

INCLUSIVE DIGITAL BANKING: EMERGING MARKETS CASE STUDIES

Consultative Group to Assist the Poor

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Cover photo by Temilade Adelaja via Communication for Development Ltd.

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Attribution—Cite the work as follows: Jenik, Ivo, Mark Flaming, and Arisha Salman. 2020. “Inclusive Digital Banking: Emerging Markets Case Studies.” Working Paper. Washington, D.C.: CGAP.

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Acknowledgments

The authors of this publication are Ivo Jenik, CGAP financial sector specialist; Mark Flaming, senior consultant; and Arisha Salman, CGAP financial sector analyst. Peter Zetterli, CGAP senior financial sector specialist, and Xavier Faz, CGAP lead financial sector specialist, oversaw this effort. CGAP peer reviewers were Michel Hanouch, senior consultant; Emilio Hernandez, senior financial sector specialist; and Stefan Staschen, senior financial sector specialist. The authors thank Mehmet Kerse for his contributions concerning regulatory aspects of digital banking. Thanks also go to consultants Leena Datwani, Anand Raman, Myra Valenzuela, and Gabriela Zapata Alvarez for their country-specific insights and assistance.

The authors thank the firms studied: Klar, Kotak 811, TymeBank, and UnionBank and their teams for participating in this work, sharing information, and dedicating their time. Thanks also go to Accendo (Mexico), Albo (Mexico), Bettr (South Africa), BPC Banking Technologies (United States), Experian (South Africa), Finastra (United Kingdom), ICICI (India), InstantPay (India), Jumio (United States), Kaleidofin (India), Mibo (Mexico), MyBucks (Luxembourg), NiYo (India), Open (India), Setu (India), STP (Mexico), Yelo (India), and many other stakeholders who shared their experience and valuable insights.

EXECUTIVE SUMMARY

DIGITAL TECHNOLOGY HAS GREATLY EXPANDED ACCESS TO financial services over the past decade. Yet even today, the range and quality of services available to low-income customers remain limited because of constraints in the business models, management culture, and operating procedures of traditional banks. A new generation of fully digital retail banks has emerged and promises to offer more and better services through branch-lite distribution channels that reach underserved areas.

This Working Paper tells the stories of three of these banks: TymeBank in South Africa, Kotak 811 in India, and UnionBank in the Philippines. These banks share some common features. They all leverage data analytics to better understand their target customers, develop affordable products tailored to customer needs, offer streamlined digital on-boarding processes, and blend offline and online customer engagement. However, they emerged in diverse markets and employ different business models. In each case, financial services providers, investors, technology providers, and funders will find lessons that may be applied to other digital banks.

The case studies suggest that ...

Customer acquisition costs for digital banks can fall to around 5–15 percent of the costs incurred by traditional retail banks.

Digital banks can operate alternative distribution channels at just 1–5 percent of the cost traditional retail banks pay to operate a branch.

Cost-to-income can be more than 20 percent lower for banks serving customers through digital channels than for banks relying on traditional channels.

Digital banks can effectively target underserved segments. Such segments make up 50–60 percent of the studied banks' customer bases, on average.

TymeBank (South Africa)

TymeBank is a challenger bank that was founded with financial inclusion as a core business objective. Since it launched in 2018, it has on-boarded over 2 million customers, about 50 percent of them women. It offers simple products, such as checking accounts, savings accounts, and debit cards, to low-income customers at low prices and through a distribution network that combines online and offline customer interaction. It is a compelling example of how challenger banks can leverage digital technology to reach excluded customer segments with more affordable, more useful products.

Kotak 811 (India)

Kotak Mahindra Bank is a well-established, private-sector bank that offers a full range of banking services, including payments, deposits, investments, and insurance, to corporate and retail customers. Since it launched its first fully digital retail banking service—Kotak 811—in 2017, the bank’s customer base has doubled from 8 million to 16 million; many new customers are low-income and first-time accountholders. Kotak 811 is an example of how incumbent banks can create new digital services that coexist with their traditional offerings and represent an incremental approach to digitization that is popular among established financial institutions.

UnionBank (Philippines)

UnionBank has been serving customers in the Philippines for over 50 years and is one of the largest banks in the country. In 2016, it launched UBX, an internal fintech innovation and incubation arm that now operates as a subsidiary. However, the bank also has gone a step further by investing heavily in the digital transformation of its core banking services. Whereas Kotak 811 represents an incremental approach, UnionBank offers an example of a multidimensional digital strategy.

Klar (Mexico)

The regulatory environment in some markets has led to the emergence of “neobanks” rather than digital banks. Whereas digital banks have banking licenses, neobanks are nonbank financial services providers that offer banking-like digital services without a license. Mexico is an example of a market where new entrants operate without banking licenses. One of the country’s leading neobanks, Klar, exemplifies the benefits and limitations of the neobanking model.

ABBREVIATIONS

AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
B2B	Business to Business
B2C	Business to Customer
BaaS	Banking-as-a-Service
BSP	Bangko Sentral ng Pilipinas
CBSA	Commonwealth Bank of South Africa
FSP	Financial Services Provider
KMB	Kotak Mahindra Bank
KYC	Know Your Customer
MAU	Mobile Account Opening
MSMEs	Micro, Small and Medium Enterprises
OTC	Over the Counter
OTP	One-Time Password
PAN	Personal Account Number
PnP	Pick n Pay
POS	Point of Sale
RBI	Reserve Bank of India
SaaS	Software-as-a-Service
SARB	South African Reserve Bank

INTRODUCTION

A NEW GENERATION OF DIGITAL RETAIL BANKS IS REACHING mass-market customers with promising results for financial inclusion. They have the capacity to simultaneously overcome challenges faced by customers themselves and obstacles encountered by financial services providers (FSPs) in building an offering with depth and scale. Digital banks offer a greater variety of financial products than early financial inclusion champions like mobile money providers because digital banks can intermediate retail deposits (see Box 1).

Digital banks analyze financial and nonfinancial customer data and tailor their products to the needs of unbanked individuals and underserved customers. This approach allows digital banks to offer a better customer experience. Products are priced more attractively than the market average because the modern technology stack underlying digital bank operations unlocks cost efficiencies. Alternative, branch-lite distribution channels extend the reach of digital banks to underserved areas.

CGAP has identified three distinct business models in digital banking that are particularly promising (Jeník and Zetterli 2020):

- **Fully digital retail bank.** A full-service bank that serves individual retail customers and micro, small, and medium enterprises (MSMEs) through digital channels. Fully digital retail banks can be further categorized as *digitized incumbents*, which are incumbent banks, such as UnionBank in the Philippines, that are pursuing a total digital transformation; *digital brands*, such as Kotak 811 in India, where product lines are launched as offshoots from a parent incumbent bank; and *digital native challengers*, such as TymeBank in South Africa, that are new to the market.
- **Marketplace bank.** A bank that curates a platform of third-party products that complement the bank's own banking services (e.g., Banco Inter in Brazil and Starling Bank in the United Kingdom).¹ The marketplace approach gives customers from different segments access to a wide range of services.
- **Banking as a service (BaaS).** A technology company with a bank license that provides elements of the banking value chain as an end-to-end, business-to-business (B2B) service (e.g., Fidor Bank and solarisBank in Germany).² BaaS enables third parties that are not licensed banks to offer banking services within a short period of time and highly specialized providers to enter the market.

1 See Starling Bank, <https://www.starlingbank.com/>, and Banco Inter, <https://www.bancointer.com.br/>.

2 See solarisBank, <https://www.solarisbank.com/en/>, and Fidor, <https://www.fidor.com/>.

This Working Paper focuses on three **fully digital retail banks**: TymeBank in South Africa, Kotak 811 in India, and UnionBank in the Philippines. We take a detailed look into how the selected businesses operate in their markets, what they do differently from traditional players, and how they are contributing to financial inclusion. The banks in our study share some important features:

- They are **customer-centric**. Each of them was founded and resourced specifically to reach mass-market customers through digital channels. This is evident in the vision of the founders, skill set of management, and agile business practices.
- They offer products that are **better priced** than their competition's products. This is partially attributable to their lean cost structure and acquisition strategies; marketing also may play a role. However, their pricing policy may change over time.
- They create a physical footprint through **innovative distribution models**—and they do so for a fraction of the cost incumbents spend on branches.
- **They on-board customers remotely** and faster than incumbents by leveraging established infrastructure, such as existing ID systems, and cutting-edge technology, such as biometrics.
- They focus on **essential products** and gradually expand product offerings to graduate customers.
- They know their customers well thanks to **data analytics** and can quickly adjust to meet customer needs.
- They use the architecture and capabilities of **technology platforms** to create a new generation of products, channels, and modern business practices.
- They are **not profitable yet**, but they have defined pathways to profitability that rely mostly on revenues from lending.

We start with TymeBank, which is a typical example of what some would call a “challenger bank.” TymeBank shows us how modern technology can drive creative solutions in product design and distribution. Next, our study of Kotak 811 illustrates the benefits and challenges of

BOX 1. Why is financial inclusion still “shallow”?

Digital technology has been an important driver in the addition of 1.2 billion adults who gained access to formal financial accounts for the first time between 2011 and 2017.^a But this expansion has not translated as much into value for the customer. The range of services offered, measures of customer adoption, and actual transaction behavior remain modest.

Despite heavy investment in technology, very few traditional banks have been willing or able to make the fundamental changes to their business model, management culture, and operating procedures to create a compelling value proposition for mass-market customers. Payment services providers (e.g., e-money issuers) have extended basic payment services to millions of customers but typically are restricted from offering the full range of services (e.g., loans, savings, investment, and insurance) that low-income customers require to manage their daily financial lives.

a. Findex, 2017.

an incumbent bank that is creating a digital brand to improve customer digital experience and to acquire a larger portion of the mass market. Then, UnionBank illustrates a comprehensive digital strategy of an incumbent with a vision of banking blended with e-commerce.

