and key performance indicators. Include the company’s tech team in the planning.
- As existing Philippine regulations limit ESG reporting obligations to certain types of companies only, an enterprise will also have to consider whether it will benefit from making voluntary ESG disclosures.
- An enterprise needs to put in place structures for implementation, oversight, measurement, evaluation and continuing stakeholder engagement. Remember that this is one main difference between ESG and the more familiar CSR --- ESG is more action oriented, and focuses on measurable outcome.

¹⁹ Organisation for Economic Cooperation and Development, *supra* note 3.

²⁰ World Economic Forum, *Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation*, available at https://www3.weforum.org/docs/WEF_IBC_Measuring_Stakeholder_Capitalism_Report_2020.pdf (last accessed Oct. 7, 2021).

²¹ Betsy Atkins, *ESG Metrics: A Path Forward for Companies*, FORBES, Oct 1, 2020, available at <https://www.forbes.com/sites/betsyatkins/2020/10/01/esg-metrics-a-path-forward-for-companies/?sh=2b371b1176da> (last accessed Oct. 7, 2021).

²² Doris Dumlaog-Abadilla, *SEC Notes Leap in PH Green Bond Market*, PHIL. DAILY INQ., Feb. 10, 2020, available at <https://business.inquirer.net/290210/sec-notes-leap-in-ph-green-bond-market> (last accessed Oct. 7, 2021).

²³ *Id.*



NEW FRONTIER: NFTS AND ITS LEGAL IMPACT ON DIGITAL ASSET REGULATIONS

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The blockchain community continues to wage – and win – its campaign of permeating the mainstream markets. From initial coin offerings and exponentially rising valuations of decentralized cryptocurrencies, the growing community is now setting its sights to further the mass adoption of blockchain technology by targeting two industries known for its cultish and dedicated followers: gaming and art.

The blockchain-based instrument of choice to disrupt these industries? Non-Fungible Tokens (NFTs).

NFTs, by its “non-fungible” denomination, is a unique digital token in the blockchain universe that is commonly minted – that is, created – in the Ethereum (ETH) blockchain protocol. While the concept of a unique item and the ownership thereof is not exactly news in the physical (real) world – think of paintings hanging in museums – the rave surrounding NFTs is its ability to create proof of sole ownership to a unique digital item in the virtual world.

An example thereof is a digital art by well-known graphic designer and animator Beeple which fetched a staggering USD\$69 Million at Christie’s – a renowned auction house, curator, and dealer in fine art, and well, now including digital art. In the gaming community, an example closer to home, is the rise of Axie Infinity: a play-to-earn gaming platform which melds together its utility/governance token (Axie Infinity Shard or AXS), payment token (Smooth Love Potion or SLP), and unique, Pokémonstyle NFT creatures called Axies. At its core, Axie Infinity essentially allows users to earn while a playing a game through their NFT creatures (Axies) and the success of the model has been thoroughly validated by the game’s current \$30 Billion market valuation.

Through NFTs and the use of blockchain technology, a play-to-earn model is possible where initial participation can be made through purchase of payment tokens via fiat and/or be earned through gaming progression in a metaverse, with the ultimate objective of such payment tokens being used for NFT acquisition



and merchantability through a decentralized NFT trading platform.

While NFT users grow exponentially, the legal and regulatory treatment surrounding this technology has stalled in a wait-and-see environment. In most jurisdictions, specific regulations on blockchain technology, cryptocurrency, and specifically NFTs have not yet spurred a commensurately comprehensive regulatory framework – usually having to rely on existing securities regulation framework to determine whether the government, through the Securities and Exchange Commission (SEC), should step in and protect investor and/or consumer rights.

In the Philippines, regulatory discussions on NFTs were stirred by the rise of Axie Infinity amongst e-games enthused Filipinos as well as crypto investors enticed by the hyper-bullish native tokens: AXS and SLP, with major news channels even running programs covering Axie players/investors.

Insofar as the Bangko Sentral ng Pilipinas is concerned, it has only issued regulations concerning the licensing and regulations of Virtual Currency Exchanges (now Virtual Asset Service Providers) through BSP Circular Nos. 944, 942, 1039, and 1108. While it has provided the definition of virtual assets, which may be considered as covering NFTs, the BSP has generally only allowed VCE/VASPs to only deal with leading decentralized virtual assets by market cap and volume as conversion pairs for fiat. This, thus, does not concern NFT regulation which can be likened more to tradable assets than payment instruments.

Meanwhile, the SEC has recognized the rise of NFTs and the playto-earn model. Currently, the SEC is evaluating how it can address issues and define its official treatment. Most likely, it will apply the well-known “Howey Test” to determine whether play-to-earn models utilizing NFTs would qualify as investment contracts – a type of security – under Philippine Law. As recent as late of last month, the SEC issued a warning against Pogi Breeds/Pogi Breeds International/Pogi Breeds Int’l/CoPartners

Pogibreeds – a group claiming to use its client’s money in buying, breeding Axies and playing the Axie Infinity game. In the notice, the SEC categorically stated that the model used by the group is considered a security subject to the regulatory authority of the SEC.

The Bureau of Internal Revenue (BIR) maintains that all income earned by Filipinos from whatever means may be subject to tax, unless provided otherwise by law. Necessarily, this includes earnings from playing Axie Infinity, and the gains derived from trading Axies. Hence, per the BIR, players and investors earning through these models should register and pay their tax. The taxability of a transaction dealing with NFTs would highly depend on the activities performed. For players/scholars, it may be considered as income subject to the graduated income tax rates. Hence, if the annual income of the player/scholar does not exceed PHP250,000, then there would be no tax on the income. On the other hand, investors/managers who loan their axie teams to players/scholars may be considered as engaging in a regular conduct or pursuit of a commercial activity and may be subject to Value-Added Tax, or Other Percentage Tax (as applicable), income tax, and other taxes and fees (e.g., Registration fees).

On the intellectual property front, an NFT does not (unless provided otherwise) carry with it the transfer of copyright ownership to the underlying work. Due to this, the original creator of an NFT maintains the exclusive right to reproduce, make additional copies, distribute, display or sell the work. In a way, this arrangement is similar to physical artworks where the artist retains intellectual property rights over the work and the buyer gains ownership of the physical artwork.

While technology, innovation, and excitement about NFTs continue to grow, you might find it easy to get carried away and forget that we have laws and obligations that should be considered when dealing within these new asset classes. Do take a pause to remind yourself of the legal obligations arising from these activities so you can intelligibly participate and hedge safely your time and money.



DIGITALIZATION OF CORPORATE BONDS IN THE PHILIPPINES

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There has been much headway made in the transformation of manual and paper-based processes into electronic and even fully digital¹ forms across different activities in the Philippine financial markets. But even though all private corporate bonds and commercial paper are already in paperless form in an electronic securities registry, many of the procedures within the primary issuance activities such as pre-issuance, regulatory registration, issuance, client on-boarding, and listing remain manual and heavy users of paper.

The main participants involved in bond initial offerings include the Corporate Issuer (the Debtor), its Underwriter-Arranger/s (who structure the issue), the Underwriter-Selling Agent/s (who distribute the issue), Investors/Bondholders (the

Creditors), and for public offerings, the Securities & Exchange Commission (that oversees all regulatory registration requirements). The Issuers are also supported by various counsels providing legal and tax advisory services. In consideration of this collective, the digitalization of corporate bonds is a joint effort of the PDS Group and Financial Executives Institute of the Philippines (FINEX) and focused on identifying and easing the so-called “pain points” to provide optimal benefits to the community.

Electronic Securities Issue Portal

If one would describe this transformative process in simple terms as a “war on paper”, then the initial staging point would be the

¹ For the purposes of this article, we differentiate “electronic forms” to include electronic copies of paper documents transmittable electronically, e.g., ‘pdf’ copies, from “digital forms” that refer to documents that are already electronic, i.e., via online or mobile mediums, and are in readily utilizable data format for information processing.



electronic Securities Issue Portal (e-SIP) Phase 1. This e-SIP Phase targeted paper submissions by Issuers and Underwriter-Arrangers for PDEX Listing and PDTC Registry engagements, paper submissions of individual Applications to Purchase (ATPs) by Investors through their Underwriter-Selling Agents and the e-mailed Final Sales Report by Underwriter-Selling Agents. The electronic alternatives to paper-based processes delivered by Phase 1 also provided online:

- a. facilities for Issuers to designate their Underwriter-Arrangers and Underwriter-Selling Agents for the issue,
- b. facilities for Issuers or Arrangers to set up the prospective security/s for PDEX Listing and PDTC Registry Services,
- c. dashboards for Issuers to monitor the progress of their security's primary distribution, and importantly,
- d. facilities for each Underwriter-Selling Agent to invite prospective Investors to fill up ATPs online, receive ATPs entered online, upload Sales Reports from ATPs still received manually, allocate and confirm ATPs to Investors, collate all allocated ATPs and Sales Reports into one Final Sales Report for submission one day prior to the Issuance Date.

In keeping with the initiative's theme of "no one left behind by technology", features in e-SIP allow for manual processes to still be accommodated for Underwriter-Selling Agents with Investors who have less acceptance for electronic forms or formats. At the same time, there are provisions for secure connectivity via application programming interfaces (or APIs) for Underwriter-Selling Agents that already have developed internal securities distribution systems for client investors. Even if the ideal state of digitized documents is not yet achieved, at this first phase the amount of paper saved through the electronic submissions and reduction of copies is substantial and the platform is a firm foundation for future development.

The second phase is already in development and contains features that will provide electronic mediums for processes in the pre- and post-

trade activities of investors in the secondary market. The effort in this stage is intended to improve secondary market liquidity by streamlining those procedural flows for Investors and Fixed Income Brokers in the settlement of client transactions.

An offshoot from the initial electronic effort in e-SIP: a widening of participants to include the National Association of Salesmen and Brokers Inc. (NASBI) and the Bankers Association of the Philippines (BAP) and merge their initiative for a simplified and standardized Client Suitability Assessment Form (CSAF) by potentially using e-SIP facilities for electronic submissions or even full digitalization of their CSAF. The enhancements in this Know Your Customer (KYC) activity will streamline processing of new client investors for Selling Agents in the primary market and Brokers in secondary market. We expect to see more synergies emerge as we progress further down the digitalization road.

Proof-of-Concept (POC) for Digital Registry & Depository

A more ambitious project within the digitalization roadmap is a Proof-of-Concept exercise to test the technology that underlies digital asset securities (or securities tokens), Distributed Ledger Technology (DLT), to power a Digital Registry & Depository and possibly result in the issuance of a Corporate Digital Bond in the Philippines.

The project involves the participation of a Singapore-based financial technology provider for the distributed ledger that will be customized for the Philippine market. The delivered Digital Registry & Depository will then be comprehensively tested for its feasibility, reliability, stability, and ultimate ability to service a corporate digital bond throughout its entire lifecycle of issuance, coupon payments and other corporate actions, trade and non-trade related, and redemptions. The current electronic Registry & Depository system provides existing performance metrics throughout the same lifecycle that the digital version must at least equal if not surpass.



To optimize the workplan for the Digital Registry & Depository, the exercise is taken under the approach of a test of technology, i.e., the resulting digital bond will be viewed as a regular bond using a different underlying technology for its issuance lifecycle. This means all existing securities laws and regulations as well as the organized market's trading and settlement rules and conventions apply for the digital bond. This limits development requirements for secondary market trade transfers to a connectivity linkage from the existing clearing authorization system to the POC Digital Depository. In addition, the Digital Registry & Depository is designed to complement e-SIP and the development plan will connect existing e-SIP functions via APIs to the POC Digital Registry.

Whether the POC is successful or not, this exercise is expected to yield actual working knowledge on the features and aspects of distributed ledger technology that may prove useful in other bond market activities.

Challenges

A significant challenge that must be hurdled to progress toward the final goal of digitalization of corporate bonds is the process for notarization of documents, which remains manual, and paper intensive. While current initiatives accept electronic copies, i.e., pdf versions, of notarized documents, no true digitalization effort will be complete until digital notarization is recognized and accepted. The widespread dissemination of the national digital identification system may greatly aid in solving this challenge.

The past two years have sadly also shown how malicious actors have taken advantage of the digital transformation process in the economy and have "industrialized" their nefarious activities in the digital space. This means that every

developmental step toward digitalization must require an equal amount of effort in providing the security and cyber resilience facilities for each digital initiative. Cybersecurity reviews of all processes and connectivity/s proposed must be done prior to launch to maintain the vision for a secure digital financial ecosystem.

Regulatory Support

The journey would not be possible without the support from the regulators, the Securities & Exchange Commission and the Bangko Sentral ng Pilipinas who have both responded positively to the digital initiatives and the manner of approach to the projects as solutions to "pain points" identified by stakeholders. The involvement of both regulators would ensure that these industry initiatives remain synchronized with the broader national digital roadmap of the Philippine economy.

