

A comparative analysis of regulatory governance of digital banking in Asia: licensing frameworks, financial inclusion, and market dynamics

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Abstract

Purpose – This paper aims to explore the unique digital banking regulatory landscape in Asia, shaped by tailored licensing frameworks designed to boost financial inclusion and address specific market demands, and to examine the role of technology in future regulatory frameworks.

Design/methodology/approach – The study employs a comparative analysis of key Asian jurisdictions, including Hong Kong, Malaysia, Singapore, Philippines, Taiwan, South Korea, Pakistan, and Japan. It examines their regulatory requirements for digital-only banking operations, assesses market penetration, and details the operational status of licensed entities as of 2025.

Findings – The analysis highlights three critical implications of Asia's distinctive regulatory approach: the profound technological dependencies of digital banks, the evolving dynamics in the relationship between consumers and banks, and the new paradigms of accountability required for technology-only banking operations.

Originality/value – This paper provides a timely and focused comparative insight into Asia's pioneering digital banking licensing regimes and their market outcomes. It offers critical analysis for regulators, industry stakeholders, and researchers examining the region's rapidly evolving financial ecosystem and its divergence from Western regulatory philosophies.

Keywords Digital banking, Asia, Regulation, Financial inclusion, Banking license, Fintech

Paper type Research article

Introduction

Regulatory paradigms for digital banking in Asia: licensing on technology use

The rapid emergence of digital banking across Asia represents a transformative shift in financial service delivery, characterized by branchless and technology-driven models that challenge traditional regulatory frameworks. This evolution has prompted fundamental questions about the necessity and effectiveness of specialized licensing regimes for digital banks, a much-debated phenomenon that sits at the intersection of financial innovation, consumer protection, and regulatory adaptation. Unlike conventional banks that have expanded their online presence without additional licensing requirements, digital-only banks in many Asian jurisdictions face dedicated regulatory frameworks specifying distinct licensing conditions, capital requirements, and operational constraints. Regulators regarded digital banking offered by conventional banks as merely an additional delivery channel rather than a new regulated activity. The Hong Kong Monetary Authority took this position in its 2003 *TM-E-1 Guidance*, which defined e-banking as the provision of existing “financial services . . . delivered over the internet” (section 1.2.1). The Monetary Authority of Singapore adopted a similar stance in its *Internet Banking and Technology Risk Management Guidelines*,



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treating technology as a “*solution*” (section 1.0.1), implying it is part of a broader process of digital transformation rather than a distinct line of business. This differential treatment deserves considerable discussion regarding whether digital banks truly constitute a distinct category requiring specialized regulatory approaches, or whether they simply represent a different delivery channel for traditional banking services.

The licensing approach remains particularly contentious in Asian markets, where regulators have somewhat counterintuitive approaches. Whilst a dedicated digital bank licensing framework is adopted, the detailed requirements of such framework almost mimic the existing banking regulatory framework. There is little, if any, difference compared with standard banking licenses. This arguably creates more burdens for both banks and regulators, and this dual approach for banks with both digital and banking licenses reflects deeper uncertainties about how to appropriately categorize and supervise institutions that provide banking services without physical branches but with innovative technological capabilities that may introduce novel risks or amplify existing ones.

Internal and external dimensions of technological transformation for banks

Two dimensions have to be examined when exploring technological transformations for digital banks. The first dimension concerns internal applications, where banks leverage advanced technologies such as artificial intelligence, machine learning, and blockchain to optimize operations, enhance risk management, and develop innovative products. The second concerns external interfaces, where user-centered design, intuitive platforms, and digital engagement strategies can redefine customer experiences and expectations. This technological duality introduces complex regulatory challenges, particularly as automated decision-making systems increasingly govern credit assessment, fraud detection, and customer service operations, often with limited transparency or explainability to end-users.