We selected these three examples because they represent diverse approaches, time in operation, and learning opportunities that showcase how these banks operate differently from others. In addition, they were willing to share their learnings with us. We contrast the three banks with Klar in Mexico, where fintechs that do not have a banking license (so called neobanks) deliver a full range of digital banking services through special provisions under Mexico's Fintech Law. As such, Klar represents a model where nonbanks penetrate the banking space, which is increasingly common.

We developed these case studies from in-depth primary research and interviews with emerging and incumbent FSPs, regulators, and software providers in the four markets: South Africa, India, the Philippines, and Mexico. We interviewed shareholders and CEOs and staff from the technology, finance, product, risk, marketing, and legal departments. We also tested the user interface and user experience of the offerings of these players through demonstrations and site visits. In addition, we report on the banks' own perspective of their company culture and model and how that translates into competitive strengths.

Our intention is to help readers—FSPs, technology providers, investors, and the development community committed to financial inclusion—identify lessons they can apply in the companies they run or invest in. The views expressed in this publication reflect our understanding of the studied companies and cannot be interpreted as universally valid for all digital banks around the world or as endorsement of the studied firms.

TYMEBANK: INCLUSION-CENTERED DIGITAL GREENFIELD (SOUTH AFRICA)

TYMEBANK ILLUSTRATES HOW A MODERN TECHNOLOGY STACK AND A creative approach to banking can result in a bank centered on unserved and underserved clients. The founders started with core assumptions about their customer segment and used them to build a customer-centric bank. The combination of TymeBank's technology stack, the technical competency of its leadership, its strategic partnerships, its agile work culture, and its data practice stand out in the banking world, where incumbent institutions tend to struggle with their legacy systems and practices. Some of TymeBank's most significant customer value propositions are anchored in the interface between digital and physical presence. See Table 1 for the country context in which TymeBank operates.

Overview

TymeBank was founded and built to bank the unserved and underserved mass market. The core value proposition that brought 2 million customers to TymeBank in two years are simple products for daily use, such as checking accounts, savings accounts, and debit cards, that are more affordable than that of competitors, accessible where customers live, and bundled with nonfinancial incentives that resonate with customer lifestyle. TymeBank combines online experience through a mobile app with offline experience through partner grocery stores and offline and online access through kiosks.

TymeBank evolved over six years from its first iteration in 2012. It started as a part of a Deloitte Consulting project that was funded by MTN. MTN's main intent was to provide a mobile money solution that would combine the back office and payments infrastructure of the Bank of Athens with the convenient customer service footprint of Pick n Pay (PnP) retail outlets.

TABLE 1. **South Africa country context**

Area	Description	Data
Financial inclusion (access) ^a	Account ownership (male), %	68
	Account ownership (female), %	70
	Access to formal credit (male), %	11
	Access to formal credit (female), %	8
Financial inclusion (use)	Account owners who made at least one deposit or withdrawal in 12 months, %	87 ^a
	Adults saved at a financial institution in the past year, %	22 ^a
	Use of cash as a share of all other transaction channels, %	50 ^p
Banking system	Combined assets of banks	\$480 billion
	Assets of big five lenders: Standard Bank, FirstRand, Absa, Nedbank, Investec	\$384 billion ^e
	Branch network and ATMs	10 bank branches and 65 ATMs per 100,000 adults ^d
Infrastructure	National ID system	Universal coverage for all adults ^e
	Unique mobile internet subscribers, as a % total unique subscribers	51 ^f
	Smartphone connections, as a % of all connections	99 ^f
Regulation	<p>South Africa has been undergoing a substantial reform of regulation and supervision of the financial sector characterized by a shift toward the twin-peaks model, which established the Financial Sector Conduct Authority and the Prudential Authority as the main regulatory bodies, and creation of the Intergovernmental Fintech Working Group (IFWG) (BIS 2019). IFWG comprises the National Treasury, the Financial Intelligence Centre, the Financial Sector Conduct Authority, the National Credit Regulator, the South African Reserve Bank (SARB), and the South African Revenue Service. It is responsible for running the South African Innovation Hub, including the regulatory sandbox.</p> <p>SARB has been open to innovation in banking; it grants licenses to digital banks and allows fintechs to partner with sponsor banks to operate digitally.</p>	

a. Data from 2017, see Demirgüç-Kunt et al., 2017.

b. Data from 2017, see Zyl, 2017.

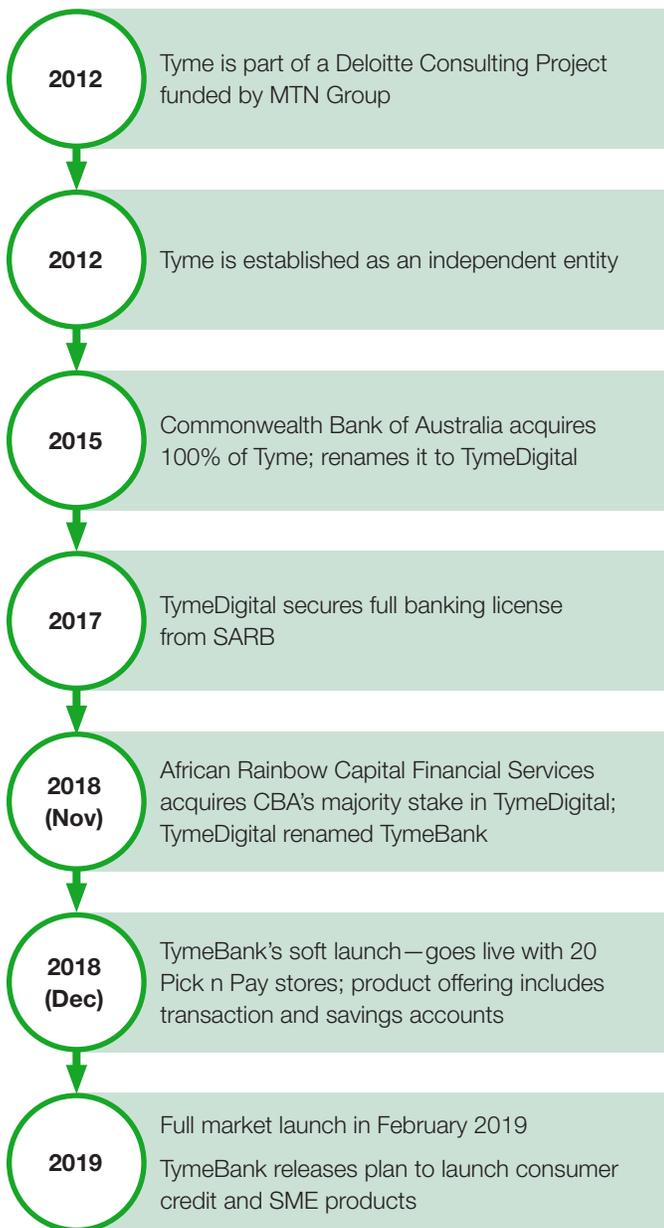
c. Data from 2019, see Fawthrop, 2019.

d. Data from 2019, see IMF, 2019.

e. See World Bank, 2018.

f. Data from 2020, see GSMA, 2020.

FIGURE 1. **TymeBank's growth trajectory**



In June 2012, the venture was established as an independent and stand-alone entity. In 2015, Commonwealth Bank of Australia through its subsidiary Commonwealth Bank of South Africa (CBSA) acquired a 100 percent stake in TymeBank and renamed it TymeDigital. The South African Reserve Bank (SARB) granted a banking license to CBSA (TymeDigital) in September 2017. TymeDigital was the first bank since 1999 to receive an operating license by SARB. Local investors and management acquired control in 2018 and launched TymeBank. See Figure 1.

The vision of the founders and the deliberate choices they made to create a digital bank capable of scaling digital retail banking services to the mass market are key components of the TymeBank story. The distribution partnerships, capabilities of the modern technology stack, company culture, and business model are all elements of a digital bank built for mass-market retail. The role of the South Africa regulator and the existing infrastructure also were enabling factors in TymeBank's successful launch.

Customer value

TymeBank's value proposition is (i) simple, affordable, and accessible products; (ii) fast and automated on-boarding; and (iii) incentive programs that appeal to the target segment, for example, its SmartShopper loyalty program.

CUSTOMER PROFILE: A YOUNG PERSON WITH UNSATISFIED FINANCIAL NEEDS

TymeBank has amassed more than 2 million customers since launch in late 2018. The customers are evenly split in terms of gender, and 53 percent of them are below age 35.

Customer transaction behavior suggests that many customers quickly adopt and use the services. The number of customers making an initial deposit at the time of sign up has tripled

since October 2019. Fifty percent of customers are active.³ The average monthly transactions per active customer went up from 4.7 in January 2019 to 7.7 in August 2020. The bank reports that these numbers aggregate an array of distinct customer profiles—different segments start by addressing their most immediate need and then begin using the bank’s other services to address more of their daily financial lives.

PRODUCTS: SIMPLE, ACCESSIBLE, AFFORDABLE, SMART

The main features of TymeBank products are (i) affordability, (ii) simplicity, (iii) accessibility, and (iv) availability of loyalty programs that reflect customer’s shopping preferences. The anchor product is EveryDay Account, a free basic **transaction account** with no account opening fees, monthly charges, or minimum balance requirements. The account comes with a free debit card. In addition, customers can set up GoalSave, a **savings account** that rewards savings behavior by applying a progressive interest yield that grows with time and balance to offer one of the highest savings rates in the market (see Table 2).

TymeBank will be launching a buy now, pay later **consumer loan** targeted at thin-file customers, whose creditworthiness will be assessed by machine-learning algorithms against rich data on customer shopping behavior and device data.