Moving Forward

The sojourn down the road of digitalization for corporate bonds has begun and there is much distance yet left to cover. For the primary issuances, there are a slew of manual processes in pre-issuance activities still waiting for secure electronic or digital solutions. The testing of a feature of DL technology, i.e., smart contracts, for specific uses in clearing & settlement is also an area of interest, especially if digital payment systems become interoperable with digital securities settlement systems.

The first steps have been taken and may have established how to progress successfully, and that is by taking digitalization as a continual series of steps targeted to resolve specific "pain points" with and each step and target determined collaboratively with stakeholders.



VALUATION OF DIGITAL TRANSFORMATION

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Which of the following would be more valuable to the organization: (1) investing in a new e-commerce site or (2) investing in some automation software that could improve the company's procurement processes?

This is a question I pose to business leaders when they pursue digital transformation. The common answer is investing in a new e-commerce platform because it is revenue generating. In fact, this was supported by a 2020 study commissioned by Epson which revealed that nearly three quarters (74%) of the respondents have embarked on the digital transformation journey that mainly focused on the marketing and sales as well as customer interaction and servicing parts of their businesses.

This is the problem when business executives evaluate the impact of digital transformation. In a 2018 McKinsey survey of 1,733 managers pursuing digital initiatives, only 14 percent of the managers said they had realized significant performance improvements from these efforts,

and only 3 percent said they had successfully sustained any changes.

Executives often argue that such digital-investment decisions can be difficult to evaluate because the benefits from these initiatives often do not materialize right away and can have front-loaded or "shadow costs"—because of, say, building a new digital business while maintaining the core business. Another reason, as highlighted by McKinsey, is that proposed digital initiatives cannot be meaningfully compared against "traditional" ones.

So how can we evaluate the financial impact of digital transformation and its attendant digital projects? The trick is to assess digital initiatives based on the cash flows they generate. But getting the right base case is crucial.

Just like any investment decision, digital initiatives should be analyzed against an alternative course of action; and for digital projects, the alternative may be to do nothing.



A do-nothing scenario may not mean net-zero change; but may lead to a steady or accelerated erosion of value.

Therefore, the base case of doing nothing is not stable profits and cash flows, but the decline in profits and cash flows. There may be other intangible effects including decline in reputation and brand image.

This is why building a realistic base case can provide the data needed to evaluate the potential impact of a digital strategy or initiative. But this is easier said than done. Optimism and overestimation bias may come into play.

Take the curious case of two initial public offerings (IPOs) in the US in 2017, as mentioned in [Applico.com](#).

Blue Apron, a tech-enabled fresh ingredient and recipe delivery service, was considered a tech company while private, raising money as a start-up from Silicon Valley venture capitalists at valuations that were typical for other tech companies and receiving lots of hype and praise from the traditional tech press. But when Blue Apron IPO'd in 2017, the company traded at a revenue multiple of about 1, with a market cap just under \$1 billion dollars. Rather than being valued like a tech company, it turns out that public markets value the company much the same way they would a typical chain of grocery stores. Blue Apron is a grocery store with a tech enabled user interface and delivery mechanism.

On the other hand, CarGurus, an automotive research and shopping website that assists users in comparing local listings for used and new cars and contacting sellers, was valued at a revenue multiple greater than ten in 2017. Its revenue was about \$143 million for the first half of 2017, compared to Blue Apron's nearly \$500 million.

What's the difference? CarGurus is a platform – a new business model call product marketplace, whereas Blue Apron is a grocery store with a tech enabled user interface and delivery mechanism.

This tale presents two digital initiatives that require different approaches to valuation.

First is when companies use digital to simply do the things they already do, only better—in service to, for instance, cost reduction, improved customer experience, new sources of revenue, and better decision making. This is where we apply an honest base case and a full range of cash-flow scenarios, to meaningfully compare digital initiatives against other investments that may be competing for scarce resources.

The second is the application of digital tools and technologies to fundamentally disrupt an industry, requiring a major revamp of a company's business model which may even cannibalize the company's core strengths. This is where we start from the future when evaluating the digital initiatives, rather than the present where markets may not exist yet. New business models look at the fundamental economics of the business, but also consider whether the new digital business will engender network effects.

So, the valuation of digital transformation initiatives not only require fundamental business case analysis but also a keen understanding of new business models. As there is much talk about the need to create new business models during this time of the pandemic, educating yourself on the differences in digital technologies and digital transformation initiatives will come in handy.

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EMERGING CHALLENGERS AND INCUMBENT OPERATORS BATTLE FOR ASIA PACIFIC'S DIGITAL BANKING OPPORTUNITY

Jungkiu Choi, Yashraj Erande, Yang Yu and Camille Jasmine Aquino

Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today we work closely with clients to embrace a transformational approach aimed at benefiting all stakeholders—empowering organizations to grow, build sustainable competitive advantage, and drive positive societal impact.

Our diverse, global teams bring deep industry and functional expertise and a range of perspectives that question the status quo and spark change. BCG delivers solutions through leading-edge management consulting, technology and design, and corporate and digital ventures. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, fueled by the goal of helping our clients thrive and enabling them to make the world a better place

At A Glance

The digital banking space continues to attract a diverse range of industry players, from incumbent banking operators to emergent new challengers. There are now 249 digital banking players globally, but of those, just 13 have been successful in generating a positive bottom line. Of those 13 successful players, ten are based in the Asia Pacific (APAC) region.

Digital Challenger Banks continue to gain traction with consumers looking for increased personalization and value-added services. This evolution is being supported by growing liberalization by banking regulators. As the landscape expands in coming years, operators will need to consider not just how to win in this market, but also how to play the game in the way that suits their business.

Markets to Watch in Southeast Asia and India

There are five key markets in Southeast Asia, alongside India, which offer potentially fertile

ground for growth, framed by positive market moves and encouraging demographics. Our research identifies Malaysia, Philippines, Indonesia, Vietnam, and Thailand in Southeast Asia, as well as India, as countries to consider launching a successful Digital Challenger Bank. Leveraging BCG's substantial experience working with digital banks across the globe, we explore critical insights and best practices for leaders looking to succeed in their journey to establish a digital bank.

A Strategic Path to Success

The path forward remains challenging for both incumbent banking operators and emerging players looking to establish a Digital Challenger Bank. Success will require a nuanced and focused strategic approach that targets the specific needs and considerations of the desired market segments. In our conclusion, we raise key questions that must be answered in charting this journey, and critical considerations around adoption of the right technology, culture, and business plan to succeed.





The banking landscape has experienced significant transformation over recent decades, as connected technologies unlock new banking opportunities.

The early 2000s witnessed an important period of transition, as the rapid growth in global internet users triggered the rise of e-banking and internet banking services. These early online banks were largely seen as additional services or new distribution channels for existing incumbent banking operators.

Digital banking however was to transform this landscape even further, as the widespread use of smartphones saw the rise of new banking models in the early 2010s. This necessitated a fresh repositioning for existing banking players as they shifted to meet the growing digital needs and expectations of customers, often requiring front-end to back-end digital transformations.

The rapid rise of a connected digital economy has created new impetus in recent years. Major digital brands such as Amazon, Grab, and Lazada have inspired expectations of always-on digital services and personalized customer experience. Customers increasingly expect to receive responsive customization in all their digital experiences, triggering changing expectations around their banking services.

“ My bank is always on. I can open accounts instantly, just like same-day deliveries from Amazon...only better!”
Asian Digital Challenger Bank customer

“ I have not seen my bank branch. My bank simply follows me wherever I am, whatever I need.” Asian Digital Challenger Bank customer

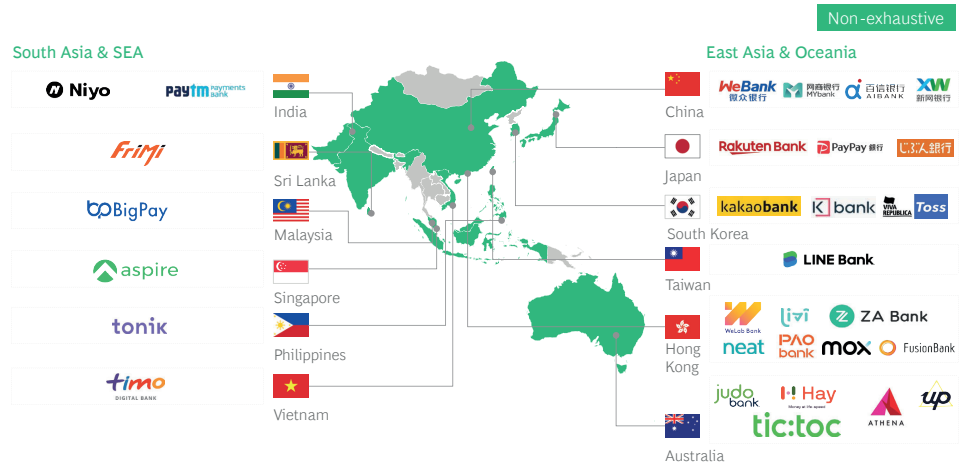
“ My bank has the best offers, personalized specially for me.” Asian Digital Challenger Bank customer

“ I try to maximize the use of my bank to ‘earn’ the most value... just like I use [Amazon] Prime for all my shopping.”
Asian Digital Challenger Bank customer

This fresh landscape of digital expectation has driven the rise of a new banking model that forms the focus of this report. These Digital Challenger Banks (DCBs) are increasingly emerging from what are non-financial institution (NFI) players (such as fintechs and tech players), and look to be transforming the banking ecosystem.



Exhibit 1 - 50 Digital Challenger Banks in APAC



Source: BCG Analysis

A Changing Banking Landscape

In this changing landscape, incumbent banks have faced pressure to continuously upgrade their digital capabilities to cater for evolving customer expectations.

This digital evolution has emerged in many forms, from conservative approaches which seek simply to improve existing digital channels, to more aggressive launches of stand-alone digital banking businesses that look to cater for new or existing customer segments with independent operations.

Banks which embrace a channel-expansion approach are often seeking to target existing customers with similar or related products, leveraging online channels such as an application (app) or website. The multi-channel approach is now largely seen as standard for traditional banking operators, and almost all legacy banks now boast some form of online presence. Some banks have sought to establish an independent business unit, with separated operations and leadership. This is often done in an attempt to target new market segments and build success by providing a fresh customer experience.

Competition for market leadership remains wide open in the majority of countries across

the globe. This competition is compounded by the emergent challengers of Digital Challenger Banks—with digital-only delivery that can quickly reach target customers at scale.

DCBs come in a number of formats, and provide a full bank service or bank-like service depending on their operating structure and banking licenses. BCG analysis indicates that there are 249 DCBs in existence globally as of the end of 2020. It's estimated that more than two-thirds of that number entered operations since 2010, showing the rapid rise of these emerging operators.

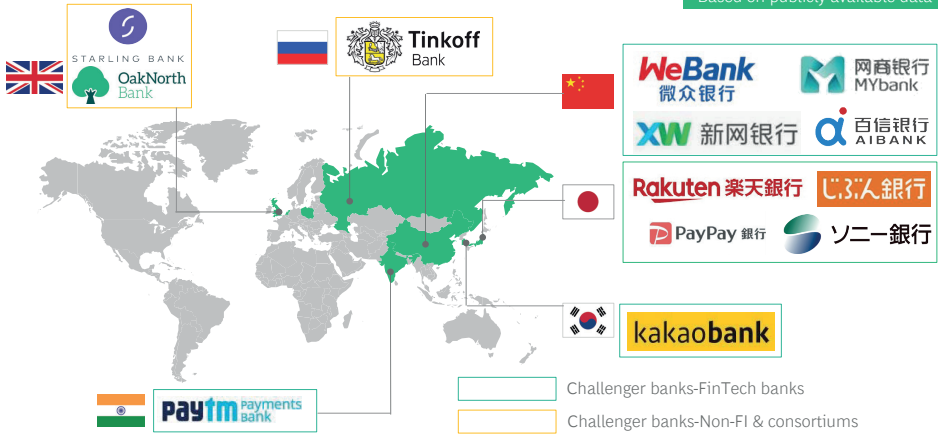
These banks seek to serve customers with diversified and personalized offerings, but are unified by key traits that incorporate electronic client servicing, a comprehensive digital infrastructure underpinning operations, and 100% digital delivery to customers.

While evolving consumer expectations and demand were primary drivers in the growth of DCBs, regulatory support through introduction of digital banking policies have provided a framework to nurture this journey. Virtual bank licenses are becoming increasingly common across the globe, championed by regulators as a way to drive innovation, improve service



Exhibit 2 - 13 profitable identified out of 249 Digital Challenger Banks in the world

Based on publicly available data



Source: BCG FinTech Control Tower

quality, and boost financial inclusion for both consumers and small and medium enterprises (SMEs).