Moreover, the widespread adoption of these technologies serves both financial objectives (such as profitability and efficiency gains) and non-financial goals (such as financial inclusion and accessibility to banking services). Asian markets demonstrate particularly rapid adaptation due to their large unbanked populations, high mobile penetration rates, and generally supportive policy environments. International standard-setters have begun addressing these developments through updated frameworks and guidelines. For instance, the Basel Committee on Banking Supervision has incorporated provisions for banks’ exposures to crypto assets within its Basel III framework, introducing classification systems that distinguish between tokenized traditional assets and more speculative crypto assets with corresponding capital requirements ([Bank for International Settlements, 2017](#)). This development acknowledges the growing intersection between digital assets and banking activities, though it stops short of providing comprehensive guidance specifically for digital banking models. Similarly, the [World Bank \(2024\)](#) has emphasized inclusive digital financial services as a development priority, publishing reference guides for policymakers seeking to establish effective legal and regulatory frameworks that balance innovation with stability, consumer protection, and financial integrity. These international efforts reflect a growing recognition that digital transformation requires regulatory responses, though specific approaches to digital bank licensing remain predominantly determined at the national level.

The second dimension concerns the external use of technology, where customers directly engage with banking services. This encompasses elements such as user experience (UX), user interface (UI), and the broader digital ecosystem facilitating service delivery, including mobile applications, websites, and API-driven integrations with third-party services. Key technologies employed in this domain include intuitive UI/UX designs, chatbots and virtual assistants for customer support, biometric authentication methods such as fingerprint and facial recognition, and Open Banking APIs that enable secure sharing of financial data with approved providers. The primary focus of this dimension lies in enhancing accessibility,

convenience, and customer engagement. The objective is to create a seamless banking experience that is user-friendly and available around the clock from personal devices. Efforts concentrate on minimizing friction in essential processes such as account openings, money transfers, and loan applications.

A significant challenge for regulators and banks is ensuring that the external technological interface does not undermine the fundamental promises made to banking customers: security, fairness, transparency, and accessibility. It is imperative that customers receive protections equivalent to, or greater than, those offered by traditional banking institutions. This is achieved through several measures:

Ensuring security and trust: Robust authentication protocols are mandated by regulators, requiring strong customer authentication (commonly known as SCA) and often employing multi-factor authentication (MFA). This approach extends beyond simple passwords to include biometrics or one-time codes, thereby securing accounts even in the event of password compromise. In addition, stringent data protection and privacy regulations, such as those inspired by the General Data Protection Regulation (the GDPR) in Europe, require banks to maintain transparency regarding data collection, usage, and storage. Encryption, both during data transmission and at rest, is established as a non-negotiable standard to avert data breaches. Digital banks also employ continuous monitoring systems to detect suspicious activities in real time, thus safeguarding customers against fraud. Regulatory frameworks mandate regular testing and validation of these monitoring systems.

Ensuring fairness and transparency (algorithmic accountability): A critical concern in leveraging artificial intelligence (AI) for external decision-making, such as loan approvals, is the potential entrenchment of historical biases within algorithms. Regulators are increasingly prioritizing “Explainable AI” (XAI), which requires banks to audit their algorithms for discriminatory outcomes and to provide customers with clear, non-technical explanations for decisions, such as specifying a “high debt-to-income ratio” rather than a generic algorithmic denial. Furthermore, all terms, conditions, and fees must be presented to customers in a clear and comprehensible manner before their commitment to any product. Digital platforms can effectively use interactive tools and plain language, surpassing the clarity of traditional paper-based documents.

Ensuring accessibility and financial inclusion: The challenge of digital literacy must be addressed to prevent the emergence of a “digital divide” that excludes less tech-savvy or elderly customers. This can be mitigated through the adoption of intuitive design principles, ensuring that applications and websites are simple and easy to navigate for all users. Alternative support channels, such as phones, video calls, or chats, should also be available to assist those who may struggle with digital interfaces, thereby ensuring that they continue to receive the personal assistance they require. A focus on inclusion is critical; external technology should serve as an enabler rather than a barrier. This entails offering services in multiple languages, ensuring accessibility for visually and hearing-impaired users, and designing products aimed at underserved demographics.

Ensuring operational resilience: This involves business continuity and disaster recovery plans from digital banks to address potential downtimes, such as application crashes or server failures. These plans must ensure the swift restoration of critical services and provide customers with timely information and support during outages, thereby minimizing disruption. Regulatory enforcement employs a combination of principles-based regulation, which sets desired outcomes such as “treating customers fairly,” alongside technology-specific guidelines addressing areas such as API security (Basak and Tiwari, 2025). Audits, independent third-party assessments, and stringent cybersecurity reporting are also mandated to uphold these standards (Sasea and Sakmaf, 2023).