TABLE 2. **Progressive interest rates**

No. of days	Rate (%) ^a
1–30	4
31–90	5
91+	6
Bonus (conditions apply)	7

a. As of 1 October 2020.

Eventually, the bank plans to serve the country’s sizeable MSME segment with similar low-cost accounts and lending products. As with the consumer segment, it aims to create value for small business customers through easy on-boarding, extensive access to physical transaction points, and market-leading pricing. Since

February 2020, sole-proprietor businesses can open a transaction account with features that are equivalent to those of individual accounts. The offering attracted close to 22,000 MSMEs by August 2020.

Central to TymeBank’s value proposition is the ability to offer customers better pricing than the competition. The overall cost to customers is around half of the cheapest incumbent in the market (UBS 2019). TymeBank offers attractive deposit rates in accounts that are tailored to suit lower income clients.

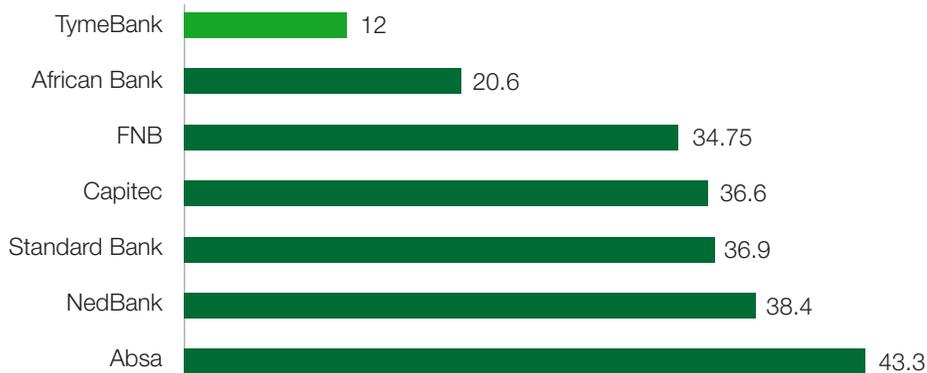
Banks in South Africa typically charge a fee on cash deposits. TymeBank offers customers one free deposit up to ZAR 5,000 (US\$300) per month at its retail partners, then it charges rates that are below the competition for additional deposits (e.g., ZAR 4/US\$0.25 for each ZAR 1,000/US\$60 deposited).

TymeBank levies fees on transactions outside of the partner ecosystem but keeps the fees below that of its competition. A recent competitor analysis showed that for 12 transactions,

³ “Active” is defined as having performed at least one customer-initiated transaction in a rolling 30-day period and/or has a positive balance.

the average TymeBank customer pays about 60 percent of what customers pay to the second most affordable bank, African Bank (Keraan 2019). See Figure 2. Another study shows that TymeBank’s monthly bank fees for all transactions, including sending cash, making cash withdrawals, making cash deposits, and making payments, is about 65 percent of the fees paid by Capitec customers (UBS 2020).

FIGURE 2. **Cost comparison of 12 common transactions**



Note: See Keraan, 2019.

Furthermore, TymeBank plans to create a new loan product by leveraging its rich data and algorithmic decisioning platform to offer loans at risk-based pricing that is significantly lower than that of incumbents, which are charging interest rates close to the upper limits established by South African regulators.

Close partnerships with the big supermarket chains, notably Boxer and PnP stores, are central to TymeBank’s customer experience and operational model. The retail partners enabled TymeBank to launch with a national service network that rivals the footprint of the largest banks in the country (Business Tech 2019). The stores also expand customer access to physical service beyond traditional banking hours—some stores are open from 8 am to 10 pm. This infrastructure offers convenience to customers from the moment they sign up. Customers can visit a single retail location for their daily shopping needs and their banking transactions. This also generates value for the partner retail networks, as they benefit from higher customer traffic and greater sales.

TymeBank also has integrated with PnP’s popular SmartShopper loyalty program in a way that benefits the bank, PnP, and customers. TymeBank customers can link their debit card to their PnP SmartShopper rewards account and receive double loyalty points. The bank uses its portion of card interchange fees to buy these extra SmartShopper loyalty points from PnP, thus generating an additional revenue stream for the retailer. Meanwhile the bank gains access to data on customer spending habits and loyalty program behavior, which it uses for customer segmentation and credit scoring.

TymeBank provides cash and over-the-counter (OTC) transactions to its customers through the tellers and point-of-sale (POS) terminals of the partner retailers that house its kiosks. This means that at the checkout counter, TymeBank customers can pay with their bank debit card and deposit (or withdraw) directly into their TymeBank account. There are 14,000 retail partner tills connected in real time to TymeBank's banking platform. The bank's retail partners are the primary physical interface between the bank and its customers. Customers also have full access to the country's ATM network.

TymeBank customers have access to all its products through the bank's mobile banking app and web-based banking. In addition, the bank is relaunching its **financial literacy and personal finance management** tool (initially called TymeCoach) to provide tips and tools to help customers improve their credit score and make better financial decisions.

CUSTOMER ON-BOARDING: FAST AND AUTOMATED

The bank's infrastructure for customer on-boarding and servicing leverages its retail partnerships, the national payments system, and a capable technology stack.

Eighty-five percent of new clients are on-boarded through proprietary automated kiosks developed, designed, and manufactured by the bank. Each kiosk comprises a touch screen, fingerprint reader, camera, and card printer. Store customers can use these kiosks to sign up for an account and receive a personalized debit card in less than 5 minutes. Customers can conduct basic transactions and receive replacement cards on the spot. The bank has 800 kiosks at PnP, Boxer, and PostNet stores.

TymeBank offers three tiers of accounts, each with a limit that depends on the level of identification available: (i) "Just Met" for web-based on-boarding that requires a follow-up kiosk-based verification, (ii) "Getting to Know You" for customers whose identity could be only partly verified using the kiosk, and (iii) "Good Friends" for fully identified customers. See Box 2.

An ambassador is assigned to each kiosk. The ambassador promotes TymeBank and helps customers use the kiosk or conduct other in-store transactions. Edge Field Marketing employs and manages the ambassadors on behalf of the bank; it also cooperates with Harambee,⁴ a not-for-profit social enterprise that helps unemployed youth find jobs.

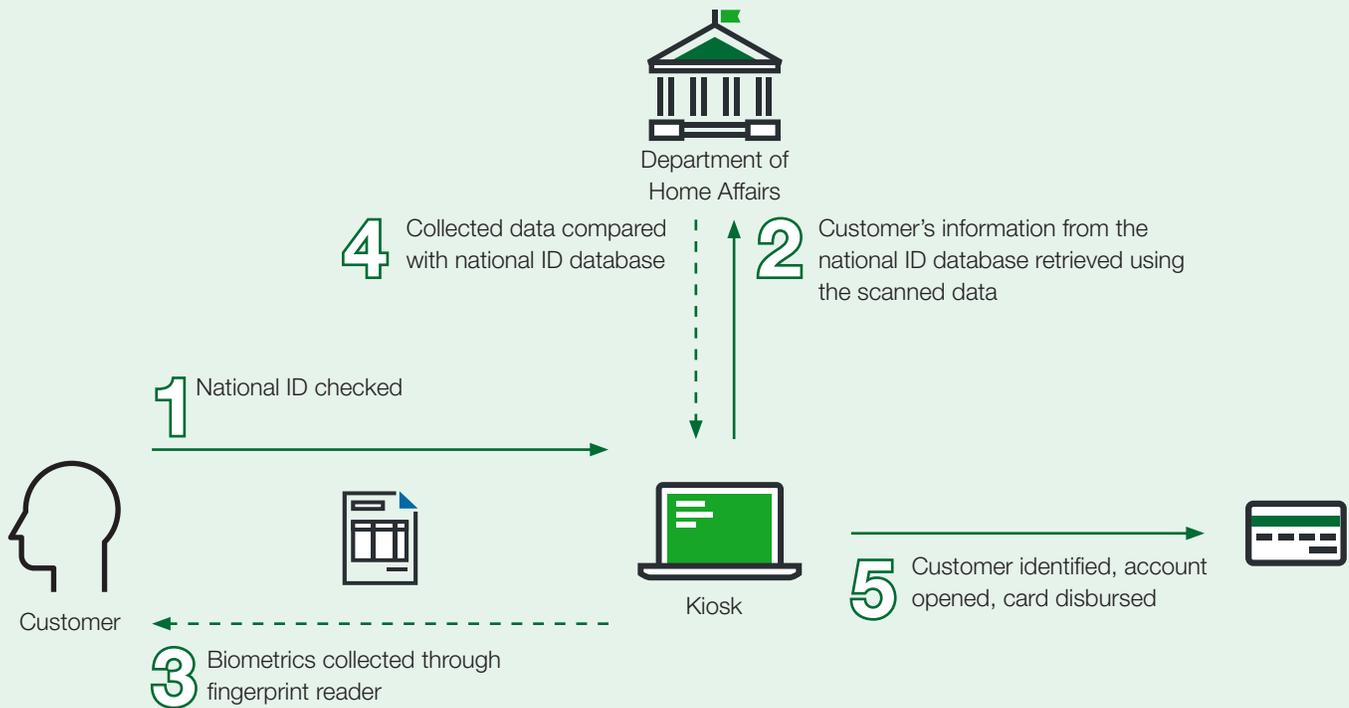
Business strategy

TECHNOLOGY STACK

TymeBank runs on a technology stack that supports agile company culture, the customer value proposition, and the business model. The stack architecture is cloud based, with a microservice architecture linked to a modern core banking system. It is scalable and replicable, with an operating cost that TymeBank believes will be substantially lower than that of conventional banks.