APAC'S Digital Challenger Banks

Asia Pacific (APAC) is home to 20% of global DCBs identified by BCG as of the end of 2020, with 50 DCBs operating in markets in the region. Many of these operators are relatively new to the market, with more than 70% established in the five years from January 2016 to December 2020. (See Exhibit 1.)

The majority of market entrants in APAC are consortium players backed by technology giants and non-financial institutions such as telecoms companies, seeking to leverage competitive advantages around existing user bases, data, and technology.

Success Is Not Guaranteed

While the number of DCBs is growing, success as defined by profit generation remains limited. Our analysis reveals that just 13, or less than 5%, of all DCBs have clearly achieved break-even globally. (See Exhibit 2.) Out of these 13 players, ten are based in APAC.





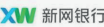












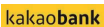

Those DCBs which have achieved profit generation have navigated well through challenges, managing operations in a sustainable way. Most of them have strong lending propositions, and a leveraged ecosystem on which to base their customer acquisition and operations. Notably, many of these players are in China—WeBank, MyBank, Aibank, XW Bank—and Japan—Rakuten Bank, Sony Bank, Jibun Bank, PayPay Bank—while two are in the UK, one in Russia, one in India, and one in Korea. Despite being leaders in the digital banking space, none of these successful DCBs have yet to capture a market share greater than 2% in terms of total value of deposits and loans of their target segments—typically retail customers and SMEs.

Of APAC's ten profitable DCBs, four entered from a digital payment space first, then evolved to reach the status of a Digital Challenger Bank with extended financial services.

What unites these ten profitable players is that they are all backed by established companies with substantial ecosystems. The investors backing these digital players boast significant business experience and valuable ecosystems that unlock significant advantage. This has been a major factor of success as they leverage on strong brand recognition with established customer bases and rich data to drive customer insights and customization. (See Exhibit 3.)



Exhibit 3 - Ecosystem of profitable Digital Challenger Banks

Bank	Origin	Ecosystem	Nature of ecosystem	Launch Year	# of users in 2020 (Million)
 WeBank 微众银行		Wechat	Instant msg/social media	2011	1,200
 网商银行 MYbank		Taobao	E-Commerce	2003	800
 新网银行		Xiaomi	Mobile phone/ Smart home	2010	32 ¹
 百信银行 AIBANK		Baidu	Search engine	2000	1,000
 paytm payments bank		Paytm	E-Commerce/Payment	2009	350 ²
 Rakuten 楽天銀行		Rakuten	E-Commerce	1997	100
 au 三井住友銀行		KDDI	Telecommunications	1984	60
 PayPay 銀行		Yahoo JP	Internet	1996	34 ³
 ソニー銀行		Sony	Conglomerate	1946	NA
 kakaobank		KakaoTalk and KakaoPay	Conglomerate	1995	46 ⁴

Source: Omdia; Informa Tech; App Annie; Press articles; Desktop research; BCG analysis.

¹ Total user of MiJia (Smart Home) app;

² Registered users;

³ Monthly user;

⁴ Total registered user of KakaoTalk.

Understanding Success at Digital Challenger Banks

In order to understand what success looks like for DCBs, we have undertaken a comprehensive analysis of key factors and metrics of success. Our analysis reveals that these operators have performed well in relation to most, if not all, three main factors of success. They are leveraging and utilizing existing assets, building and scaling the bank, and sustaining success. (See Exhibit 4.)

Leveraging and Utilizing Assets

Successful Digital Challenger Banks leverage and utilize existing assets such as brand recognition, existing customer networks, and financial services experience as a crucial competitive advantage.

This success is often based on strong alliances and partnerships that enable players to combine different strengths and reinforce their own position. Successful DCBs extract value internally from parent companies, and externally from deep partnerships, operating with ready

access to an established customer base, data, technology, and other factors to gain competitive advantage.

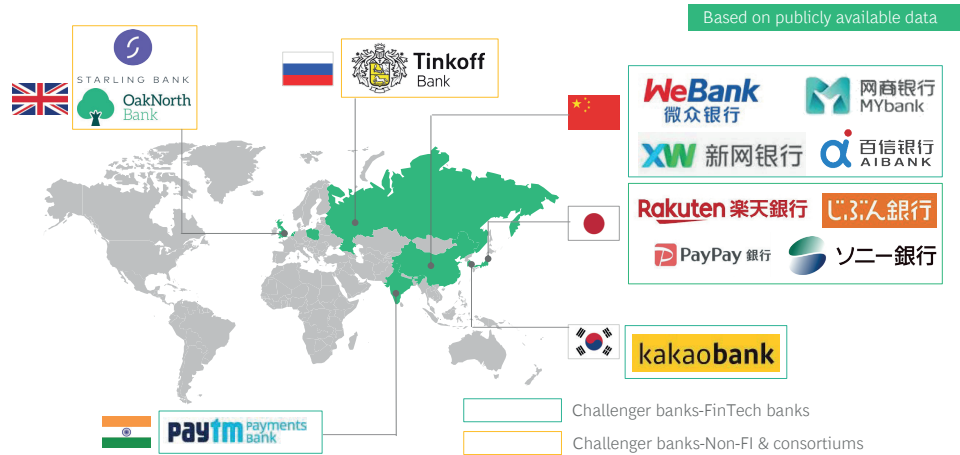
Strong brand recognition. Client trust is critical to the success of financial service providers. It is imperative that operators gain a reputation that engenders trust in customers, and that reinforces the belief that both money and personal information will be tightly protected.

Consumer trust often takes time for new brands to build. Some successful DCBs have leveraged the reputation of parent brands or financial partners to rapidly develop this trust. This has enabled players to acquire customers at a faster and often more affordable rate, with less resources having to be directed to building brand awareness and trust.

Ecosystem of users. Access to a large established customer base offers an invaluable head start for emerging players seeking to target a digital-native customer base. This avoids any



Exhibit 4 - Success factors that drive a new Digital Bank



Source: BCG Analysis

need to transition customers to digital channels, and provides a cheaper, faster avenue to customer acquisition. Once a DCB is fully embedded in an existing ecosystem, it provides seamless digital financial service delivery across the ecosystem.

Alongside customer acquisition benefits, these ecosystem players can also leverage the huge wealth of existing data to build better customer insight and more customized service delivery. This provides a highly-effective platform for both cross-selling and personalized offers. Rich data also adds a further benefit of enabling operators to build higher quality credit underwriting models.

Experience in financial services. Pre-existing knowledge of financial service delivery offers a strong foundation for success, built on understanding of an often complex financial industry, including risk management and regulatory requirements. This experience also contributes to an existing pool of transaction data and working credit scoring models which offer an informed starting point.

Building and Scaling a Digital Bank

Successfully building and scaling a digital bank will require a focus on three core pillars

of success that stimulate customer engagement and ensure critical business agility.

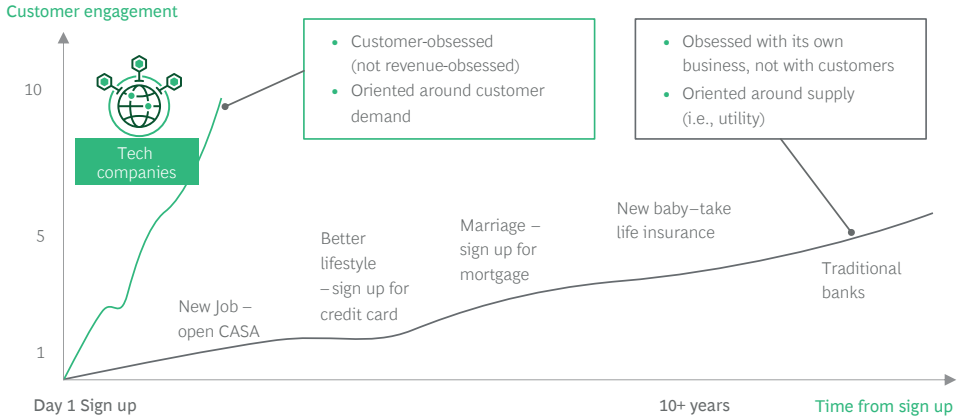
Customer obsession. It is important to focus on a compelling value proposition and product features, strengthened through continuous market testing. Successful DCBs employ many of the same tactics and focused efforts that customers expect from leading customer-oriented technology companies today. This allows operators to go beyond simple event-based engagement relied on by traditional operators, to grow and scale at a far more accelerated pace. (See Exhibit 5.)

DCBs should embrace a holistic approach that incorporates the end-to-end customer journey, covering acquisition, engagement, deepening relationship, and customer referral. It's not enough just to focus on product features. User-friendly and intuitive user interface (UI) and user experience (UX) are an essential prerequisite, and not a differentiator.

Successful DCB KakaoBank introduced social features to build customer obsession, including its popular 'Eat Lover Club' which allows users to easily split expenses among a group of friends. Payments linked to social media make for a seamless money transfer experience in a chat room. These offerings build on a sense of



Exhibit 5 - Tech vs banks on engagement



Source: BCG case experience

community engagement to ensure convenience and strong customer loyalty.

Scalable and flexible technology. Operators should develop a robust banking architecture built on scalable and flexible technology and cloud-native components. This should incorporate five key layers: 1) integration layer with standard APIs, 2) front-end consistent engagement layer, 3) integrated data and advanced analytics layer, 4) operational layers, and 5) security layer with secure-by-design features. These layers are built on key technology principles. **(See Exhibit 6.)**

Agile organization and governance. Agility is critical to the success of digital banks. They should be run independently, and focus on their own success with full speed of decision making and action taking.

Organizational structures should be designed to enable collaboration between digital talent and agile bankers. A core of talented IT staff should be established at the outset. Management should embrace an agile structure as it scales, echoing the growth of successful technology firms.

The bank organization should be flexible and efficient, embracing an iterative process of

testing and execution. It is vital that this is captured in the governance framework of systems, controls, and processes. Clear division of roles and corresponding decision rights and responsibilities among business functions will legitimize and balance interactions.

Sustaining Success at a Digital Bank

Once a bank is established and scaled, sustaining success will require a renewed focus on key areas of service delivery.

Data and analytics. Unlocking the value of consumer data insights is critical to a successful digital bank. This is key to meeting expectations of personalized and customized product offerings, and identifying the correct approach to target specific markets. Successful banks often leverage both internal and external resources to build out this consumer understanding.

Risk management. Digital banks fundamentally succeed on the value of data and digital service delivery. That means they must manage both financial and data threats effectively. It is important to define, agree, and formalize policies covering end-to-end access and information security. Operators should adhere to risk



Exhibit 6 - Technology Principles



Lean, flexible, scalable cloud native component

- Modularized and componentized with containerized microservices



Collaborative with ecosystem

- Mandated use of integration layer



Hybrid data platform

- Support for structured and unstructured data, with sufficient computing power for real-time analysis
- Single source of data platform



Automated and iterative

- Built for minimal manual operations and toil



Secure by design

- DevSecOps pipelines across all products built. (Cyber-) security concepts applied across all layers to protect systems and data

Source: BCG case experience

management principles which are specifically tailored to digital banks, incorporating the additional risks around data and technology.

Successful digital banks learn to leverage automation and big data to quickly and effectively manage risk. This includes automated credit risk assessments of loan applicants which incorporates information such as social data, online behavior, transaction data, and buying behavior. This has proven to be effective in managing non-performing loans (NPL). WeBank achieved a net interest spread of 6%, significantly higher than the Chinese industry average of 2-3%, with NPL less than half the industry average at 0.64%, by leveraging such data points.

Path to profitability. There is no single, proven path to profitability for a digital bank, but analysis of successful operators reveals the importance of the right product release sequence. Revenues and costs are also monitored and managed in parallel to identify areas where the bottom line can be improved.

Digital bank players should gradually introduce curated products that match the desires of the target market in order to avoid bombarding customers with a confusing array of product

types or features at launch. This should initially begin with a simple but essential product such as payments, personal loans, or retail current account saving account (CASA). Payments will ensure regular customer usage, personal loans can generate earnings and hook customers, and CASA will enhance profitability as a low-cost source of funding.