Taken together, these observations underscore why a systematic examination of digital-bank licensing across Asia is both timely and necessary. The jurisdictions surveyed reveal a clear regional shift toward purpose-built regulatory frameworks that diverge meaningfully from conventional banking models. By consolidating developments that have so far been

discussed only in fragmented form, this paper positions digital-bank licensing as an emerging regulatory paradigm that warrants closer scholarly and policy attention. It sets the stage for a deeper inquiry into how Asian regulators are actively shaping the future architecture of banking through deliberate, differentiated licensing strategies.

Methodology

This paper adopts a structured comparative regulatory analysis to examine licensing models, supervisory approaches, and policy objectives across selected Asian jurisdictions. Jurisdictions were chosen based on the existence of dedicated digital-bank licensing frameworks, the availability of transparent regulatory materials, regional diversity, and their relevance to ongoing debates on financial inclusion, thereby enabling meaningful cross-jurisdictional comparison. Data were systematically collected from publicly available regulatory sources—including formal guidelines, consultation papers, press releases, and statutory instruments—and organized through a document-review matrix capturing licensing requirements, supervisory expectations, and the operational status of digital banks. While the analysis necessarily relies on publicly accessible materials at that point of time whose depth and transparency vary across jurisdictions, limiting the ability to assess regulatory effectiveness, this constraint is accepted given that the purpose of the paper is to establish a focused case for comparative inquiry rather than to deliver a comprehensive regulatory update.

The Asian landscapes

The Asian regulatory landscape for digital banks represents a natural laboratory for examining different approaches to licensing, supervision, and technological governance. By analyzing featured jurisdictions across the region, this paper explores how regulatory frameworks have adapted, or failed to adapt, to the distinctive characteristics of digital banking business models. The analysis confirms that the dynamic nature of digital banking technology resists rigid, technology-centric regulatory frameworks. Instead, effective regulation must incorporate the fundamental nature of these technologies—their adaptability, scalability, and opacity—while maintaining focus on traditional banking regulatory objectives of stability, integrity, and protection. Consequently, this requires regulators to develop new capacities and approaches that can keep pace with technological change without succumbing to either reflexive obstructionism or uncritical permissiveness toward innovation.

The regulatory frameworks for traditional and digital banking vary significantly across key aspects. Traditional banking requires a comprehensive banking license and maintains extensive branch networks, while digital banking often operates under specialized licenses and is typically branchless. In terms of technology governance, traditional banks focus on operational resilience, whereas digital banks emphasize cybersecurity and AI ethics (Law *et al.*, 2026). Cross-border activities also differ, with traditional banks adhering to well-defined jurisdictions, while digital banks can offer potentially borderless services. Finally, consumer protection in traditional banking relies on physical interactions, whereas digital banking employs digital-centric safeguards to ensure customer security in an online environment (Table 1).

The policy rationales for distinctive digital banking licensing regimes across selected Asian jurisdictions, comparing their approaches to key regulatory challenges, such as capital adequacy, corporate governance, risk management, and technological oversight, based on publicly available online information from the regulatory bodies. It then explores the three implications under the internal and external dimensions of technology use in banking and analyzes how each dimension tests the boundaries of existing regulatory frameworks. Finally, the paper assesses whether the digital banking phenomenon requires fundamentally new regulatory approaches or merely adaptations of existing frameworks, offering recommendations

Table 1. Key Dimensions of Digital Banking Regulation in Asia

Regulatory Aspect	Traditional Banking	Digital Banking	Regulatory Implications
Licensing Requirements	Comprehensive banking license	Often specialized digital bank license	Differential capital, fit-and-proper tests
Physical Presence	Branch network required	Typically branchless	Challenges in customer onboarding, verification
Technology Governance	Operational resilience	Emphasis on cybersecurity, AI ethics	Need for tech-specific regulatory expertise
Cross-Border Activities	Clearly demarcated jurisdictions	Potentially borderless services	Coordination between national regulators
Consumer Protection	Based on physical interactions	Digital-centric safeguards	Digital-centric safeguards

Source: By author

for regulators seeking to foster innovation while maintaining financial stability and consumer protection in increasingly digital banking ecosystems.