4 See Harambee, <https://harambee.co.za/>.

BOX 2. TymeBank's customer on-boarding



TymeBank automatically identifies customers for anti-money laundering and combatting the financing of terrorism (AML/CFT) requirements. It uses South Africa's nearly universal biometric ID coverage and digital ID database, which is managed by the Department of Home Affairs. An applicant first enters his or her ID card number. TymeBank uses the number to connect to the national ID database and pulls customer data. The customer scans his or her fingerprints, which then are compared with the biometrics from the national database. The fingerprint

reader uses a thermo scanner to determine whether a real person is using the kiosk. Once the individual is identified as a real person, his or her information is scanned for anti-money laundering and sanction concerns, the customer account is created, and a personalized card is printed and disbursed by the kiosk. This process takes less than 5 minutes (compared to the more than 30 minutes needed by European digital banks; see D-Rating [2020] for an analysis of digital banking in Spain).

This architecture reflects TymeBank's view of itself as a technology company with a culture of continuous customer-focused product development. This commitment is embedded in the company's practice of expensing all technology expenditures as operating expenses on the conviction that technology development is ongoing and permanent and that technology-related expenditures can be calibrated to the growth of the business. This contrasts with traditional banks that almost always capitalize and amortize the core investment costs related to technology. The technology team delivers several releases daily across the platform. The company has internally branded FlowTyme as its own version of an agile product development practice.

The integration layers enable TymeBank to efficiently integrate with partner platforms and software-as-a-service (SaaS) providers with a significant range of API-enabled functionality. The

integration with partner POS platforms is core to TymeBank's unique distribution network; it allows for access to PnP loyalty program and customer purchase data.

The stack architecture also supports a dynamic and robust data analytics practice. Most transactions are associated with an event-processing engine (Kafka) that feeds data in real time into a data environment (Spark). These data can be combined with batch pulls from the core banking system and other systems, giving the bank a usable, reliable, and manageable data warehouse.

The human resources needed to develop and run the stack include (i) a data team comprising business intelligence experts, Python/SQL experts, data engineers, and machine-learning specialists and (ii) a technology team comprising developers and coders. The teams, which have a total staff of more than 100 data and technology experts, are based in Vietnam. The development competencies and their placement are necessary to build the stack and potentially offer the capabilities to FSPs in noncompeting markets as an SaaS model. The TymeBank team has a skillset adapted to managing cloud-based, microservice architecture while the IT team is smaller compared to that of a traditional bank.

BUSINESS MODEL⁵

Like most digital banks, a central feature of TymeBank's business model is the expectation that it will become increasingly profitable and competitive at scale. At present, its main sources of revenue are fees charged to customers and the net interest margin made by placing customer deposits on the wholesale money market. The bank expects revenues to diversify as it rolls out consumer lending products and its business banking line.

TymeBank believes that its cost structure will become a competitive advantage as it scales. Its cloud-based technology stack is built to scale with diminishing marginal costs. It has no physical infrastructure expenses associated with branches and ATMs. Customer acquisition and customer service infrastructure costs are low: it has been onboarding about 110,000 customers per month, including about 93,500 customers per month through kiosks, at a cost of ZAR 50 (US\$3) per customer, and about 16,500 customers via web for around ZAR 10 (US\$0.6). The bank is fully responsible for the design and manufacturing of kiosks. TymeBank estimates that the cost of running a kiosk is roughly 4 percent of the cost of running a bank branch. This includes the servicing cost, the fee paid to the partners (retail stores), and the cost of ambassadors.

Key cost drivers for TymeBank include distributions costs and IT expenditures. IT expenditures are a significant portion of the bank's annual budget, but they will proportionally decrease as the bank continues scaling up nationally and internationally. The bank calculates that these costs are less than what it would have faced in branch-related expenses had it chosen to have brick-and-mortar branches. TymeBank aspires to a cost-income ratio of around 25 percent,

⁵ The assessment in this paper does not consider the international dimension of Tyme Global's business, which is twofold: (i) replicating TymeBank's business model across suitable markets and (ii) offering TymeBank's technology solutions to other financial institutions—currently Indonesia and New Zealand. The international expansion plans promise to bring new revenue streams and economies of scope and scale.

close to half of the cost structure of the incumbent banks. It expects to pass these savings on to customers with competitive pricing in the market.

Relying on third parties for critical functions like cash deposits and withdrawals comes with some risk. Neither the staff nor the POS infrastructure involved in these transactions are managed by TymeBank. The bank does not train, supervise, or incentivize the tellers who serve TymeBank customers in the stores, nor does it control the process flow, visual design, simplicity, or reliability of the interface that tellers need to serve TymeBank customers. Hence the quality of service and customer experience at retail points largely depend on factors over which the bank has limited control.

The bank manages these risks with partnership agreements that require a clear commitment from retail partners to train and manage store staff, integrate their backend systems, and ensure a consistent level of service to TymeBank customers. In addition, TymeBank has created a support structure with the ambassadors in each store to support customers and store staff. It manages the ambassadors through a team of dedicated area managers who oversee the ambassador program, monitor the activities of store staff, and regularly visit stores. Finally, TymeBank's technology stack can monitor transaction issues in real time.

REGULATORY STATUS

TymeDigital (CBSA) was the first bank since 1999 to receive an operating license from SARB. In total, it took the bank three years to get the license. Three financial sector regulators were involved in the process: SARB (prudential requirements, including minimum capital of ZAR 250 million [US\$14.6 million]); the Financial Sector Conduct Authority (deposit taking, market conduct); and the National Credit Regulator (lending).

South African financial sector regulators have adopted a risk-based approach and have been open to regular engagement with the industry. In TymeBank's case, the regulators demonstrated an ability to assess and approve a unique business model and operating structure of a bank with no branches. At the same time, regulation does shape some parts of the bank's business, specifically, the AML/CFT tiered accounts with transactional limits and integration between the IT systems of TymeBank and stores (i.e., real-time, unidirectional connection to safeguard sensitive banking data). Because its automated on-boarding process depends on the South African national ID, the bank is unable to serve domestic or international customers who do not have this ID.

KOTAK 811: KOTAK BANK'S DIGITAL OFFSPRING (INDIA)

KOTAK 811'S DIGITAL BANKING SOLUTION ILLUSTRATES HOW AN incumbent bank can adopt new and innovative channels to improve acquisition of its target segment and expand to serve low-income and unbanked and underbanked customers at scale. Kotak Mahindra Bank's (KMB's) legacy as a credible and trusted bank in India, the bank's balance sheet, an aggressive marketing campaign, and a commitment to modernize its technology stack have been the key drivers of the digital bank's growth.

While the commercial viability of 811's solution is hard to judge independently from KMB, its ability to acquire, serve, and enable customers to graduate to a broad range of financial products offered by KMB are early indicators of success. 811 is not a separate legal entity and as such is fully controlled and operated by KMB (i.e., clients of 811 are KMB clients). However, it is important to note that 811 is the digital arm of KMB and not merely its online and/or mobile banking interface. Both 811 and non-811 customers of KMB have access to the bank's online and mobile banking channels.

811 is competing in a very dynamic environment. Other incumbent banks such as ICICI and SBI are implementing digital solutions with the aim to facilitate their quick and easy deployment, increased customer engagement, and cost-effective product diversification. Neobanks like NiYo, InstantPay, Open, and Yelo are offering banking services to individuals and businesses in close partnership with sponsor banks. The major areas of innovation for these players are (i) delivery of banking services through convenient app-based channels (e.g., Open, InstantPay, and Yelo); (ii) tie ups with wide physical distribution networks including agents (e.g., InstantPay); (iii) corporate employers largely comprising small and medium businesses (e.g., InstantPay, NiYo, and Open); and (iv) user interfaces that cater to customers with varying levels of literacy and language preferences (e.g., NiYo offers an app in several languages and an integrated voice response system). See Table 3 for the country context in which 811 operates.

TABLE 3. India country context

Area	Description	Data
Financial inclusion (access)	Account ownership (male), %	83 ^a
	Account ownership (female), %	77 ^a
	Ownership went up from 53% to 80% between 2014 and 2016, with an increase in account ownership of 30 percent for women and 40 percent for the poorest households driven by the Pradhan Mantri Jan Dhan Yojana scheme that brought ~400 million Indians into the formal banking system. ^b	
	Access to formal credit (male), %	10 ^a
	Access to formal credit (female), %	6 ^a
Financial inclusion (use)	Account owners who made at least one deposit or withdrawal in 12 months, %	48 ^a
	Adults saved at a financial institution in the past year, %	20 ^a
	Use of cash as a share of all other transaction channels	49.3% in 2016 (forecasted to reduce to 46.2% by 2021) ^c
Banking system ^d	# of public sector banks	20 (total assets \$1,038 billion)
	# of private sector banks	22 (total assets \$289 billion)
	# of foreign banks	44 (total assets \$22.6 billion)
	# of regional rural banks	44
	# of urban cooperative banks	1,542
	# of rural cooperative banks	94,384
	# of small finance banks	10
	# of payments banks	5
	# branch network and ATMs	15 bank branches, 21 ATMs, per 100,000 people ^e
Infrastructure	Aadhaar national ID system	The world's largest biometric-enabled digital ID system; covers 1.25 billion residents ^f
	Unique mobile internet subscribers, as a % total unique subscribers	36 ^g
	Smartphone connections, as a % of all connections	53 ^g
Regulation	<p>The Reserve Bank of India (RBI) has created licenses tailored for small finance and payments banks to promote financial inclusion through “high technology-low cost” operations. Payments banks are licensed to provide accounts with a maximum balance of INR 100,000 (US\$1,333) and cash in and cash out services, but they cannot extend credit. The adoption of new banking licenses has been accompanied by a reduction in the issuance of universal banking licenses.</p> <p>Since 2016, RBI has been permitting banks to open accounts entirely digitally by leveraging the eKYC functionality offered through the Aadhaar system.</p> <p>RBI supports several enabling infrastructure elements including (i) interoperable payment systems comprising several products like the Universal Payments Interface (UPI) and the Aadhaar Enabled Payment System that are operated by the National Payments Corporation of India; (ii) near ubiquitous biometric-based national ID system (Aadhaar), which is operated by the Unique Identification Authority of India; (iii) a forward-looking open API policy through the India Stack;^h (iv) paperless governance for Indians to access authentic documents through the Digilocker initiative.</p>	

a. Data from 2017, see Demirgüç-Kunt et al., 2018.

b. Data from 2016, see Indian Ministry of Finance, 2018.

c. Data from 2016, see Global Cash Index, 2018.

d. Data from 2019, see IBEF, 2019.