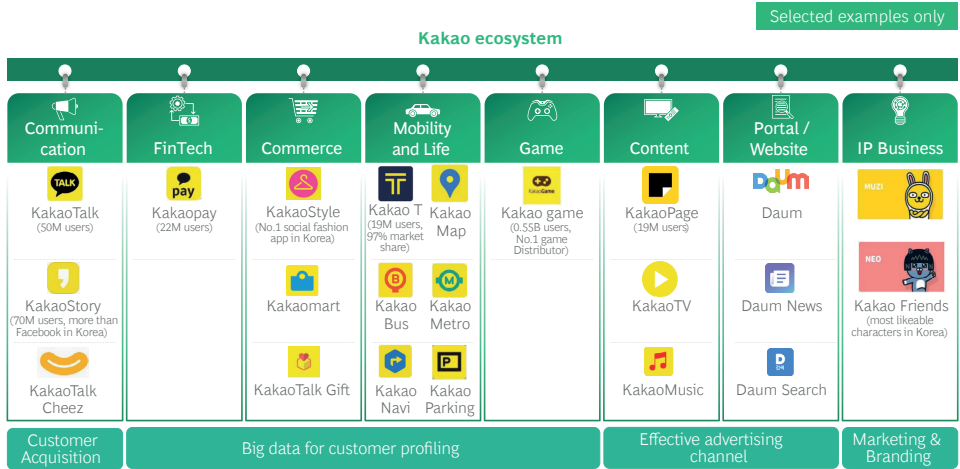
Ethnographic research to deeply understand pain points and identify unmet needs is critical in ensuring operators offer the right product features to the right customers.

As a bank expands, it should continuously innovate apps to maintain customer engagement and ensure daily usage. This should be balanced against a target of consistently low customer acquisition costs that operate below those of traditional incumbent banks. Revenue sources should also be clearly identified.

Our research shows the most successful plays rely more on interest-based income at early stages, requiring strong lending propositions. A clear strategy on how to achieve maximum profit margins while serving underserved segments with low-fee or free services is crucial. Given the essential role technology plays in DCBs, lowering IT and operational costs is also critical.



Exhibit 7 - KakaoBank ecosystem



Source: Rise of Digital Banking in Southeast Asia; Press search; BCG case experience

Case Study: KakaoBank

KakaoBank offers a valuable study of success, revealing the significant potential for Digital Challenger Banks even in a highly-banked and mature market such as South Korea.

Since its launch in 2017, KakaoBank has gained over 13 million customers. It reached a customer penetration rate of 26% with a far lower acquisition cost per customer than traditional banks, leveraging the significant ecosystem of parent company Kakao Corp. That includes the extremely popular chat platform KakaoTalk.

KakaoBank has increased its loan book annually since its launch, and interest income continues to be a major driver of its profitability. Of the company's ~USD603 million revenue, 66% is contributed by lending activities. Kakao-Bank also successfully targets underserved segments through its instant unsecured lending to sole proprietorship, addressing pain points from existing offerings that require long turnaround times or offer limited access. **(See Exhibit 7.)**

KakaoBank leveraged KakaoTalk—South Korea's most popular social network service—to rapidly on-board new customers. With 97% market share amongst smartphone users,

KakaoTalk provided a pathway to KakaoBank acquiring more than five million customers within six months of launch. A personalized approach that targeted millennials through a popular Kakao Friends character offering saw 70% of customers acquiring debit cards over this period.

KakaoBank also leveraged platform familiarity to deliver effective UI/UX with customer-centric design. The KakaoTalk and KakaoPay mobile applications are both based on established ecosystem design, with innovation driven by the product features and customer experiences that are targeted at providing a highly-engaging customer experience.

This familiar product design enabled easy sign-up processes, providing rapid on-boarding that saw 300,000 customers joining on the day of launch. Just three products—checking and savings account, time deposit, personal loans—were offered to avoid confusion in customers. Simple, convenient, digital processes underpin the success of KakaoBank's offering, including later products such as housing rental deposit loan services, which can be delivered far faster than similar products from legacy banks.



Case Study: WeBank

WeBank is a digital bank operating on an ‘open banking’ approach which leverages open APIs to create an integrated digital ecosystem. WeBank’s primary source of income comes from interest accrued from its lending products. It focuses on smaller loans with high volumes of customers driven by an extensive user base captured from a variety of ecosystem partners such as WeChat. (See Exhibit 8.)

WeBank utilizes its open banking model to connect financial institution incumbents and ecosystem partners to serve underbanked/unbanked individuals and SMEs. This shared business infrastructure is a direct result of the open banking system, backed by continuous collaboration with business partners.

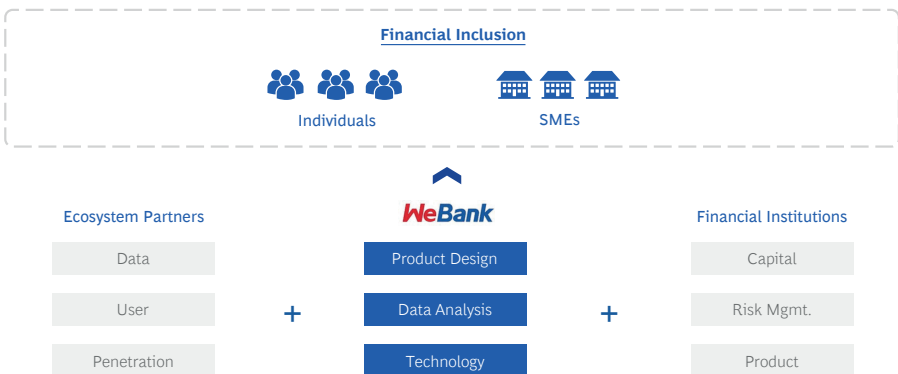
WeBank successfully embeds the product journey for products such as loan applications in other popular apps like WeChat Pay and QQ Wallet, allowing users to complete the full application process in these partner apps.

WeBank has also developed a digital inclusive financial product matrix to serve the general public and SMEs, which includes consumer loans, SME loans, auto loans, the WeBank app, and other key offers. WeBank further benefits from a technology-driven approach founded on an ABCD—AI, blockchain, cloud computing, big data—strategy. This enabled WeBank to significantly lower its IT costs during expansion, contributing to a shorter break-even period and more sustainable growth.

WeBank steered its journey to profitability by introducing products sequentially, rather than crowding users with initial offerings. Income from interest on loans continues to be the main driver of revenue, and the bank has continuously lowered its cost-to-income ratio.

Leveraging its outstanding data analytics and robust modeling capabilities, WeBank has achieved an NPL less than half the industry average at 1.20%.

Exhibit 8 - Tencent ecosystem



Potential markets for success in Southeast Asia and India

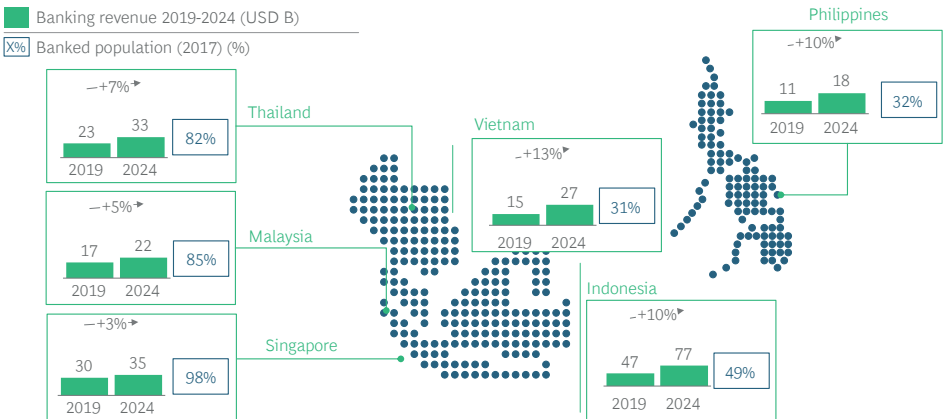
Southeast Asia (SEA) and India offer notable opportunities for Digital Challenger Banks, building on the omentum of consumer digital trends and evolving regulatory frameworks.

COVID-19 has further accelerated this potential, driving greater digital adoption and the pathway to digital banking growth. Consumer perceptions have shifted more positively towards digital service delivery in areas such as banking, largely founded on a growing demand for speed and convenience.

Southeast Asia’s banking sector is projected to deliver significant growth in coming years, with Vietnam, Philippines, and Indonesia expected to register double-digit growth from 2019 to 2024. **(See Exhibit 9.)** These countries also represent markets with significant underbanked populations, ripe for disruption by successful DCBs. India’s significant population and large underserved demographic echoes many of these opportunities.

Through our analysis of the core success factors for Digital Challenger Banks, we have identified six key markets which offer the greatest potential in Southeast Asia and India. **(See Exhibit 10.)**

Exhibit 9 - Banking revenue and unbanked population in SEA

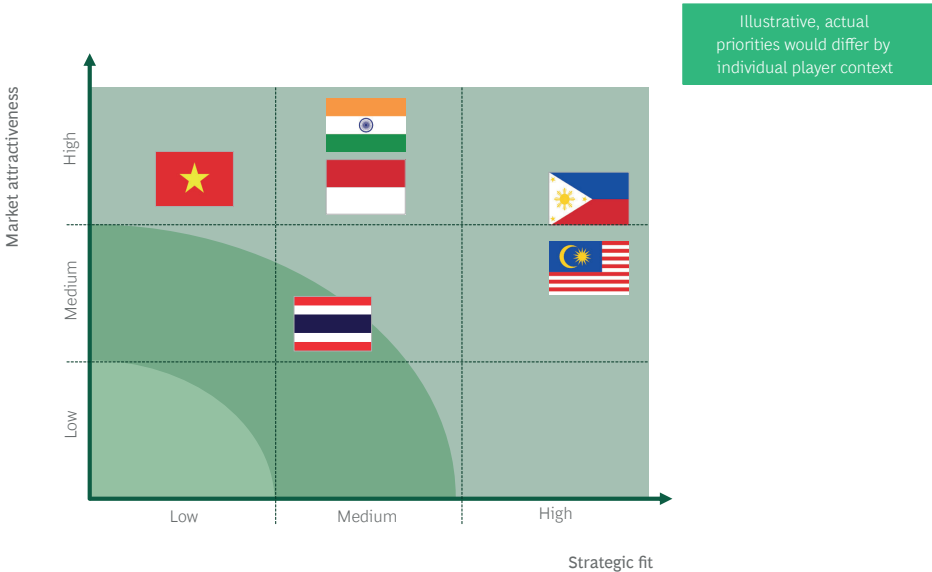


Sources: BCG Global Revenue Pools; BCG ASEAN Banking Revenue Pool; Central banks; World Bank; Global Findex.

Note: (i) Banked population = Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+); (ii) Exchange rate of 4.14 USDMYR used; (iii) Banking revenue includes both retail and wholesale (covering SME and corporate banking)



Exhibit 9 - Banking revenue and unbanked population in SEA



Source: BCG analysis

Malaysia

Malaysia boasts a digitally-savvy population, and despite high banking penetration of 85% currently, there is still room for significant growth, particularly in the area of underserved individuals and SMEs.

The recent opening up of applications for digital banking licenses provides a positive framework, in a population where studies reveal more than 30% of consumers and businesses are willing to adopt digital banking.

The nation's payment market remains cash-resilient, but offers high growth potential as the shift towards digital payments continues. Debit cards account for 81% of total cards in circulation in 2019.

Banks have been amplifying efforts to improve digital and technological capabilities, with significant outspending on IT infrastructure. There have as yet been no identifiable winners taking advantage of the digitally-engaged population, and no financial technology company has yet achieved true scale beyond the payment space.

Digital banks have a number of opportunities to target market share according to ethnographic research conducted by Dalia Research in 2019:

- **Payments.** Boost engagement, offer lower fees, enhance service quality.
- **Personal loans.** Improve access, offer more favorable terms, reduce length of application processes.
- **SME loans.** Improve access for wider range of business types, reduce service rates, provide customizable products that fit business needs.

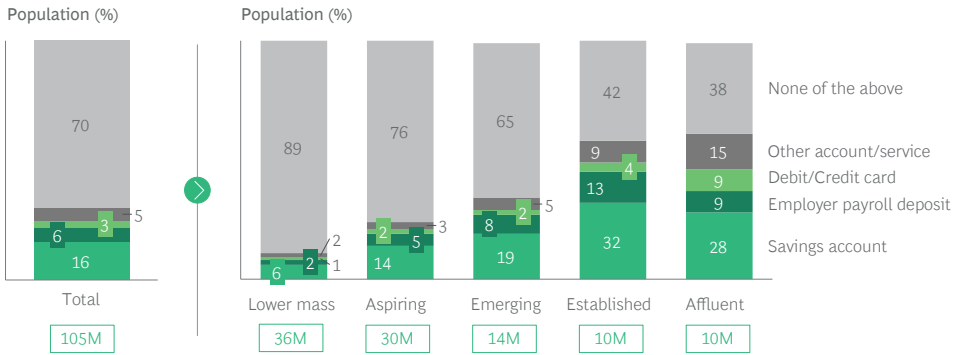
The digital banking license application in Malaysia is open through the first half of 2021, and is expected to be highly competitive given relatively low minimum paid-up capital requirement of ~USD72 million.

Philippines

Philippines is a market with encouraging demographics around the potential for digital banking adoption. The release of the Digital Banking Guidelines by the regulator in April 2021 offers further opportunity in this regard. As



Exhibit 11 - “Which of the following banking products and services are you currently using?”