The framework of Asian digital banks, including its licensing regime, illustrates that existing technology-neutral bank regulations fail to adequately address the potential risks arising from an overreliance on third-party technology.

Regulation of digital banking

Digital banks are regulated differently, and the policy drivers behind them are unlikely to be consistent.

Table 2 shows that Asia has emerged as a prominent region in terms of digital banking, with a higher number of digital banking licenses compared to its Western counterparts. However, despite having purposely designed digital banking licenses, the regulation of digital banks is the same as that of traditional banks, like those in Anglo-Saxon and European economies, which do not have digital bank-specific licensing requirements (Law, 2025). This paper extends Law (2025) in threefold: (a) providing an empirical perspective that grounds and tests the theoretical claim; (b) examining the practical challenges that arise when regulators treat digital-only banks and incumbent banks differently; and (c) strengthening the conceptual foundation for future fiduciary duties. Together, these elements move the discussion from a theoretical proposition to a more operational, legally anchored framework. Digital banks emerge as partnerships between big tech platforms with large client bases and conventional banks, which can create new risks arising from collaborative activities with third parties. They can also lead to closer cross-border cooperation with other major fintech hubs across the world, which could help address the associated operating risks linked to digital-only banking activities. However, the impacts and effects of these remain complex and difficult to identify due to a lack of visibility in the eyes of the public (Yeoh, 2020). Questions remain over whether established laws and regulations could serve the same purpose for digital-only banking

Table 2. Regulation of Digital Banking in Selected Jurisdictions

Specific Digital Banking Licensing and Regulatory Framework	Digital Banking Regulated Under a General Regulatory Framework
Hong Kong, Taiwan, Korea, Singapore, Malaysia, Philippines, Pakistan	Argentina, Australia, Brazil, Canada, China, Dominica, European Union, Japan, Indonesia, New Zealand, Nigeria, Russia, South Africa, United Kingdom, United States

Source: Press Releases from financial regulatory agencies; Alliance for Financial Inclusion (Law, 2025).

platforms, as well as the necessity of mandating an additional license without separate laws and regulations governing digital-only institutions.

It is evident that, at the time of writing, not all digital banks that have been licensed are operational. For example, Hong Kong has issued the highest number of digital banking licenses with eight, all of which are in operation. Malaysia issued five licenses in 2022, but only two are in operation. Singapore initially planned to issue five licenses; so far four have been issued as they hope to maintain high standard and stringent criteria — which are not detailed in public documents. Philippines intended to issue seven licenses, but ultimately six were issued, all of which are in operation, and only two licensed holders being fully digital. Taiwan has issued three licenses, but only one digital bank is currently in operation. In South Korea, all three digital bank licenses were issued in 2016/17, while Malaysia has only issued two since its initial issuance. In Pakistan, there is a digital banking license and five have been issued for the time being. In Japan, there are currently no digital banking licenses, although the number of digital banks is the highest among the compared Asian jurisdictions.

Key features of the licensing requirements are derived from regulatory sources, and categories, and are designed to support the societal goal of advancing financial inclusion policy.

(a) Hong Kong

In general, the digital banking landscape has witnessed significant growth with the emergence of various digital banks. This is evidenced by the active response of 29 applications for a digital banking license, with eight ultimately becoming digital banks. The license authorization process for digital banks in Hong Kong is overseen by the Hong Kong Monetary Authority (HKMA), which carefully evaluates applicants based on criteria outlined in different sections of the Seventh Schedule to the Banking Ordinance. Factors such as business viability, risk management, and consumer protection are taken into consideration during the assessment process. The detailed requirements are published in the HKMA's *Guide to Authorization*, of which the most notable requirements specific to digital banks are that they are not allowed to have a physical branch, nor to impose a low balance fee.

The regulator aims to enhance consumer experience, cater to consumer needs, and provide accessible banking services without the need for physical branches. The primary targets are retail consumers and small and medium-sized enterprises (SMEs). However, the present author observes that the licensing regulatory framework might not fulfill its financial inclusion vision, especially in the context of SMEs, given that the onboarding requirements remain tight, and consumers are still required to provide physical documents in some instances.