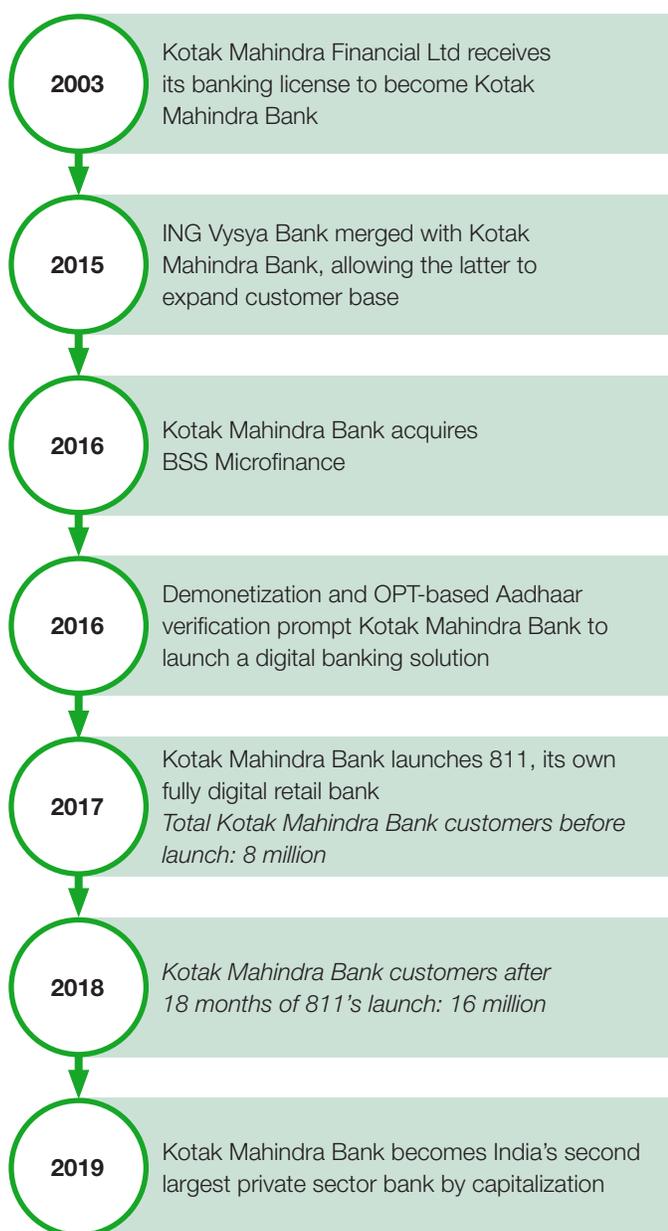
e. Data from 2019, see IMF, 2019.

f. Data from 2019, see Business Standard, 2019.

g. Data from 2020, see GSMA, 2020.

h. India Stack brings together specific technologies—Aadhaar authentication for eKYC, Digilocker for eSign, UPI for payments, and a consent architecture for data privacy—and their corresponding APIs to fulfill its objective of “presence-less, paperless, and cashless service” delivery. See, e.g., “India Stack: New Financial Inclusion Infrastructure,” CGAP, 2017, <https://www.youtube.com/watch?v=suE8CQkCqOQ>.

FIGURE 3. KMB's growth trajectory



Overview

KMB launched Kotak 811, a fully digital retail bank, in March 2017 to attract mass-market retail customers. In 18 months since the launch, KMB's customer base doubled from 8 million to 16 million. This tremendous growth can be attributed to targeted marketing, user experience of real-time and completely digital customer on-boarding, zero fees for digital transactions and payments, and competitive interest rates on deposits compared to the market average. Macroeconomic factors and demonetization also have created an opportunity.

Founded in 1985, Kotak Mahindra Group is one of India's largest financial conglomerates. In 2003, Kotak Mahindra Finance Ltd. became India's first nonbanking finance company to receive a banking license. It launched KMB—a publicly listed private sector bank that offers a complete range of banking services to corporate and retail customers (NSE 2019). Its services include payments, deposits, investments, and insurance. KMB has launched several innovative solutions that harness technology. See Figure 3.

Since its launch, it has focused on driving growth and has added new product lines and acquired new customers through mergers and acquisitions. Banking giant ING Vysya merged with KMB in 2015, which enabled KMB to expand its geographical coverage and enhance its product

offerings. In 2016, it acquired BSS Microfinance, which had 217,000 customers (KMB 2016). This acquisition allowed KMB to reach lower income customers and fulfill its priority sector lending targets. By 2016, it had reached a customer base of about 8 million individuals.

In March 2017, KMB announced the launch of a full-service digital banking offering with the aim of reducing the use of cash. The offering was designed to accelerate KMB's organic growth by enabling the bank to (i) rapidly acquire customers across socioeconomic groups and (ii) realize revenue growth by cross-selling products to those customers. Its announcement coincided

with two critical events in India's economy: (i) demonetization of all INR 500 and INR 1000 bank notes and (ii) Aadhaar regulation that permitted the opening of remote and paperless limited-functionality accounts through authentication using one-time passwords (OTPs). While demonetization did not render cash obsolete, the event nudged Indian consumers to explore alternative options like KMB's digital banking offering.

Customer value

The value proposition includes (i) simple, affordable, and accessible products and (ii) fast and customer-centric on-boarding. KMB's hypothesis was that providing customers with a simple and convenient way to open a bank account in under 5 minutes will attract not only more customers but also customers from underserved segments. It was right: customers across all demographics began opening accounts 24/7. The bank's earlier experience suggested that if customers are not asked to maintain average minimum balances, they generally do not keep balances in their accounts. But after collecting data over more than two years, it became evident that 811 customers were maintaining good balances.

811 is helping customers overcome some critical barriers to formal finance, including affordability and the physical barriers associated with branch-based banking. The numbers indicate that 811 is advancing financial inclusion. Data 811 shared with us suggest that a significant proportion of all customers are first-time account holders, and a large proportion have low incomes—income lower than the minimum taxable income in India of INR 250,000 (US\$3,400). Most customers fall within the lower bands of India's middle-income segment.⁶ In addition, 811 customers are increasingly graduating from using basic accounts to using a variety of financial products.

Customers can sign up for an account and complete the know-your-customer (KYC) process remotely or from home. This convenience helps customers overcome the physical barriers associated with visiting branches and could effectively reduce the amount of time low-income customers, particularly women, must devote to getting to and from branches. There are no fees charged to use the account, which makes it affordable for low-income customers. This is particularly relevant for a large proportion of 811's customer base, including students and unemployed individuals, who do not draw a regular income.

⁶ According to the National Council of Applied Economic Research, middle-income individuals in India earn roughly \$10/ working day (Mint 2018).

CUSTOMER PROFILE: YOUNG, URBAN MEN WITH LOW INCOMES

811 targets individuals across socioeconomic and cultural groups that it refers to as “dreamers” (KMB 2020). Dreamers typically are individuals who are excluded (not yet included) from the formal banking system, particularly youth, low-income individuals, and women. 811’s target segment includes:

- Young customers. About 91 percent of the customers are between the ages of 18 and 40.
- Salaried workers (43 percent); self-employed workers (28 percent); and students, homemakers, and retired individuals (25 percent).
- Predominantly male customers, with a growing number of female customers, which is attributed to 811’s marketing campaigns. The gender gap is smaller for Kotak’s branch-based banking.

The top 20 largest cities make up 58 percent of the customer base. 811 is servicing customers across all 6,000 ZIP codes. Previously, it serviced only customers who lived within 15 kilometers of a KMB branch because the bank conducted exclusively in-person KYC verification. However, the introduction of video-based KYC services could lead to a relaxation of this limit.

Products

SIMPLE, ACCESSIBLE, AFFORDABLE

The main features of 811’s products are price, simplicity, and accessibility. The anchor products are two types of savings accounts: (i) a no minimum balance account with stricter limits on withdrawals and transactions and (ii) a minimum balance account. The accounts are free and come with a debit card and a virtual debit card that allows customers to make secure online transactions (Table 4). The accounts yield up to 4 percent interest per annum, which is competitive compared to the interest rates of 2.75–7 percent (as of August 2020) offered by other commercial banks (Wishfin 2020). KMB offers the same interest rate on savings to 811 and non-811 customers (KMB 2020).

In addition to the savings accounts, 811 customers have the option to sign up for a recurring or term deposit. While customers typically save small amounts—roughly INR 100 each month—term deposits encourage them to get into the habit of saving. 811 has introduced a secured credit card and will introduce loans and fixed deposits.⁷

Customers can load their 811 accounts online and can receive funds into their accounts from other bank accounts through online channels like NEFT and RTGS. They have access to KMB’s branch network of over 1,600 branches (as of 30 June 2020) for deposits and cash withdrawals and the bank’s ATM network for cash withdrawals. One deposit and one withdrawal per month are free for 811 customers at KMB bank branches (no minimum balance account customers) after which they are charged.

⁷ A secured credit card is offered instead of an unsecured credit card because most poor customers do not have a credit score from India’s credit information bureau, CIBIL.