Source: BCG CCI Philippines consumer survey, 2018

of the time of publication, one banking license had been granted to OFBank in March 2021.

Philippines is the second-most populous country in SEA, with a predominantly younger consumer group. More than half of the population are aged 24 or younger, and the market is extremely digitally-engaged with an average ten hours per day spent online.

Onboarding new banking customers through digital channels does present some challenges however. The lack of national photographic ID is the most prominent of those, and ID uptake more broadly is extremely low with only 2.5 million people possessing birth certificates. A new national ID system is currently being piloted, but is not expected to be fully rolled out until 2023. Tight data management and privacy laws will also necessitate robust data management systems.

Prior to the COVID-19 pandemic, Philippines had the second-highest GDP growth rate in the region at 6%. The banking sector also demonstrates significant room for growth, with cash the dominant payment of choice. More than two-thirds (70%) of the population also remains unbanked, stretching across demographics and income levels. (See Exhibit 11.)

Philippines provides a favorable setting for rapid development and adoption of digital financial services

- It has a young population of 110M people, with a large emerging middle class
- Its economic growth is expected to revert to its pre-COVID healthy trajectory of 6% per annum
- Filipinos are among the most ‘digitally engaged’, spending an average of about 10 hours daily online
- Over two thirds of its population are unbanked, with local banking offering not considered suitable or accessible by too many Filipinos
- There is a clear will by local authorities to develop digital financial services to stimulate financial inclusion. The release of the Digital Banking Guidelines by the regulator in April 2021 illustrate this commitment

Some challenges remain to maximize adoptions, but several initiatives underway to address them

- The lack of national photographic ID and effective credit bureau make challenging for customer authentication and lending risk assessment more complex, but a new ID system is being piloted and should reach mass adoption by 2023



- The economy is still largely cash based but the fast rise of e-Wallets illustrates the consumer readiness to adopt digital services that effectively address some of their pain points

Three well-established e-wallet payers—GCash, Paymaya and Coins.ph—are trying to digitize everyday transactions. Numerous parties including legacy bank digital channels, digital only banks, start-ups, and large tech companies are also positioning to enter the space, backed by local conglomerates or local partners. New entrants should note key points:

- **Tailored strategy.** A strategy tailored to the nation’s polarized wealth structure is key, with 30% of the population in the lower segment. Future growth projections position a dominant affluent segment by 2030.
- **Partnerships.** The right partnerships to build customer reach and local brand presence is vital. Local partners can provide large customer base, rich data sets, point of presence, and brand equity.
- **Serving unbanked.** The ability to penetrate the dominant informal banking market will be essential in driving adoption, with non-bank and informal institutions the primary providers of financial services currently.

There are a wide range of entry modes available, including digital, subsidiary, branch, and with minimum paid-in capital and favorable policies. However, the Digital Bank Act is not yet finalized, and current regulation might be changed to apply specific regulation for digital banks.

Indonesia

Indonesia offers a huge market opportunity. Regulation for digital-only banks is currently under revision. This regulation may take some time to design, with release potentially expected in 2021.

Indonesia’s demographics reveal the nation’s significant potential, as the region’s most populous nation where half the population is aged 30 or younger. The middle and affluent

class is also expected to grow 1.3x from 2019 to 2024.

The country demonstrates a growing appetite for digital financial services solutions, with digital transactions expanding 30% to 50% per annum between 2015 and 2018. As of the end of 2019, Indonesia boasted the second highest e-payment penetration in Southeast Asia, next to Singapore.

Indonesia’s banking industry is fragmented and competitive, with about 100 banks fighting for ~50% market share. Local incumbents began their digital transitions in 2012, with digital financial service players such as Link Aja, OVO, and GoPay beginning to enter the market in 2014. The market remains significantly cash-driven, but offers opportunities in the fast-growing credit sector. Loan growth from 2019 to 2024 is projected at around 11% CAGR.

Mobile applications designed by traditional banks remain behind non-bank entities in both scale and coverage, although some banks are partnering with FinTech players, for example BCA partnering with OVO and multiple FinTech operators to enhance their value propositions through collaborative ecosystems.

Indonesia’s regulators recently announced a revision to OJK Regulation No. 19/POJK.03/2014 on Branchless Financial Services is ongoing.

It might not be currently practical to enter via a new subsidiary, but mergers and acquisitions offer an avenue for market penetration. Such a path to market entry is currently being explored by technology leaders via acquisition of a small local bank, as is the case with Gojek’s Bank Jago and Shopee’s SeaBank. Both operators are very aggressive in the e-wallet space. This route is likely to become more expensive as competition increases. Current national regulations stipulate:

- Able to invest 40% in a new subsidiary (99% aggregate foreign ownership)
- Minimum paid-in capital of ~USD206 million for a new subsidiary
- Require ~USD206 million committed to branches



Exhibit 12 - Vietnam banks digitizing

Non-exhaustive

	Bank	Digital initiative	Type	Launched/ updated	Number of Customers	Target segment
Digitizing existing bank	Vietcombank		Mobile app	Jul 2020	6M ¹	Existing users
	VIB		Mobile app	Mid 2019	N/A	Existing users
	VietinBank		Mobile app	Dec 2019	2M	Existing users
Digital channels	TPBank	LiveBank	Virtual branch banking	Feb 2017	2M ²	Existing users
	VietCapital Bank	Timo	Acquired fromVPBank	May 2016	250K	Unclear
	VPBank	Yolo	Digital channel	Aug 2018	<100K	GenZ
	VPBank	Ù	Digital channel	Dec 2020	<10K	Young professionals
	VPBank	Cake	Digital channel	Jan 2021	N/A	Genz, Young professionals
	CIMB Bank	Octo	Digital channel	Dec 2019	N/A	GenZ
	MSB	TNEX	Standalone	Dec 2020	N/A	GenZ

Sources: Vietcombank AR, 2019; VIB AR, 2018, 2019; Vietin Bank AR, 2019; TP Bank AR, 2019; Yolo, 2020; Timo, 2020; VPBank, 2019; MSB,2020; CIMB, 2019; OCTO, 2020; SBV, 2020.

¹ From existing mobile banking application (out of 14.7M total customers).

² Out of 3M total banking customers.

Vietnam

Vietnam's high GDP growth makes it an attractive market to watch, particularly given its relative success in curbing the COVID-19 pandemic. In the near term, the Central Bank (SBV) is not looking to provide separate digital banking licenses, but instead angling to issue regulatory documents which guide banks on how to launch specific products online.

This is one of the fastest growing economies, with extremely strong foreign direct investment inflow and high productivity growth. The banking sector is also expanding rapidly, and while cash is dominant currently, use of banking is expanding at a substantial pace, and more than 40% of the population is now banked. Bank cards are also seeing accelerating penetration, with more than 90 million active cards of various types in 2018, up from almost zero in 2001. A photographic national ID system was also recently put in place.

The current banking landscape is fragmented, with many small players. It is likely industry consolidation will occur in future. Many banks are currently digitizing, but there is no clear dominant winner in the digital banking space yet

identified. Incumbents are digitizing to maintain market share and competitiveness, but these efforts have not yet gained significant traction with consumers. (See Exhibit 12.)

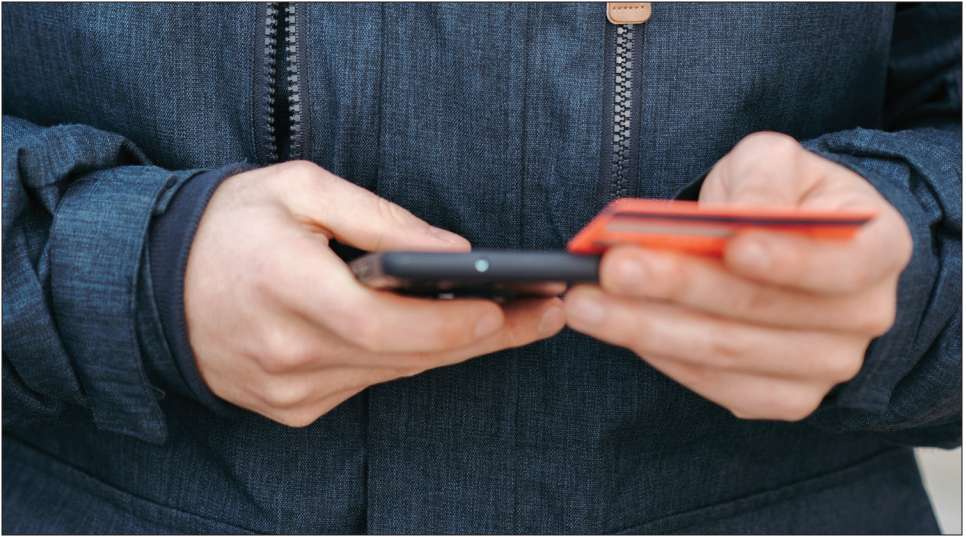
New banks are faced with minimum capital requirements and potential limitations on new licenses. Aggregate foreign ownership is capped at 30% for commercial banks (whether listed or unlisted). Shareholding in commercial banks is regulated such that:

- A strategic foreign investor may hold no more than 20%
- An institutional investor and its related persons may hold no more than 20%
- An institutional investor may hold no more than 15%.
- Foreign investors that are not financial institutions or that do not meet other capital requirements are limited to holding less than 10% of the shares in a commercial bank.

Thailand

Thailand offers a steady and more mature economy than some regional neighbors. Existing financial institutions have a high penetration





rate, with more than 80% of locals having some form of account. Thailand also utilizes a photographic national ID system.

Thailand is one of Southeast Asia's most receptive markets to DCBs, with a recent study by The Asian Banker commissioned by data analytics company FICO showing 78% of respondents expressing positive sentiment to digital banking.

There are no dedicated digital bank licenses yet issued in Thailand, however, the regulatory environment is broadly welcoming to foreign banks. Foreign shareholder limits have been lowered for foreign banks in order to strengthen the banking sector, with 49% of an existing local bank able to be owned subject to regulatory approval. Current regulations stipulate:

- Foreign entity may own up to 49% of existing local bank, subject to approval of The Ministry of Finance of Thailand
- Foreign entity may invest 100% in a new subsidiary
- Minimum paid-up capital THB10 billion for new subsidiaries, but much lower for branch

Banking Liberalization in Southeast Asia

Southeast Asia is undergoing a period of banking liberalization, unlocking new opportunities

for Digital Challenger Banks. The Regional Comprehensive Economic Partnership (RCEP) is likely to further benefit digital players, providing a regulatory framework for inter-regional market entry and further shaping digital banking policy.

RCEP encompasses over three billion people, and 30% of the world's GDP. It builds on ASEAN's existing free trade agreements, with a core focus on empowering the SMEs that make up to 90% of businesses across all RCEP countries.

It will drive liberalization throughout the services sector, and encourage equal access for foreign service providers within signatory countries. This also covers the transfer and processing of data, information, privacy, and consumer protection.

RCEP will also provide a framework for positive transformation in key areas relating to digital banking. That includes easing of restrictions in financial services, foreign shareholder limits, and number of foreign financial service companies operating within RCEP markets. It will help nurture potential entry structures for foreign entrants, allow usage of electronic authentication, and provide more open markets that encourage positive cross-border data flows.



Exhibit 13 - Digital challenger banking plays in India

Illustrative

	Bank's own attackers	New attackers	Ecosystem players
Examples	<ul style="list-style-type: none"> 811 by Kotak Mahindra Bank Digibank by DBS 	<ul style="list-style-type: none"> Niyo Open FI Jupiter 	<ul style="list-style-type: none"> Paytm Razorpay
Key differentiator	<ul style="list-style-type: none"> Full banking license Warehouse customer E2E 	<ul style="list-style-type: none"> Special purpose license Open architecture 	<ul style="list-style-type: none"> Special purpose license Ecosystem with multi use cases
Strategy	Key objective	<ul style="list-style-type: none"> Deepen moats around existing franchise 	<ul style="list-style-type: none"> Capture value in growth and ROE with capital light model
	Target customers	<ul style="list-style-type: none"> Appeal to modern customer 	<ul style="list-style-type: none"> Target underserved segments
	Product	<ul style="list-style-type: none"> Digital version of classic products 	<ul style="list-style-type: none"> Distribute 3rd party products
Typical anchor use case	<ul style="list-style-type: none"> Transaction account Basic personalization 	<ul style="list-style-type: none"> PFM Card Bill pay 	<ul style="list-style-type: none"> Payment Credit line Coupons

Sources: Press search; BCG analysis

India

India offers a very dynamic market with huge potential. In terms of revenue pool, it is an order of magnitude larger than other South East Asian markets. Three types of strategies are emerging. First, banks are launching their captive challenger entities. There aren't yet any pure challenger banks with no legacy and a full universal banking license. Second are players who compete by providing a completely modern customer experience for financial services products. They often acquire limited purpose licenses but rely on partner banks for majority of products. Third are existing digital ecosystem players with large customer base and multiple use cases who focus on finance as an added feature. They often also have limited purpose licenses and distribute products of other institutions. Strong digital capabilities are common across all categories. There are choices on who warehouses the risk originated digitally vs. who acquires and presents the front-end to the customer. The local Indian market is large enough for domestically-focused, balance-sheet-led Digital Challenger Banks to create value, while the substantial local technology talent provides a welcoming pathway for technology-driven operators. Which model will prevail is as yet uncertain, but it's clear from

existing market players that both approaches are currently active currently. **(See Exhibit 13.)**

DBS' Digibank is a strong global player present in India. Other global players like Revolut are also becoming more active. However, there are a vibrant ecosystem of home grown digital challenger banks. This situation is driven by three main reasons. Firstly, India has a strong digital utility in the form of India Stack, which removes many friction points. Secondly, Indian banks are rapidly adopting micro-API architecture for both risk and transactions, with emerging players attempting industry-wide standardization. Thirdly, Indian regulation has made it critical for unregulated pure-play FinTech operators to team up with regulated entities to access key national protocols such as eKYC, as well as certain products such as savings and current accounts and cash transactions, thus ensuring greater collaboration.