Once they pass the evaluation criteria, digital banks in Hong Kong are subject to the same supervisory framework as traditional banks, but the framework contains no explicit requirement on balancing fintech innovation promotion against ensuring the stability and integrity of the banking system.

(b) Malaysia

In 2022, Bank Negara Malaysia (BNM) issued a total of five digital bank licenses out of 29 applications, which were duly approved by the Minister of Finance, Malaysia ([Bank Negara Malaysia, 2020](#)). These licenses signify the regulatory authorization for specific entities to operate as digital banks in Malaysia. Notably, three out of the five consortiums granted licenses are predominantly owned by Malaysian entities, reflecting the preference to merge the country's interests with corporate interests in advancing financial inclusion and fostering the development of responsible digital banking solutions.

The Policy Document on Licensing Framework for Digital Banks, issued in December 2020, further elaborates its financial inclusion vision, which aims to promote financial well-being, sustainable growth, and meaningful access to suitable financial solutions for unserved and underserved segments ([Bank Negara Malaysia, 2022](#)). It adopts a phased regulatory

regime to safeguard financial system integrity and depositors' interests. It allows the digital bank to have a transitional period during which new digital banks have certain provisions relaxed and face limits or restrictions on the range of products and services, caps on deposits and loans, and the number or type of clients.

Two types of licenses, namely Digital Full Bank (DFB) and Digital Wholesale Bank (DWB), are under a phased regulatory regime, which is arguably a more digital bank-specific requirement. They can have more streamlined and simplified regulatory requirements. In its initial operational phase, a DFB functions as a restricted DFB, which entails certain limitations on the acceptance of deposits and the range of products it can offer. During this phase, the DFB is required to maintain its assets below RM3 billion for a period of three to five years. The licensing of DWBs necessitates compliance with the same regulatory requirements that apply to existing wholesale banks. These requirements encompass the management of technology risks, mitigation of anti-money laundering and terrorism financing risks, as well as adherence to non-financial business conduct guidelines. Notably, these regulations are identical to those of traditional banks.

(c) Singapore

The Monetary Authority of Singapore (MAS) has issued four digital bank licenses out of 21 applications in two categories: Digital Full Banking (DFB) and Digital Wholesale Banking (DWB) licenses, focused on retail banking and SME clients respectively ([Monetary Authority of Singapore, 2024](#)).

Digital banking is governed by the Digital Banking Framework, which is arguably a technology-neutral framework inheriting the traditional banking framework. The development of digital banks in Singapore is more policy driven as part of its digital financial inclusion agenda, which is, arguably, more process driven. It is achieved through improving financial system support to integrate technological advancement and to enhance engagement between employers and bank clients with data ([Monetary Authority of Singapore, 2023](#)).

(d) Philippines

The regulatory landscape in Philippines encompasses both digital banking and conventional banking. In the realm of digital banking, Philippines has adopted a licensing approach specific to digital banks. Existing banks may apply for conversion to a digital bank. They are given a period of three years of approval from the Monetary Board within which to meet the minimum capital requirements and implement a transition plan, including divestment or closure of branches. There have been six licenses issued ([Bangko Sentral ng Pilipinas, 2024a](#)). *Circular No. 1154*, issued by the Bangko Sentral ng Pilipinas (BSP), provides revised policies to clarify the application of prudential banking requirements to digital banks and revises the documentary and licensing requirements for establishing such banks ([Bangko Sentral ng Pilipinas, 2024b](#)). Other than that, digital banks follow the same regulations as conventional banks, and only banks that have been granted a digital bank license are permitted to market themselves as digital banks. However, any bank that has obtained the required license from the BSP for electronic payment and financial services may market itself as a bank offering "digital banking products or services" or use similar terms. The new circular also clarifies that digital banks are subject to BSP standards and prudential requirements of corporate governance, risk management, compliance, internal control and audit, and reporting governance applicable to other bank categories. These regulations are still identical to those of traditional banks ([Bangko Sentral ng Pilipinas, 2024a, b](#)).