TABLE 4. **KMB savings account variants**

Product Offering	Product Features	Pricing
811 Zero Balance Savings Account	811 is a zero-balance account with basic features: Branch transactions: 1 free transaction of up to INR 10,000 (US\$134) per month for cash deposit and withdrawal each ATM withdrawals: 5 free monthly withdrawals for KMB ATMs and for other domestic bank ATMs each Up to 4% interest on account balances	Debit card fee: Classic (INR 199/ US\$2.5 per annum) Checkbook is chargeable
811 Edge Minimum Balance Savings Account	811 Edge has a minimum balance requirement of INR10,000 (US\$134) per month, which has the following added benefits over the 811 savings account: 25 free quarterly checks 4 free bank transactions up to INR200,000 (US\$2,667) per month Free and unlimited KMB ATM withdrawals	Debit card fee: Platinum (INR 150/ US\$2 per annum) Free checkbooks

The 811 debit card gives customers access to the entire ATM network across India. KMB also has launched a cardless withdrawal service for 811 OTP account holders who do not have a physical debit card. Customers can access this service through the mobile banking app or internet banking. A code is created through both channels that can be used to withdraw money from any of the over 2,500 ATMs in the KMB network.

Once they are on-boarded, customers embark on any of three paths to KMB products:

- **Credit-driven.** Customers who seek credit products such as short-term loans and credit cards.
- **Deposits-driven.** Customers who seek a diverse set of savings products, including recurring deposits for small ticket savings and fixed deposits for long-term savings.
- **Investment-driven.** Customers who seek higher returns and wish to open trading accounts and invest in mutual funds, systematic investment plans, and other investment products.

CUSTOMER ON-BOARDING: FAST AND ACCESSIBLE

811 has an incremental on-boarding process that begins when a customer signs up for an account through KMB's mobile banking app or website. Customers can sign up at any of three different KYC levels—each associated with a unique set of account features: Kotak 811 Lite, Kotak 811 OTP Based (Aadhaar OTP), and Kotak 811 Full KYC.

Kotak 811 Lite. Users complete a basic sign-up form on the mobile app or website using personal account number (PAN) cards issued by the Government of India. This account does not require an Aadhaar-based KYC verification process.⁸ The account's features are similar to those of a payment wallet. Customers receive basic features, cannot receive a physical debit card or access a checkbook, and do not earn interest on savings. They can shop online, pay

⁸ Aadhaar is a national ID that is issued to every Indian resident. It is linked to a person's photo identity and biometrics at the back end.

bills, recharge through a virtual prepaid card, and use the Scan & Pay functionality of the mobile app. Scan & Pay allows customers to make payments at thousands of merchants across the country by scanning mVisa or Bharat QR logos at merchant outlets. The maximum balance for the account is INR 10,000 (US\$134). The account is valid for one year, after which users need to complete the full KYC process. This account is designed to serve individuals whose Aadhaar numbers are not linked to their own mobile numbers.

Kotak 811 OTP Based (Aadhaar OTP). Customers enter their personal information and undergo an Aadhaar-based KYC verification process, which involves entering their names and Aadhaar numbers online. Next, customers go through the authentication process, which is based on OTP. Customers receive an OTP on their Aadhaar-registered mobile phones, which helps to verify their identities. This account provides basic banking features and a virtual debit card but no checkbook. Users can request a physical debit card. The account is valid for one year, within which users need to complete the full KYC process.

Kotak 811 Full KYC. This account requires in-person KYC verification after customers sign up online. Kotak has a large team of field staff that conduct in-person KYC verification. Customers also can visit a bank branch to complete the KYC process. Once on-boarded, 811 customers have access to KMB's complete range of digital banking services, including a virtual debit card and a checkbook, through Kotak's mobile banking app and through internet banking. Customers can earn up to 4 percent interest per annum on their savings account balance.⁹ They also can request a physical card through the mobile banking app or website.

In 2015, KMB created MAU, a mobile account opening video-based KYC service. Kotak had to shut down MAU within a month from launch because RBI had not yet officially approved video-based KYC. However, the experience informed 811's launch of the OTP registration-based 811 savings account in 2017. In January 2020, RBI introduced the option to on-board customers through video-based KYC. In May 2020, in the wake of the COVID-19 global pandemic, KMB became the first bank in India to integrate video-based KYC services into the account-opening process.

Video KYC facilitates the verification of KYC documents and the recording of a customer's signature, which eliminates the need for in-person visits to bank branches, biometric verification, and the sharing of physical documents. Customers begin the sign-up process for the 811 account through the app or web. They enter their personal details and provide their Aadhaar numbers and PANs. Then, they are routed to bank representatives who conduct the video KYC in real time.

For the process to go smoothly, customers need to have uninterrupted access to data connectivity, a clear background that allows bank representatives to clearly see their faces, their Aadhaar number and PAN card, and a blank sheet of paper on which the customer signs his or her signature when asked to do so by the bank representative. After the video KYC is completed, the customer relationship number and account number are generated, and the

⁹ As of 25 May 2020, interest rates on daily balances in Savings Account stood as follows: Daily balances above INR 100,000 (US\$1333.40) will earn 4 percent interest per annum and daily balances up to INR 100,000 (US\$1333.40) will earn 3.5 percent interest per annum (KMB 2020).

customer gets a full-fledged bank account with no restrictions on transactions or account balances. The entire video KYC process is recorded and stored by the bank. For KMB, video KYC is a new and evolving process. It expects to save time and money as the process improves.

Business strategy

TECHNOLOGY STACK

811 relies on KMB's core banking and back-end systems. Its customers are on-boarded through KMB's mobile banking app. However, the on-boarding process and customer experience for 811 differ from that of KMB in that the 811 on-boarding process is completely digital and non-811 customers need to visit a bank branch to complete the process. While KMB uses the full technology stack that already is in place for traditional bank accounts, it has added specific functionalities for 811 within its mobile app. These functionalities facilitate remote on-boarding and the operation of 811 tiered accounts. This means that the incremental software development for 811 is confined to the mobile app itself. Once on board, the customers who want to use KMB's other banking services get steered into KMB's regular flow.

811 uses external partners and in-house developers. It usually relies on partners at the beginning of the development process and then brings the process in-house. The move to in-house development allows KMB to assume control over the development process and facilitates rapid response to business teams.

811's operations have been limited by KMB's legacy technology systems and processes, which are slow and extend the time needed for KMB to innovate and bring products to market. However, 811 appears to be a catalyst for modernization: in a year, KMB plans to move to a microservices architecture. It also is opening up APIs, which may help third-party developers interact with and offer various services to KMB customers. 811 engineers have created new functionalities, with frequent upgrades, within KMB's technology frame. This creates an agile culture in 811 that is similar to that of greenfield digital banks. Time will tell if KMB manages to leverage 811's experience for a more comprehensive digital transformation.

BUSINESS MODEL

811's main sources of revenue are (i) transaction fees for banking activity beyond the set of free transactions (see Table 4), (ii) annual physical debit card fees of INR 199/INR 150 (US\$2.5/US\$2) and debit card interchange fees, (iii) net interest income, and (iv) income from cross-selling various financial products related to, for example, assets and investments.

KMB is focusing on expanding the "size of the pie" of 811 customers. Along with attracting more customers, it is working on "splitting the pie" by cross-selling its other products to 811 customers. For instance, many 811 customers are graduating to products like credit cards and are becoming profitable.

From a business model standpoint, 811 still is in its early stages of operation. Its long-term strategy is to offset initial investment and generate profits through an expanded customer base and cost efficiencies benefiting KMB as a whole. For instance, 811's one-time customer

acquisition cost is roughly 15 percent of KMB's average cost of acquisition. Another example of cost efficiency is customer servicing through a chatbot that uses artificial intelligence instead of through a call center.

811 operates as a center of excellence within KMB; its staff have digital expertise in technology, risk, business intelligence, and marketing. The human resources needed to develop and run 811 include a dedicated 811 business team comprising 40 individuals, a field force of 1,500 staff who complete customer KYC, 20 IT and solutions experts, and 30 risk monitoring and containment professionals.

MARKETING

Marketing is a key factor behind the success of 811. KMB has been running large-scale marketing campaigns for 811 that have been trending with the hashtags #DreamsInvited and #IndiaInvited. Its main marketing channels are television-based advertising and high-impact digital media. The campaigns have large budgets and feature celebrities—prominent Indian actor Ranveer Singh is 811's brand ambassador. The #IndiaInvited campaign champions inclusive banking and features people from all walks of life and across various ages, genders, professions, religions, and physical attributes (e.g., one campaign spot included a survivor of an acid attack). The campaigns tell the stories of these everyday people who struggle against discrimination.

REGULATORY STATUS

Because it is part of KMB, 811 does not require a separate banking license. KMB's universal banking license provides 811 the flexibility to launch new products across a complete spectrum of financial services. RBI merely requires 811 to collect a Fair and Accurate Credit Transactions Act declaration from every customer who opens a savings bank account through the app or website. 811 leverages RBI's OTP-based Aadhaar KYC regulation, which allows banks to use OTPs to complete their KYC procedure electronically after receiving consent from customers. 811's video-based KYC is in line with the RBI KYC amendment, which was announced in January 2020.

UNIONBANK: DIGITAL REBIRTH OF INCUMBENT (PHILIPPINES)

UNIONBANK REPRESENTS AN AMBITIOUS ATTEMPT BY AN INCUMBENT bank to improve its core business and grow a mass-market business through digital transformation. Less visible but still significant is the strong commitment from bank leadership to drive its digital transformation strategy. This case study looks at how UnionBank transformed its IT infrastructure and process, became an agile organization, and partnered with international software providers. What makes UnionBank's experience particularly interesting is its holistic and multifaceted approach to digital transformation.