Foreign players typically face three strategic hurdles. One, Indian markets cannot absorb developed markets cost structures, especially on technology costs which tend to be an order of magnitude cheaper domestically. Foreign players can overcome this hurdle by building the majority of the technology stack locally while leveraging



global experience for the design principles, customer experience, and security layers.

Two, India is perceived as a diverse and geographically dispersed market. There may be concerns that building meaningful scale requires significant capital and operational investment. This is more a perception than reality on a relative basis. One way to address this is to pick niches and build scale within them. Even niches are extremely large in relative terms. For example, India's MSME lending market is concentrated predominantly around the top 30 centers and outstanding credit is north of USD 300 billion.

Three, Indian regulators place significant emphasis on financial inclusion and priority sectors, which can limit the potential model and opportunity. Not all licenses carry this constraint, for example non-bank finance company (NBFC) licenses are significantly flexible. For an NBFC, partnering with a traditional bank is one way to find best of both worlds.

In financial terms, there remain considerations around currency depreciation and its impact on dollar-denominated returns. However, these considerations are true for multiple other developing economies. India's attractive demographics and high growth potential needs to be built into the return expectations to form a comprehensive view of local market opportunity.

Winning a License to Operate

Gaining a digital banking license is a critical step for DCBs. It is essential that applicants stand out and demonstrate to regulators an ability and intention to meet the needs of local consumers, as well as evidencing the capacity to deliver on this commitment. Applications must also clearly show an ability to successfully run a digital bank. We have identified six qualities that an applicant should exhibit to regulators.

- **Innovative.** Demonstrate an ability to enhance financial provision through innovative features and delivery to improve both customer service and the quality of the broader financial industry. This should not come at the cost of disrupting operations of the existing banking industry.
- **Committed.** Clearly show commitment to digital banking success. Demonstrate



locked-in funding sources, and the presence of key leadership and personnel to run the bank, as well as the buy-in of shareholders.

- **Relevant.** Evidence a strategy designed to deliver a positive economic and societal impact. This must include provision to boost financial inclusion and accessibility of banking products to target underserved markets.
- **Sustainable.** Show that the banking model is secure and sustainable, and not subject to volatility. Present the ability to prudently build and operate a sustainable business. This should include a strong corporate governance plan, including systems, controls, and processes to show effective management and security of the digital bank.
- **Prepared.** Act one step ahead of the competition with a clearly prepared strategy that includes support of specific plans or steps that signify an application is ready to quickly enter operations if a license is received.
- **Engaged.** Collaborate and communicate with regulators to show an applicant is engaged. Regulators are often open to shaping this emerging digital banking landscape in partnership. This also allows an applicant to more robustly understand the process, requirements, and any significant regulatory concerns.



Planning a strategic path forward

Designing the right strategy for success is not easy. Incumbent banks must weigh up the challenges of transitioning legacy IT infrastructure and organizational processes against the significant hurdles of establishing a winning solution to compete against these new entrants. Non-financial institution operators on the other hand must reflect on the significant complexity of the financial services industry, and how best to leverage their existing skillsets and experience to succeed in this space.

Considerations for Incumbent Operators

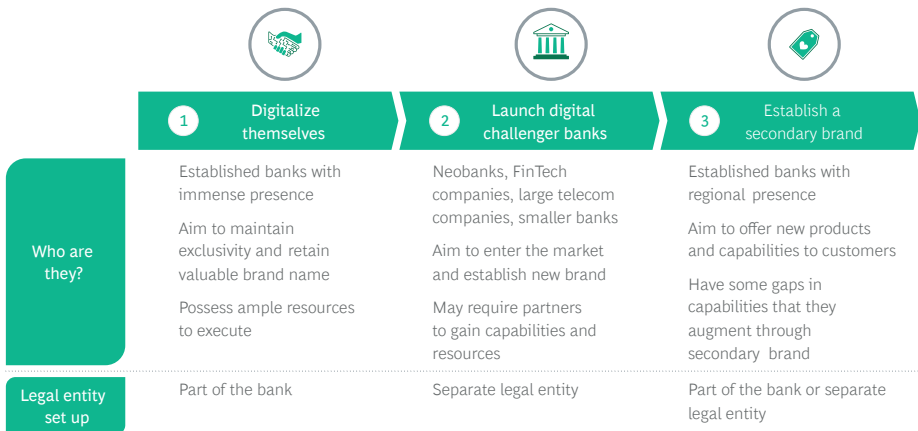
Steering a modernization journey is a major challenge for incumbent banking operators. These legacy institutions often struggle to transition away from aging core IT infrastructure with trapped data in order to embrace the agile approach fundamental to success when competing against DCBs. Lack of digital talent, outdated IT, and traditional financial industry mindsets are often further hampered by rigid governance structures. Building a true Digital Challenger Bank is often seen as an attractive

alternative to such a jarring internal transition. Legacy banks have begun to realize they sit on massive lake of data, which can be extracted as a basis for success of a DCB. They may also benefit from significant cost savings and productivity improvements, as well as accessing enhanced risk and financial management through data and automation.

Top tier banks—accounting for ~70% of market share— may also look favorably on the fresh, agile potential of a Digital Challenger Bank. These sidestep inflated and complex organizational structures, avoiding potential conflicts of interests. It also provides an opportunity to project a fresh DCB brand that can attract digitally-savvy customers.

In the current landscape, many legacy banks continue to focus on improving existing digital channels rather than establishing a new DCB. Capital and investment needs for a fresh digital build, customer acquisition costs, and high uncertainty of returns remain the main concerns. With their established market positions, many may consider winning customers through a full

Exhibit 14 - Three options for legacy banks



Source: BCG analysis



omni-channel presence as the preferred route, particularly as full digital penetration is not yet the norm in APAC.

For smaller banks, size is likely the main driver in entering the DCB space. With these banks operating at a more limited scale, there is less threat of stealing market share from the legacy operating unit. New DCBs have the freedom to more accurately target any market segment, providing a pathway to engage digitally-savvy customers.

Regardless of whether a bank seeks to expand existing digital channels, or enter into a fresh DCB build, significant short-term investment will be required. That means it is crucial for banks to figure out the right way to invest and extract value. (See Exhibit 14.)

There are a number of banks which have successfully taken on a fresh-build DCB approach. Singapore's UOB created a Digital Challenger Bank, TMRW, expanding on plans to competitively build a digital retail bank to scale outside Singapore while achieving lower cost-income ratio. With these goals in mind, TMRW was launched in Thailand in August 2020. The digital bank focuses on user experience, and continues to rapidly evolve to meet customer wants and increase engagement. The bank has focused on emotional engagement and personalization to drive customer growth.

We have also seen banks that collaborate with FinTech players to launch a DCB in partnership, a route often used by small banks to augment their digital capabilities. In most cases, these banks target a specific underserved segment or more digitally-savvy customer segments.

Questions to Guide Growth

The right path to market entry will vary by operator, and be influenced by existing bank assets, capabilities, market position, and culture. Incumbent players considering building a Digital Challenger Bank must address several key questions and concerns. (See Exhibit 15.)

Value. It must be clear why an incumbent is embracing a DCB build rather than transforming the existing bank to an omni-channel digital approach.

Structure. A clearly defined structure is critical. Will the DCB be a part of a business unit inside a bank, a separate legal entity, or a partnership with other players? Creating a separate legal entity may trigger considerations around the need to apply for a separate operating license.

Position. The identified positioning of a DCB should also be clear. This should include analysis of where it falls in a bank's omni-channel approach to products, servicing, and pricing, or whether it will operate as a completely separate business with differentiated products, services, and pricing. If operating separately, would it carry the same brand, a sub-brand, or completely new brand. Customer acquisition and ecosystem utilization concerns should be raised if creating an entirely new brand.

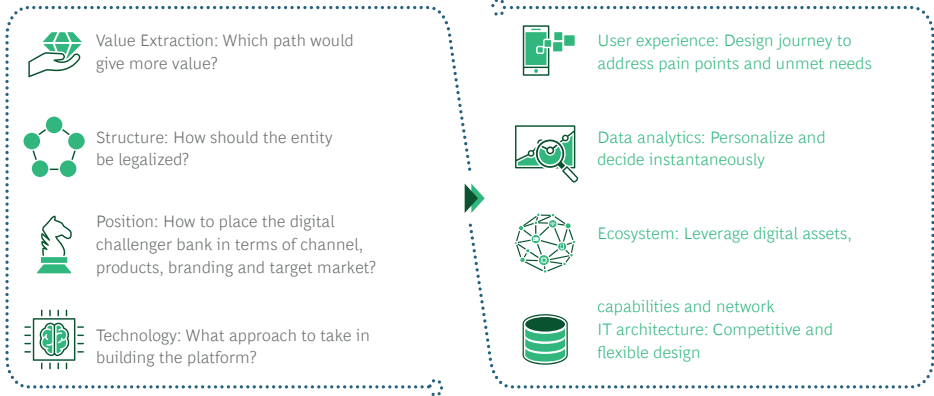
Technology. Existing legacy systems should be assessed, and an approach to building a fit-for-purpose technology platform analyzed. It should be established whether a fresh technology platform is required. Migration of existing digital assets and data to a new platform must be considered, as should questions around whether systems would operate in parallel or a complete transition to a new platform would be undertaken.

The overarching strategic agenda of a Digital Challenger Bank should also be analyzed in order to build a strong and competitive operation. It is vital these questions are consistently challenged as a platform to drive continuous innovation and maintain competitiveness.

- **What are the digital assets and unique advantages I need to leverage?**
- **What ecosystem do I have and how should I use it?**
- **Is my IT architecture sustainable and flexible enough to compete against expert tech-driven Digital Challenger Banks?**
- **What should be my end-state enterprise architecture?**



Exhibit 15 - Key strategic questions & agenda for incumbents



Source: BCG analysis, expert interviews

NBFIs Entering the Digital Banking Space

Non-bank financial institution players entering the market will need to identify the right strategy based on their capabilities and preferred model. We have identified five models which reflect the most likely positions. (See Exhibit 16.)

NBFI technology companies will have to work on building a platform that seamlessly integrates users and partners. The benefits and risks will vary depending on the type of products offered, and the level of underwriting that the player is willing to take. Investment costs for the first four models are significantly lower than for the final model of building a fully-integrated Digital Challenger Bank.

A full DCB is focused on creating a full suite of products and marketplaces with a digital banking license. It offers access to robust customer financial data and potentially better income opportunities due to CASA. However, this approach is far more complex to build, and requires much higher upfront investment costs. It captures the largest potential revenue

pool as it allows an operator to deliver the broadest range of products and services. More complex capabilities and talent access is necessary.

We have seen that breaking even does take time in this space, and operators should take this into consideration. Embracing a full DCB approach does provide some key advantages, but additional requirements to pursue. (See Exhibit 17.)

We have identified some important strategic questions to think about when planning which model to embrace.

- Can we afford to become a Digital Challenger Bank?
- Why would we be successful?
- How do we accelerate success?
- What are my alternative strategies if not DCB?

It is important to highlight that shareholder structure will also affect the consideration around the model of choice. In the case of FinTech or e-payment players, an ecosystem partnership will be particularly critical.