In comparison with non-digital banks, digital banks face some specific requirements and additional obligations of operating exclusively through digital platforms and electronic channels. This places greater emphasis on information technology and cybersecurity measures to ensure the integrity and security of digital banking operations. Furthermore, digital banks

must navigate the complexities of managing outsourced services in the digital realm and must comply with specific regulations regarding electronic payments and financial services. These distinct requirements reflect the unique nature of digital banking and the need to address the associated risks and challenges in a rapidly evolving digital landscape. Digital banks in Philippines align with the National Strategy for Financial Inclusion by extending financial services to underserved and remote populations through mobile and branchless banking. They lower costs, making financial products more accessible to low-income individuals and small businesses, while offering innovative solutions such as microsavings, microloans, and digital payment platforms. These banks also promote financial literacy, target vulnerable groups such as women and rural communities, and adhere to regulatory standards set by the Bangko Sentral ng Pilipinas, supporting the NSFI's goal of building a more inclusive and accessible financial system for all Filipinos.

(e) Taiwan

In Taiwan, the Financial Supervisory Commission (FSC) has issued three digital banking licenses ([Financial Supervisory Commission, 2021b](#)). These digital banks aim to enhance the banking experience by targeting niche and underserved segments. They leverage existing technology platforms and ecosystems to seamlessly integrate online services into everyday banking activities. Digital banks are expected to improve the accessibility of financial services for the underserved segments of society, such as small-scale businesses and younger generations without a credit history, as part of implementing an overall policy of financial inclusion. Yet, the policies focus on anti-money laundering measures and link them to traditional banks in Taiwan, especially in the context of cryptocurrency and PSP lending. Incumbent banks are investing in digital offerings, although the impact of digital banks on the industry may be limited due to their smaller size. The key regulations applicable to digital banks mainly focus on restricting the specific products and services they can offer. The FSC of Taiwan has been actively exploring the establishment of a regulatory framework for digital banks. The FSC aims to facilitate the development of digital banking in Taiwan while ensuring consumer protection and financial stability (Regulations Governing Anti-Money Laundering and Countering the Financing of Terrorism for Enterprises Handling Virtual Currency Platform or Transaction) ([Financial Supervisory Commission, 2021a](#)).

(f) South Korea

South Korea was an early pioneer of digital banking. There are three digital bank licenses: first issued to K Bank in December 2016, followed by Kakao Bank in April 2017, and Toss Bank (on lending services only) in December 2019. These digital banks capitalize on established ecosystems to attract clients to their platforms and focus on improving accessibility for underserved segments. The growth of mobile banking was accelerated by the COVID-19 pandemic, resulting in exponential growth for digital banks. In terms of conventional banking, traditional banks in South Korea face less intense competition from their digital counterparts. Most digital banks in South Korea are subsidiaries of existing banks or smaller tech start-ups. There is no specific regulation for digital banking, although digital banks must comply with the Act on the Protection of Virtual Asset Users of 2023, where key provisions include segregation of assets, cold wallet storage, and an insurance plan or reserves to address responsibilities in case of computer hacking or network crashes. Yet, this Act focuses on the regulation of digital assets, not on the banking platform through which investors access them.

(g) Pakistan

Pakistan has experienced rapid growth in digital banking. There have been five digital bank licenses issued out of 20 applications ([State Bank of Pakistan, External Relations Department, 2022](#)). Users in Pakistan are increasingly opting for digital services due to their ease of use and enhanced

security. Commercial banks also offer online account opening services, which are deemed to have facilitated the digital banking trend. Digital banks in Pakistan aim to improve accessibility to financial services for underserved segments of society. Easypaisa, Pakistan's first digital bank, played a significant role in revolutionizing branchless banking. The State Bank of Pakistan encourages commercial banks to embrace branchless banking. Additionally, Pakistan has introduced Roshan Digital Accounts specifically for non-resident Pakistanis, enabling them to invest in the country's financial markets. Multiple banks, including United Bank Limited (UBL), offer online account opening services to cater to this segment. In Pakistan, the State Bank of Pakistan (SBP) regulates digital bank licenses under the *Licensing and Regulatory Framework for Digital Banks*, issued by the SBP in January 2022, within the categories of Digital Retail Bank (DRB) and Digital Full Bank (DFB) (State Bank of Pakistan, 2024).