UnionBank and some other established players, including May Bank and Overseas Filipino Bank, are launching digital-only solutions. In addition, the CIMB Group, which has an established branch network in ASEAN countries, has acquired a commercial banking license to launch the digital-only CIMB Bank in the Philippines. Tonik Bank, a new entrant that received a provisional rural-banking license from BSP, the Philippine Central Bank, in December 2019, is set to launch later in 2020. Under a test-and-learn regime,¹⁰ Tonik is working with BSP to prove a new model of a full digital banking license (Faridi 2020). See Table 5 for the country context in which UnionBank operates.

¹⁰ BSP has been an early adopter of a "test-and-learn" approach to promote innovation. Through test-and-learn, a regulator works with an innovator that crafts a framework to test a new idea in a live environment. The regulator and innovator collectively adopt safeguards to minimize the impact of potential failure and to set criteria against which they measure success. Based on testing, the regulator decides whether to grant the innovator permission to launch the innovation marketwide, which may involve a licensing process and may require regulatory changes. For more information, see www.cgap.org/sandbox.

TABLE 5. The Philippines country context

Area	Description	Data
Financial inclusion (access) ^a	Account ownership (male), %	30
	Account ownership (female), %	39
	Access to formal credit (male), %	9
	Access to formal credit (female), %	11
	Between 2014 and 2017, the percentage of adults with a bank account went up marginally from 31% to 34%.	
Financial inclusion (use)	Account owners who made at least one deposit or withdrawal in 12 months, %	75 ^a
	Adults saved at a financial institution in the past year, %	18.8 ^a
	Use of cash as a share of all other transaction channels	Digital payments made up 10% of all payments in volumes corresponding to 20% share in the total transaction value ^b
Banking system	# and asset size of universal and commercial banks	46 with total assets of P 16,919 billion (US\$337 billion) ^c
	# and asset size of thrift banks	55 with total assets of P 771 billion (US\$15.37 billion) ^d
	# and asset size of rural banks	105 with total assets of P 266 billion (US\$5.3 billion) ^e
	Branch network and ATMs	9 bank branches and 29 ATMs per 100,000 adults ^f
Infrastructure	Since 2018, the country has been creating a national ID registry (PhilSys) using biometrics as the base for identifying individuals. The launch of Step 1 of PhilSys was scheduled for 12 October 2020. ^g	
	There are efforts in place to upgrade supporting infrastructure for the financial sector, including the clearing-house, Bancnet ATM exchange, and credit bureau.	
	Unique mobile internet subscribers, as a % total unique subscribers	42 ^h
	Smartphone connections, as a % of all connections	101 ^h
Regulation	BSP is granting a variety of different licenses to promote “high technology-low cost” solutions that improve financial inclusion: 3 types of banking licenses and nonbank e-money issuers licenses. Start-up bank Tonik has been approved by BSP to pilot a full digital banking license, which is the first such license granted in the country. ⁱ	

a. Data from 2017, see Demirgüç-Kunt et al., 2018.

b. Data from 2018, see Massally et al., 2019.

c. Data from 2018, see BSP, 2019a.

d. Data from 2018, see BSP, 2019b.

e. Data from 2018, see BSP, 2019c.

f. Data from 2019, see IMF, 2019.

g. See “PhilSys,” Philippines Statistics Authority, <https://psa.gov.ph/philsys/announcements/node/163241>.

h. Data from 2020, see GSMA, 2020.

i. Data from 2020, see Kapronasia, 2020.

Overview

UnionBank, incorporated as Union Savings and Mortgage Bank in 1968, was granted a license to operate as a universal bank in 1992, and is now the Philippines's 10th largest bank by assets, with P 707 billion (\$14 billion) in total assets (BSP 2019a). In 1994, UnionBank merged with International Corporate Bank and subsequently merged with International Exchange Bank in 2006. In 2013, it acquired CitySavings Bank, which now operates as a subsidiary of UnionBank. The acquisition allowed UnionBank to expand its rural footprint. In 2016, UnionBank launched UBX, an internal fintech innovation and incubation arm. It spun off UBX in 2019, and UBX now operates as an independent entity that offers technology tools to financial institutions and

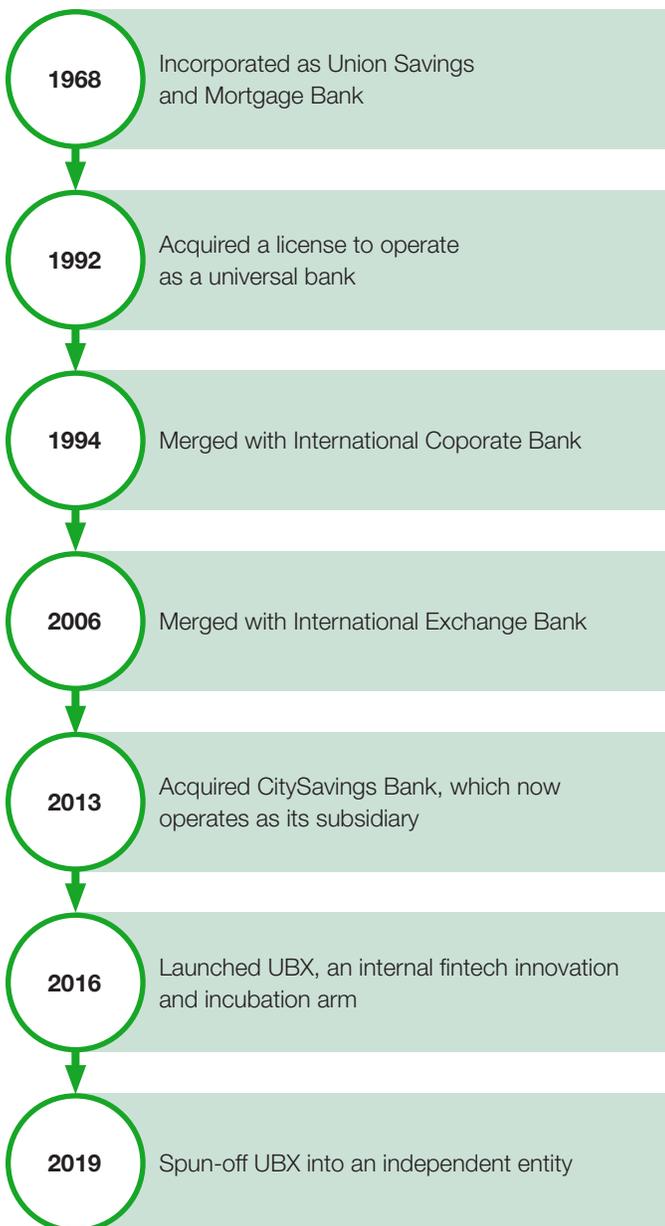
MSMEs. The bank's primary services include consumer retail, corporate cash management, and B2B and business-to-consumer solutions that are offered to local and multinational companies. See Figure 4.

UnionBank is willing to invest significantly in technology to add a mass-market business line to its legacy corporate business. The multiplan strategy includes elements that have potential to reach millions of mass-market customers and the underserved MSME segment with new channels, partnerships, and products.

Customer value

The value proposition of UnionBank's digital transformation is yet to be proven. The plan is to (i) offer simple, affordable, and accessible products directly or through partners, such as rural banks and lenders operating on UnionBank's lending platform and (ii) enable e-commerce for sellers (MSMEs) and customers. In addition, the digitization is helping to on-board customers faster and remotely, improve their experience through a mobile app, and drive a customer-centric approach through data analytics. Digital on-boarding is especially relevant to dispersed low-income populations. Likewise, the pure digital account and CitySavings Bank's Loan Rangers help the company to overcome the logistical challenges of branches.

FIGURE 4. UnionBank's growth trajectory



CUSTOMER PROFILE

UnionBank group has about 5 million customers. About 3 million of them receive routine public or private pension payments, which guarantees a steady influx of deposits into the bank. UnionBank also acquired a significant proportion of its customers (roughly 650,000) through corporate customers that use payroll accounts. It has about 250,000 credit card holders and 30,000 mortgage clients. CitySavings Bank, a UnionBank subsidiary, has 800,000 customer accounts that are split 50–50 between depositors and borrowers. Ninety-five percent of the loan portfolio is made up of loans to teachers, and the rest are pension loans and motorcycle purchase loans. More than 60 percent of UnionBank customers belong to underserved segments. Almost 50 percent of its customers live outside of urban areas.

CUSTOMER ON-BOARDING

UnionBank's Android and iOS mobile app, called UnionBank Online, allows completely digital on-boarding that can be completed in less than five minutes. Customers enter their personal and financial information, then upload a copy of their government IDs, such as a National Statistics Office-issued birth certificate, Social Security System Unified Multi-Purpose ID card, passport, or driver's license, and a selfie, which is compared to the photo on their government IDs to authenticate their identity. Once the authentication process is complete, customers sign an electronic form to finalize the process. They can choose to get their debit cards delivered to a preferred address without paying for shipping.

UnionBank partnered with Jumio, an international provider of identity verification solutions, to implement a fully automated eKYC solution. The solution uses several techniques, including facial recognition, machine learning and artificial intelligence, and certified liveness detection to confirm the identity of an individual opening an account or of an individual making digital transactions. The solution improves the speed, safety, and security associated with the digital on-boarding process.

This partnership has been pivotal in enabling UnionBank to pursue digitization. Through the partnership, it is able to offer digital account opening without expanding its physical footprint. The solution has proven to reduce the time it takes to complete the KYC process from 15 minutes at a bank branch to less than 5 minutes when customers do so digitally. The partnership makes it easy for customers to open accounts, it improves conversion, and it enhances the customer experience. It also has demonstrated a 30–40 percent reduction in the risk of on-boarding-related fraud. Jumio's solution has helped UnionBank open roughly the same number of accounts digitally as the bank has opened through its entire branch network. This has enabled it to acquire and service retail customers at scale without increasing infrastructure costs.