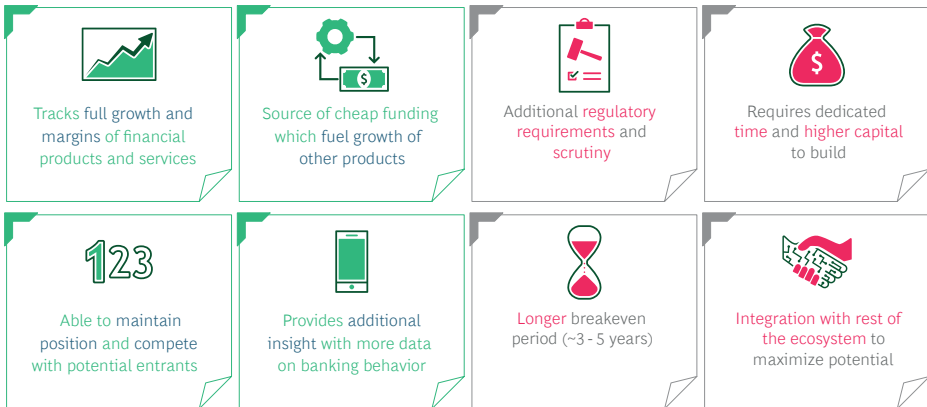
Exhibit 16 - Five models for non-banks

	1	2	3	4	5
Model	Lending marketplace platform	Online P2P lender	Online self-funded lender	Ecosystem platform capturing life events	Digital Challenger Bank
Description	Network of partners as underwriters	Lending and wealth products, fund flow from one customer to another	Loans to consumers online utilizing own funding	Specific segments with extensive set of ecosystem partners; Done with option #1 or #3	Own suite of products and marketplaces for wealth
Opportunities & limitations	Highly scalable; Can offer a wide range of lending products	Highly scalable; Can offer a wide range of lending & investment products	Scale limited by funding available but offers a wide range of lending products	Provide E2E journeys focused on well-defined customer needs	Has access to holistic customer financial data and better funding costs
Revenue					
Credit risk				Depends on the model	
Investment required					

Can opt to play in multiple models

Source: BCG analysis, expert interviews

Exhibit 17 - Advantages and other requirements



Source: BCG analysis; expert interviews

What it Takes to Build a Digital Challenger Bank

Boston Consulting Group has years of experience working with both incumbent banking operators and emerging new players to drive digital transformation in the financial industry. That experiences helps us identify the

crucial steps to establish a Digital Challenger Bank over an 18 to 24-month timescale.

This roadmap frames the vision to build a digitally-enabled financial services provider with best-in-class customer experience. The blueprint can be divided into three phases. (See [Exhibit 18.](#))



Exhibit 18 - Digital Challenger Banks take 1.5 to 2 years to build

Non-Exhaustive



Source: BCG case experience

Application. This is applicable to Digital Challenger Banks considering obtaining a digital bank license. It's important to allow up to six months to prepare the relevant requirements and organize internally to have a market-ready application. This includes one or two months of consortium or partnership agreements, three to four months for development and documentation of business plans, and one month for external audit (where required by regulators).

Build. The first step is designing a minimum viable product. This should include a complete build on product, analytics, and technology. The product, product-related processes, and features must be defined based on the value proposition for each target market. This will enable the development of UI/UX, testing and recalibration of design, and integration with any third-parties. Building out analytics to integrate with the product should then follow, based on relevant use cases in credit scoring, anti-money laundering (AML), know your customer (KYC), customer due diligence (CDD), foreign account tax compliance act (FATCA) etc.

It is important to refine the business plan to shape the offers and services. Move towards finalizing the three-year and five-year plan with clear targets and KPIs detailed for at least the first year. With the business plan established, a product portfolio and roadmap should be

set, including targeted sub-segments, unit economies, and characteristics such as pricing and features. Any changes to the product must be incorporated into the build. This also covers on-boarding and service models, including customer engagement, user flows, and service channel definitions.

The goal of the Build phase is to ensure that the organization, people, and operations are in place and aligned. Structure and governance should be clearly defined and established. Key roles must be filled with clear roles and responsibilities. Critical operation processes and enablers required to launch should also be secured.

Launch. Defined channel strategies, marketing initiatives, and brand positioning should be set out in preparation for go-to-market. Each operational area should be aligned in preparation for a rapid growth outlook. Partnerships, pilots, and customers segments must be locked in and finalized. Integrations with possible partners should be defined, including assets, ecosystems, and other capabilities.

There is no defined path to success in building a Digital Challenger Bank. Leaders must remain flexible and agile, ready to adapt as new insights or opportunities arise. Each emerging player will face its own challenges.



Positive policies and infrastructure to facilitate banking sector modernization

Regulation will provide the defining framework to enable this successful transition. Many governments across the APAC region are already pushing for greater adoption of digital financial services, as well as broader modernization in the industry. A favorable regulatory environment and well-coordinated government and industry-led initiatives will be invaluable in accelerating this opportunity. (See Exhibit 19.)

The reality on the ground is that technology continues to disrupt the traditional financial space in many markets, transforming consumers’ digital expectations. Regulators have been introducing enabling regulations such as eKYC guidelines to allow banks to perform secure digital checks, as well as approve customer applications electronically within certain limits.

Some countries are also looking to prioritize national digital identity for use cases in banking, allowing customers to open accounts and transact securely online.

Account portability is another key enabler that tackles pain points for online banking, allowing









customers to seamlessly transfer financial arrangements to a new account with a single click. This helps lower the cost of switching accounts and makes account opening and switching processes much easier for customers.

The continued adoption of cashless payments also unlocks numerous advantages, supporting financial inclusion and providing wider benefits to society. Governments continue to map out initiatives to support this goal, with a particular focus in the banking space. That includes new payment infrastructure to enable real-time fund transfers, digital payment adoption with national payment QR codes, and digital currency designed to replace reserve money that cuts friction in transfers.

A positive credit bureau system will spur banking transformation and modernization. This not just supports instant and accurate lending decisions, but helps banks better manage lending risks and lower credit defaults in a volatile landscape.

Regulators will need to renew their focus on guiding banks utilizing new technologies

Exhibit 19 - Key regulatory policies and initiatives for banking modernization

Policies/initiatives								
Account	eKYC	✓		✓	✓	✓	✓	✓
	National digital ID	✓	✓	✓	✓	✓	✓	✓
	Account switch service	✓						✓
Payment	Instant payment system (interbank)	✓	✓	✓	✓		✓	✓
	National standard QR code				✓	✓		✓
	Government-led cashless/light strategy				✓		✓	✓
Lending	Central bank digital currency (CBDC)		✓					
Infra/Architect	Positive credit bureau	✓	✓	✓	✓		✓	✓
	Open banking – Data sharing/portability	✓		✓	✓		✓	✓
	Open banking – API standard/playbook	✓		✓			✓	✓
Data security	Cloud banking	✓	✓	✓	✓		✓	✓
	Data rights protection	✓		✓		✓	✓	✓
	Data on cloud	✓	✓	✓	✓		✓	✓
Regulation	Regulatory Sand-box	✓	✓	✓	✓	✓	✓	✓

Source: Desktop search, BCG analysis





and data, as such technologies continue to accelerate innovation in the wider economy. Regulators are embracing open banking as an important trigger for industry collaboration as part of this transition, which will allow operators to expand on the services they provide, and unlock new opportunities for both customers and industry.

Cloud technology has also emerged as a major catalyst for effective and efficient digital transformation in financial institutions. Cloud offers a number of benefits such as improved data security, enhanced cost optimization, increased efficiency, scalability, flexibility, and more. Modern data protection regulation will be needed to ensure customers' privacy is protected in this rapidly evolving landscape, while also enabling ethical use of data that drives customer opportunities while retaining trust in digital banking.

The rise of FinTech also continues to promote innovation in the banking space. Sandbox testing environments offer a valuable opportunity for financial institutions and FinTech players to experiment in delivering innovative

financial products in a live environment within a well-defined space and duration.

In this dynamic and evolving landscape, regulation must strike the right balance between fostering innovation, and ensuring customer protection remains at the heart of the banking industry.

Conclusion

The last decade has seen a remarkable proliferation of Digital Challenger Banks globally, with more than two-thirds of today's 249 digital banking players established since 2010. Despite this significant growth, it's clear that the route to profitability remains challenging for these operators, with just 13—less than 5% of the total—achieving break-even to date.

The Asia Pacific region offers an encouraging outlook within this landscape. It is home to approximately 20% of Digital Challenger Banks as of the end of 2020. Many of these operators are relatively new emerging players, with more than 70% established between January 2016 and December 2020. More important still, of the



13 global players enjoying profitability, ten are based in the APAC region.

Southeast Asia and India now present a new emerging opportunity for potential Digital Challenger Banks. In Southeast Asia, Malaysia, Philippines, Indonesia, Vietnam, and Thailand all offer encouraging signs for the expansion of these operators in coming years, boasting positive market liberalization and attractive market demographics. India also presents a huge potential addressable market, with encouraging demographics, a significant underserved population, and encouraging technology foundations. Each market offers its own unique challenges for operators aiming to successfully navigate this transition.

Prospective market entrants will have to identify the right model for success, recognizing the importance of leveraging and utilizing existing tangible assets (e.g., offline networks) and/or intangible assets (e.g., online customer access, knowledge and knowhow), building and scaling appropriately, and sustaining success with the right data-driven approach and models. With the right commitment, organizational structure, and strategy—supported by an enabling regulatory framework—both incumbent banking operators and non-financial institution players (e.g., tech players, fintechs, non-financial companies) could access opportunities from DCBs in APAC’s rapidly evolving financial landscape.



BLOCKCHAIN TECHNOLOGY

Brian A. Trias

Treasury & IT Head/Business Development Manager, CCT Chemicals



Blockchain technology, we have been hearing about it for the past few years now. What is it and how is it being used? What are its challenges and how can it transform various industries? What we know about it and its uses are still in its early stages, but the pandemic has certainly sped up its rate of adoption.

Blockchain is essentially a digital ledger of transactions that is duplicated and distributed across an entire network of computer systems known as nodes. It is a system of recording information that is not owned by one node, but many. It is a chain of blocks where each block contains a number of transactions. Every time a new transaction occurs, it gets added to the blockchain and each node records this information. These transactions are also recorded with an immutable cryptographic signature (called a hash), which means they can never be modified.

This nascent technology is already starting to be used by companies around the world and its use will only continue to grow. Before blockchain, the first version of the Internet, or web 1.0, was initially meant as a way for us to communicate and share information. Web 2.0 is what we are experiencing right now, which is ecommerce. Blockchain, or web 3.0, is a natural evolution of the Internet.

Most of us know about blockchain mainly because it is the record-keeping technology of cryptocurrencies such as Bitcoin and Ethereum. Besides being the platform that most, if not all, cryptocurrencies run on, blockchain technology is also used as a platform for buying and selling non-fungible tokens, or NFTs for short.

Right now, from a global perspective, NFTs are becoming quite popular. NFTs are unique, non-interchangeable (non-fungible) units of data (or tokens) stored on a blockchain



that can represent both physical and digital assets. Unlike cryptocurrencies which are interchangeable (fungible) such as bitcoin where one bitcoin equals one bitcoin, the value of an NFT versus another NFT may or may not be different. If we take digital art as an example, a digital artist could make three hundred copies of the exact same digital image and assign a different NFT to each one, therefore each piece would be unique, but the price of each one when sold may either be the same or vary. He could also create an NFT that represents a work of art that is one-of-one and another NFT that represents another work of art that is one of a kind as well, and both of these would be unique and different in their values and digital signatures, too. You can assign an NFT to almost anything, e.g., music, art, trading cards, digital comic books, 3D collectibles, digital posters, pictures, movie tickets, etc. What makes NFTs so valuable is that it provides proof of authenticity and ownership. Without it, you would not know if the artwork, as an example, was really created by the artist.

In addition to being a platform for cryptocurrencies and NFTs, there are even games powered by blockchain technology where players play to earn. There are games where you can even purchase virtual land and even NFTs to use in the game.

Blockchain also has the ability to perform both government and financial services. For example, when recording a real estate transaction with the Office of the Register of Deeds, with blockchain technology, fraud would be avoided or minimized. The same would apply if one were to use blockchain technology in a new voting system. All transactions would be added to the blockchain and any tampering of a record would be detected. In the finance sector, blockchain has allowed the creation of decentralized finance (DeFi) ecosystems that enable peer-to-peer transactions by providing smart contracts that automate the terms between buyers and sellers and between lenders and borrowers.

As exciting as blockchain technology may be, it still faces many challenges. Organizations are creating their own blockchains and cryptocurrencies for one. Cryptocurrencies are

still relatively new and there are many countries that haven't developed a clear regulatory framework for it. This also adds to the volatility of the crypto market. And then there are organizations that are creating decentralized applications (dApps) that run on these specific blockchains, too. Now some of these blockchains have a much faster transaction processing rate than traditional financial systems, but because there are different blockchains, cryptocurrencies, and applications that run on these different blockchains, there is a lack of interoperability. Fortunately, there are organizations that have and are still working on ways to make these different blockchains interoperable.