(h) Japan (no specific digital banking license)

The first four digital-only banks in Japan were PayPay Bank, Sumishin SBI Bank, Rakuten Bank, and Sony Bank, all established in 2000. There is cultural disinclination toward removing the social setting of the physical bank branch experience, as well as sentimental attachments to the use of cash in society (Demirgüç-Kunt *et al.*, 2018). In June 2017, the Japan Financial Services Agency (JFSA) opened the door to the setting up of digital banks through several initiatives, particularly the amendment of the Banking Act and the Payment Services Act to enable financial groups to invest in finance-related IT start-ups, facilitate open innovation between financial institutions and fintech firms by utilizing open API architecture, as well as establishing a registration requirement for digital currency exchangers (Financial Services Agency of Japan, 2018). The above overview is summarized in Table 3.

Table 3 indicates that digital banks represent only a small portion of the total number of banks in the region, from 4 to 16 percent when compared with the total number of banks. This may explain why there is currently no specific regulation dedicated solely to digital banks, with them instead being regulated by licensing requirements and through the issuance of guidelines (Bank for International Settlements, 2017). This information remains essential for researchers and practitioners, as it signifies the primary objective distinction among these jurisdictions when promoting financial inclusion through easy access to banking services. However, regulators have largely ignored the challenges faced by individual consumers and SMEs in obtaining loans and in opening accounts. Despite the aim of enhancing accessibility, banks continue to maintain stringent approval thresholds and requirements for account opening and accessing credit. Consequently, access to banking products and services remains limited. The licensing requirements have not adequately addressed this inequality, nor have they considered the technology dependency inherent in operating a digital-only banking

Table 3. Digital Bank Licenses and Operations (as of April 2025)

Jurisdictions	Number of Digital Bank Licenses issued (% in market)	Number of Banks (Including digital banks)
Hong Kong	8 (4%)	194
Malaysia	5 (12%)	42
Singapore	4 (3%)	150
Philippines	6 (1.2%) (Only 2 are completely digital)	489 (400 rural and cooperative banks)
Taiwan	3 (8%)	39
South Korea	3 (6%)	55
Pakistan	5 (16%)	31
Japan	20 (10%) (holding traditional banking licenses)	195

Source: Author compilation from press releases of regulators in respective jurisdictions.

platform. Additionally, there is a lack of explicit, publicly available criteria outlining how institutions are capable of conducting digital banking operations. These critical issues appear to be neglected by regulators. This phenomenon demonstrates the insufficiency of relying solely on existing regulatory requirements to address new technological advances emerging from the growth of digital banks.

The three regulatory gaps in a technology-centric banking era

There are three implications to the above argument. The first implication is that whilst these requirements are easily comprehensible and self-explanatory to consumers, and banks are able to offer direct digital-only access through meeting the licensing requirements, the nature of digital and traditional banking differs significantly from the consumer perspective. Within this implication, there are three points to highlight. First, in digital interactions, consumers are unable to incorporate or interpret body language, which is often a crucial aspect of communication. Second, human judgment is minimized or not entirely demonstrated through the use of digital banking, forcing consumers to adapt to the communication methods dictated by digital platforms. Third, consumers are required to engage with written communication without the opportunity to ask follow-up questions in real time. These distinctions underscore the shift in how banks conduct business with consumers. Existing regulations primarily require banks to implement policies, processes, and systems that protect and uphold consumers' interests. Historically, these measures were executed by human staff, with technology serving as an aid to human decision-making. However, the current shift toward digitalization has led to interactions becoming increasingly programmatic, a change that existing regulations have not fully addressed. Regulatory frameworks have traditionally viewed technology as a tool to assist in decision-making rather than as the decision-maker itself. As a result, consumers now face a fundamentally different counterpart: automated systems predesigned by humans, such as chatbots and spending analysis tools, whose implications have yet to be fully explored by regulatory bodies.

The second implication is that for consumers to have easier access to banking products and services, digital banks must advance technology within the banking industry. The roles and functions of technology in the sector have not been adequately addressed in existing regulations, and the reasons for this gap are not commonly agreed upon. It remains unclear whether regulators or banks possess the necessary capability to effectively use, manage, and resolve issues arising from technological advancements. Several notable gaps in regulation include the absence of specific requirements related to technological expertise or qualifications and the lack of an established standard for such qualifications. Moreover, there is insufficient publicly available information regarding banks' responses to technology-related fraud, apart from the obligation to inform consumers promptly. Additionally, there is no penalty mechanism for technology failures attributable to banks, nor are there specific requirements addressing the causes of such incidents and their remedies. Given the extensive integration of technology within the industry, particularly in digital banks that operate exclusively through technological means without human interaction, the absence of these regulatory measures constitutes a significant shortcoming.

Finally, there is the dominance of technology-led operations and their relationship with human comprehension. The distinction between technology-centric banking and digital banking primarily lies in how technology is leveraged to drive operations. In a technology-centric approach, the provision of banking products and services is preprogrammed, leading to the automation of these processes.

This approach operates in three key stages:

1. Pre-programming and Automation: Banking products and services are initially preprogrammed, enabling automatic execution without human intervention.

2. Data Collection and Analysis: Each time a transaction or inquiry is made, and data are collected. This process is continuous and integral to the system's operation.
3. Iterative Refinement: The collected data are used to refine and optimize the initial programming, ensuring that the system improves its accuracy, efficiency, and responsiveness over time.

A critical aspect of this approach is ensuring the accuracy, consistency, and reliability of the system, as well as determining accountability when failures occur. A key regulatory question arises: whilst the bank itself is ultimately held accountable for its conduct, would it be able to exercise sufficient control and be responsible for the conduct actually driven by the “machine”, developed and powered by separate technology service providers?

In contrast, regulations specific to digital banking (if such regulations were to exist) would primarily address the absence of physical branches, restrictions on charges for low deposit balances, and the requirement for digital banks to closely replicate the operations of traditional banks. Current licensing frameworks for digital banks, however, do not appear to adequately address the unique technological dimensions as the inherent assumption is the technology-neutral model. Thus, the regulatory landscape for digital banking remains underdeveloped, particularly with respect to the advanced technological systems that power the services these institutions provide. Existing licenses do not seem to encompass the critical technological aspects that define technology-centric banking operations, leaving a gap in oversight and accountability that must be addressed through more comprehensive regulation.

Conclusion - from bilateral oversight to triadic accountability

These implications support the necessity of an evolved, technology-centric regulatory model. In this framework, technology is not treated as a separate adjunct but is embedded directly into core regulatory obligations, such as client communication standards, ensuring interfaces are fair and transparent. Crucially, governance concerning data management, infrastructure integrity, and third-party risk must constitute fundamental pillars of this model, applying to all institutions that use technology, not just digital banks. For institutions that rely exclusively on digital channels, the absence of physical fallbacks means that resilience in these domains is existential. Therefore, they must assume explicit and demonstrable responsibilities in ensuring robust technological governance, thereby meeting the evolving safety and soundness demands of a digital economy. This approach offers a future-proof regulation, levels the competitive playing field, and builds a more resilient financial system for all participants.

The provision of separate licenses for digital banks, while aimed at fostering innovation, carries risks and tends to create an uneven competitive landscape and regulatory discrepancies when compared with those applicable to traditional institutions. This bifurcated approach can lead to an inconsistent application of rules, where similar activities are regulated differently based solely on the entity's license type rather than the inherent risk of the activity itself. This disparity is particularly concerning given the rapid advancement of technology, which quickly renders current, static frameworks insufficient for overseeing novel risks. In this dynamic environment, ensuring absolute transparency during technological transitions, such as the deployment of new algorithms or data processing practices, becomes paramount for effective oversight. A more sophisticated and effective regulatory strategy would therefore move beyond entity-based licensing to focus on governing the core utilization and communication of technology within financial services. Ultimately, durable progress in financial communication will depend on formal legal obligations rather than informal expectations. A shift from the traditional bilateral bank-regulator model toward a more transparent, triadic bank-regulator-client framework — anchored by targeted fiduciary duties — offers a credible path forward. Such duties would clarify the depth, quality, and interpretive expectations of communication flows, giving clients a meaningful stake in the regulatory conversation without destabilising existing institutional arrangements. Further work is needed to examine how these duties might

be designed, operationalized, and embedded in practice, but the direction of travel is clear: only structured, enforceable obligations can deliver the communicative integrity the financial ecosystem requires. This ensures that all stakeholders, from regulators to customers, are well informed about both the digital tools at their disposal and their associated risks and responsibilities.

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