Another challenge that is slowly being overcome would be the cost of minting an NFT or tokenizing an asset as some would say. They also say this technology is not environmentally friendly, but there are organizations that are already addressing these issues and making the process more energy efficient.

Besides the lack of interoperability among the different blockchain platforms, an added bonus to the list of challenges this technology faces is the dethroning of an older, much more mature, cross-border funds transfer system in the banking industry known as SWIFT. The Society for Worldwide Interbank Financial Telecommunication, or SWIFT as we all call it, is a non-profit co-operative that is made up of thousands of members. Most banks use this network to transact cross-border payments. Even a network as old as this is looking for ways to make its processing faster and more efficient. Nevertheless, the competition for a better banking system has been heating up and there are financial institutions that are creating their own networks and running on their own blockchain.

Looking back at the history of the Internet and seeing how long it took for us to get to where e-commerce is today and somewhat fully embraced by all, it may take blockchain ten to twenty more years before we start to see it more globally adopted. There are many projects empowered by blockchain technology, but not all will succeed. Which ones will succeed, you might ask. Only time can tell.



CLOUD ECONOMICS IN THE PHILIPPINE CONTEXT

The Cost of Public Cloud vs Hosted Private Cloud

Bong M. Paloma and Kar Wong

Hosted private cloud and public cloud are compared in this article mainly from an economics and cost perspective. We will not dwell on the numerous differences between public and private clouds, including performance, agility, innovation, communications latency, security and control, customizability, regulatory compliance, governance, shared responsibility model, and so on. In our cost comparisons, we try to compare similar levels or grades of solutions, such as performance, whenever possible.

The provisioned workload is assumed to be around 122 VMs with 106TB of Storage. This would be considered a mid-large workload in the Philippine context. The duration of the comparison will be over three years. For the public cloud, we used the McKinsey cloud simulator¹ to obtain cost references. In contrast, costs considered for the hosted private cloud uses a financial model used by a typical local private cloud provider.

The hosted private cloud is a dedicated environment for a single-tenant hosted in a Tier III data center in the Philippines. It is loosely similar to the public cloud because it is an opex offering and customers are not burdened with cloud platform and data center management, upgrades, and maintenance. These services are bundled in the private cloud monthly fee.

What is noteworthy with the public cloud is the high level of elasticity of the public cloud. All the major public cloud providers allow customers to scale up their workload almost instantly. Thus, the public cloud is unmatched by the private cloud for the **unpredictable workload**.

A private cloud would not be able to provide such a level of instant elasticity. Most providers need a cloud consumption plan over 3 to 5 years to offer attractive rates and schemes. A small degree of buffer capacity usually is provided, typically around 20% to 30%. Customers need to project their base workload or consumption. **The critical aspect is predictability.** The projected workload can increase or decrease over time (plan to move to SaaS, for instance), or even seasonal or cyclic – the projection need not be flat.

Compute and Storage

The annual cost for computing and Storage on the public cloud, with some cost optimizations for Compute and Storage, applied, is US\$531,739 from the McKinsey cloud simulator. Suppose we assume the operating system to be a free Linux distribution. In that case, the Compute fees could apply to the Southeast Asia region of public clouds.

For the hosted private cloud, the annual cost is US\$406,246, or 23.6% less. The workload projection installed is assumed to be accurate, which enabled the right-sized infrastructure to host the private cloud.

Now, if, on the onset, we stretch the duration to 5 years and increase the workload by 50%, the annual compute and storage cost for the public cloud would become US\$666,256. And that of the hosted private cloud will be US\$408,960, or 38.6% less.

¹ The McKinsey simulator is accessible here <https://www.mckinsey.com/business-functions/mckinsey-digital/ourinsights/cloud-cost-optimization-simulator>.



For the five-year scenario, the workload can also be gradually increasing every 6 or 12 months. In such cases, the private cloud could still cost less than the public cloud when comparing the total annual fee over the entire period.

Significant savings will be realized by opting for a private cloud instead of a public cloud, and this is applicable for workloads which are:

At a specific minimum scale, typically 50 virtual servers (or virtual machines) or more; predictable over 3 to 5 years; and consumption growth or reduction, if any, is relatively small.

Network Egress

The network egress is pegged at 1.5TB per day for the public cloud, with an annual network egress fee of \$54,750. This volume translates to 300 Mbps of premium Internet connectivity based on certain assumptions on traffic concentration. And the yearly egress fee would be in the vicinity of Dedicated Internet Access (DIA) charges in the Philippines.

However, there are opportunities to achieve cost savings in a private cloud relative to network egress fee if:

We switch a good chunk of the bandwidth to MPLS or mix MPLS and broadband Internet. Such a setup is suitable for many Philippine companies where the bulk of access originates in head offices, branches, sites, franchise locations, etc., and

If the traffic volume is higher than the 1.5TB per day, and the equivalent bandwidth would therefore be higher than 300 Mbps, local telcos could offer a even lower rate per Mbps.

Customized Requirements

Some companies or organizations have specific or specialized requirements. Examples include large memory for analytics, ability to "hot-plug" vCPU and vRAM (many legacy applications can only scale up and not scale-out), fault-tolerant level of high availability, use of GPUs, low-latency network requirements for IoT, desire

to have cost-optimized but virtualized Oracle environment, workloads requiring extreme performance, etc. For these more specialized requirements, some are available and can be provisioned in the public cloud. But oftentimes, a private cloud provider can better cater to such requirements through a customized setup.

Cost Optimization

In the public cloud cost generated by the McKinsey cloud simulator, one of the compute optimizations applied is leveraging savings plan/reservations. This means using reserved instances for some virtual machines (VMs), which gives discounted rates but means committed consumption and sometimes upfront payments. This negates to some degree the elasticity of provisioning advantage of the public cloud.

Companies can usually commit to the aggregate consumption in the private cloud, and individual virtual machines can be enlarged or shrank. The memory size of a production virtual machine (VM) can be increased, for example, without changing the preset unit charging rate.

The public cloud is a very dynamic business. The policies for using reserved instances differ slightly between public cloud providers. While public clouds can better cater to elastic consumption in general, financial or economic analyses should look into the exact rules of committed consumptions and reserved instances when comparing costs between different public clouds.

Optimizing public cloud costs is often not easy. There is a large number of VM instance types in the public clouds, each with numerous VM sizes to choose from. Not to mention an overwhelming number of services and configurations. There are varying schemes on the use of reservation plans or reserved instances. A private cloud provider would offer fewer options and it is usually easier to figure out the cost-optimized option and price point for a given workload and scenario.

And as pointed out, a private cloud provider could offer reserved aggregated VM capacity, which allows flexibility of changing VM size over time – in terms of vCPUs, vRAM and Storage capacity, and possibly GPU.



Microsoft License Considerations

In the preceding cost comparisons, software license fees are not considered. Most Philippine companies use Microsoft Windows Server as their primary operating system (OS). This should not come as a surprise as it is in line with the worldwide trend². We can expect the ratio of Windows Server OS against Linux Server OS to be even higher than the global average. Microsoft SQL Server is a very popular database among the Windows Server shops.

Existing Windows Server licenses, and SQL Server licenses without Software Assurance cannot be reused when a Microsoft workload is moved to the public cloud. This means the cloud compute subscription fee needs to include the requisite Microsoft component. For the 1-year Reserved Instances, the Windows Server OS fee could be almost the same as the cost of the bare VM.

"Microsoft shops" can get discounts on their Azure subscriptions under the Azure Hybrid Benefit scheme, but with two caveats: 1) this program is only applicable for Azure, not for other public clouds such as AWS or Alibaba Cloud, and 2) to qualify, the existing Microsoft licenses should be covered by Software Assurance (SA). In the Philippines, based on our experience, not that many companies have active SA for their Microsoft licenses, even among large enterprises. The discounts provided by Azure Hybrid Benefit will not be tackled in this article.

On the other hand, when a Microsoft workload is moved to a dedicated private cloud³, companies can often reassign their existing Windows Server, SQL Server, and other licenses

to the private cloud servers. When a company has a very significant number of existing Microsoft licenses, and there are no immediate plans to upgrade software versions across the enterprise, moving to a private cloud could mean substantial savings compared to moving to the public cloud, at least in the short term.

Use Both Public and Private Cloud

In the Philippines, many companies are at the early stages of their digital transformation journey. A considerable portion of IT workloads they need to run today can be characterized as predictable workload in terms of capacity and performance requirements – compute, storage, network, and databases. The workload projection over 3 to 5 years can be that of growth, reduction, or seasonal or cyclical. There could be specialized needs, such as large memory for analytics, low latency networking, and the ability to scale up VMs without downtime. And very possibly, there are existing Microsoft Windows Server and SQL Server licenses that will be upgraded eventually, but not immediately, and therefore can be reused. For these and similar cases, it is would be worthwhile to compare the cost of public and private clouds with an eye towards achieving significant savings by using the latter.

Better yet, companies can take advantage of the best of both worlds by placing the workloads in the cloud most suitable for it: Private cloud for the more traditional workloads with the above characteristics, and public cloud for e-commerce, marketing, application modernization, development and test workloads, infrequently used analytics, disaster recovery (DR) and many other use cases.

² See Global Server Share by OS <https://www.statista.com/statistics/915085/global-server-share-by-os/>.

³ Private cloud is assumed to be a dedicated, non-shared environment hosted on-premises or managed by a traditional outsourcer. It does not include dedicated server instances running on the cloud of Listed Providers: Microsoft, Alibaba, AWS including VMware Cloud on AWS and Google. See <https://www.microsoft.com/enus/licensing/news/updated-licensing-rights-for-dedicated-cloud..>



BIG DATA AND ANALYTICS

“A business perspective”

Edgardo G. Sumulong

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Planning to introduce a new product? Cross sell to your existing client base? Or just trying to understand the spending behavior of your customers? These are sample use cases to start an initiative in Big data and Analytics. That was 10-15 years ago. If you don't have a strategy how to leverage your data not only will you be left behind but you will eventually become obsolete. To give you some perspective the highest market cap companies globally use big data and analytics such as Amazon, Google, Apple, Facebook and to a certain extent even Microsoft. Wall Street loves data and loves companies that use data wisely.

An entire ecosystem of companies, vendors and suppliers now earn a living in assisting companies to their journey in Big data and Analytics. Other concepts are also related such as cloud, digital transformation and AI/ML also use a lot of data. The bottom line is you need to

know how to use the data you generate because your competition is doing it.

So, in this article let me help you simplify this journey and demystify some concepts along the way. Someone said 'data is the new oil!!' so let me make that comparison and start this journey. Before oil becomes useful for you in the gas station or turning on the light switch let us go back on the hardest part for the oil business which is exploration. Searching for new oil requires big investments and time .. this also applies to big data and analytics. Do you know where your data points are? Not just any data but useful data for decision making. Transaction data? Customer data? Historical data? IOT? Structured and Unstructured? Social Media data? Go through the exercise soon and just write down in a piece of paper and see if you can list all the data your company has and it is easily accessible. Thus,



the first and critical question is where is your company's data? Do you know where it is and in what form?

Second, now that we have established "where is your data" lets now find out how to get it. Again, similar to oil you would need to know how to get it from the ground? This might require a lot of work. A traditional concept is ETL which is Extract Transform and Load. We need to put it in a form that can be used and reused on a regular basis thus the ETL activity is crucial. Like oil you need to refine the sweet crude to various forms such as gasoline, lubricants, asphalt, etc. This is key second step in your data journey is data transformation and preparation.

Third, now that you have transformed your data to become useful you need to put it in a single "big data" repository or sometimes called data lake. This is where the similarities with oil will end with the oil tankers and oil fields. The repository needs scale, security, stability. But for big data you also need to consider Volume, Veracity, Variety, Velocity and Value. Consolidating data has many benefits but its key proposition is knowing what data you will need eventually for your analysis. The 3rd key step is data aggregation or consolidation.

Last stage is analytics, exploration and investigation of your data. This time you need to learn how to become a data scientist. Know what data needs to be used for what business

issue and understanding the operational side of the business. This is the fun part of big data and analytics where new products are conceptualized and efficiencies are created.

The journey I just described above is a typical approach many companies do to ensure they are able to leverage their information and use for analytical purposes. For banks for example, depends on what is their business goals are, there are a number of use cases that are very straight forward such as developing new products, improving the customer experience, making sure governance and compliance is adopted or just making operations more efficient. There are many more but the samples I mentioned are a good starting point.

Many companies have now embraced Big Data and analytics as part of their organization, strategy and even culture. Data driven decisions are now a mandatory methodology across all layers of the organization and we need to make sure we understand the basic terminologies so that all functional areas will benefit from the data. So.. there is no time like the present and start the journey now!

For Finex Members, there are number of people in the ICT committee that can help in walking you thru the journey and assist guide you how to efficiently use your data. You can contact me at 0917 530 4967 or anyone from the ICT committee for any further queries.



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