Business strategy

DIGITAL TRANSFORMATION STRATEGY AND TECHNOLOGY STACK

UnionBank aspires to grow its core business and reach 65 million unbanked and underbanked Filipinos in urban and rural markets. To achieve this, it has adopted a four-plan digital transformation strategy to develop capacity to serve different market segments. While the four plans have an embedded sequencing logic, their implementation is intertwined.

Plan A: Digitization

Plan A calls for UnionBank's main banking products and services to be transformed into digital offerings. It believes this will create value for mid-level to high-end corporate clients who want the efficiency and speed of modern digital cash management solutions. It also believes that digitizing retail banking services will make banking less intimidating and more compelling for the mass-market segment, while reducing operating costs. Plan A includes a digital on-boarding solution to remotely sign up customers.

UnionBank plans to limit the growth of its 210 full-scale branches and expand using digital branches. In 2017, it launched its first fully digital branch, called The Ark. The Ark makes customer on-boarding and servicing entirely digital and paperless. Simple transactions, such as cash and check deposits, can be made through self-service kiosks. Branch ambassadors at The Ark kiosks provide added value through face-to-face interactions with customers, if needed.

UnionBank is working to scale The Ark experience by replicating the concept in other branches. Currently, 47 branches are fully digital, and UnionBank plans to make 13 more branches fully digital in 2020 (Sanglap 2020). Accounts can be opened six times faster through digital branches than through traditional branches, and the average daily balance at The Ark is 4.3 times higher than it is at traditional branches (Go 2019).

Plan B: The future of banking

Plan B is UnionBank's structured approach to experimenting with emerging technologies and business models, including banking-as-a-service (BaaS) and marketplace banking models. Plan B is led by UBX, an innovation lab that was recently spun off into a wholly owned UnionBank subsidiary. Through UBX, the UnionBank group experiments with a range of ventures, including i2i, SeekCap, Bux, Sentro, and GlobalLinker (all part of UBX), designed for mass-market customers and MSMEs. The following are UnionBank's "Future of Banking" key initiatives:

- **API developer portal**, built with support from UBX, allows developers from third-party companies to tap into the functionality of UnionBank's technology platform. The portal acts as an interface between UnionBank's full suite of APIs and the developer community. It exposes roughly 600 functional APIs for various banking services and allows external entities to easily sign up on it.

The portal provides developers access to functionality that they can incorporate into the workflows on their own platforms and allows them to create additional channels to commercialize UnionBank products. While third parties can select functionalities, they cannot use UnionBank's balance sheet. The API portal allows developers to take products to market faster and scale their offerings without having to build several elements of the technology stack from scratch. Over the past three years, roughly P 28.8 billion (US\$566 million) in transactions have been processed through the bank's APIs from corporate and retail customers.

- **i2i** is UBX's take on BaaS, which it uses to cater to rural banks.¹¹ While rural banks, which already are licensed, do not need the license that comes with i2i, they do benefit from i2i's cloud-based, blockchain platform, which gives rural banks access to banking services that they would otherwise be unable to use, including for fund transfers, bill payments, loan application processes, and management of enterprise resource planning.

i2i facilitates the interoperability of rural banks, which otherwise do not participate in interbank clearance and settlement systems. It enables rural banks to offer OTC fund transfers and bill payments in real time without integration with their own core banking systems. It significantly reduces the time it takes for rural banks to complete processes like fund transfers across the Philippines. For example, an interbank fund transfer from southern to northern Philippines that traditionally would take five days (since the banks were not connected to each other) can be completed nearly instantly through i2i. UBX also has introduced a mobile ATM to cater to rural banks.

i2i is part of UnionBank's goal of providing banking services to 65 million unbanked and underbanked customers. The intention is to work with banks that have an established branch network in rural areas. By arming rural banks with the appropriate infrastructure at no cost to them and helping to drive down their operating expenses, UnionBank indirectly offers banking services to its target base through partner banks. In the long run, UnionBank aims to gain revenue from fee sharing, co-lending, and pooling of funds with rural banks.

- **SeekCap** is UBX's digital lending marketplace. It allows MSMEs to get same-day loan approvals by matching institutional lenders with MSME borrowers. SeekCap acts as a neutral intermediary—it does not incentivize customers to pick one lender over another. It charges borrowers a fee for every loan successfully processed through the platform. It also helps lower the cost of acquisition for its lending partners by processing loan applications, underwriting, approvals, and disbursements through the platform. It acquires clients through social media marketing, primarily through Facebook, and partnerships, such as with Lazada, the country's largest e-commerce provider, which is owned by Alibaba.

UBX has partnered with OneConnect, the Chinese fintech spun out from insurance giant Ping An Insurance to develop the lending engine that supports SeekCap. The lending platform improves the quality of credit risk assessment and reduces the time it takes to approve loans. It enables lenders to integrate their products on the platform through APIs. Since January 2020, about 7,000 MSMEs have signed up on SeekCap's platform, 4,000 have applied for a loan, and 800 have been approved. About two-thirds of visitors on the SeekCap platform are women, while 55 percent of the applicants are men. SeekCap has a young user base, with two-thirds of its users between the ages of 25 and 44. Typical loan sizes are P 150,000–200,000 (US\$3,000–4,000), with 3–12-month repayment periods. UBX believes the platform's total operating costs could equal 2–3 percent of loan disbursements, including acquisition costs of around 1 percent of the loan amount.

¹¹ More than 50 out of more than 400 rural banks, including Cantilan Bank, CitySavings, FairBank, and Progressive Savings Bank, are part of the i2i network.

- **Bux** is a payments platform that allows MSMEs to accept digital payments by generating and sharing a link with buyers through Facebook Messenger and other channels. Buyers can choose to use the link to make online payments or to pay with cash and cards at a network of partner retail stores, including 7-Eleven and Bayad Center. MSMEs can transfer funds collected through Bux directly to their mobile wallet or any bank account for free. Over 30,000 MSMEs are using Bux. UBX earns a fee on transactions completed through payment links issued on Bux.
- **Sentro** is an online B2B platform with a built-in online store builder, payment platform, and other business solutions to run and digitize MSME businesses. MSMEs can use Sentro's e-store builder to set up their own online shops for free by following easy steps. MSMEs listed on Sentro can collect payments from buyers through multiple payment channels—online and OTC.
- **GlobalLinker** is an e-commerce site similar to Tao Bao in China that helps MSMEs grow their online business. It links over 270,000 MSMEs across the Philippines, Thailand, and India. The platform allows MSMEs to sell their products by connecting buyers and sellers. MSMEs can post offers, get discounts, share management tips, write product reviews, and solicit feedback on products. The platform is available free to all MSMEs, even those that are not UnionBank clients.

Plan C: Digitization of CitySavings Bank

Plan C deploys mobile technology to enable UnionBank's subsidiary CitySavings Bank to extend financial services to the underserved segment. Its current focus is on lending. Bankers and field officers use tablets to help them process loans and do disbursements and collections offsite. This is a cost management tool because CitySavings is not required to set up a large brick-and-mortar infrastructure. CitySavings calls this initiative Loan Rangers. The Rangers go out to serve customers wherever they may be. Teachers are a key customer segment because they work long hours and are unable to access bank branches during the day. Loan Rangers visit schools and allow teachers to sign up for a loan. Motorcycle purchase loans is another key category. CitySavings also extends loan services through selected Perahub outlets. Perahub is a subsidiary of UnionBank that provides remittance, cash-in/cash-out transactions, and payment-related services to UnionBank and CitySavings clients.

Plan D: Digital-only bank

Plan D is a digital-only banking proposition. One of the early elements of this strategy was the launch of the EON Cyber Account, a UnionBank electronic savings account. Plan D is similar to the strategies being adopted by new digital-only players like Tonik Bank. UnionBank expects strategies A and D to closely converge in the long term as its overall digital channel strategy matures.

BUSINESS MODEL

UnionBank expects that the convergence of all elements of its digital transformation strategy will allow it to scale. The convergence will lower operational costs as the customer base grows, which then would increase margins and profitability. The UBX initiatives may have a longer return-on-investment horizon, but they represent additional revenue flows from new channels and services that could become significant as the broader digital banking market expands. As the i2i solution matures and scales, UBX will develop revenues from fee sharing, co-lending, and pooling of funds with rural banks. It will realize more direct revenue gains from SeekCap as the lending platform will allow it to acquire MSMEs at scale and at lower costs. As a start-up, UBX has a limited revenue base, but it envisions that it will grow as its various ventures mature. Currently, the direct revenue sources for UBX are transaction and referral fees generated from its venture platforms.

REGULATORY STATUS

UnionBank has a universal banking license that allows it to offer a complete range of financial services. BSP's regulations around eKYC that allow customer on-boarding through digital-only channels have significantly spurred UnionBank's digital banking strategy. In 2019, UBX has received BSP approval to run its i2i platform (which connects rural banks) and Bux (the merchant payments solution). SeekCap, Sentro, and GlobalLinker currently are not subject to regulatory approvals.

KLAR: THE NEOBANK (MEXICO)

KLAR IN MEXICO IS AN EXAMPLE OF A NEOBANK RATHER THAN A licensed digital bank. The term “neobank” often is used to describe new types of nonbank FSPs that offer banking-like services without a full banking license. In that sense, the term is an oxymoron. We present this case study of Klar because it is important to understand the overall digital banking ecosystem and to highlight similarities and differences between neobanks and digital banks.

Unlike the South Africa, India, and the Philippines markets, Mexico does not have a fully digital retail bank. Two of the main commercial banks, Citibanamex and BBVA Bancomer, have launched accounts linked to mobile phones. Those two banks have 95 percent of all digital accounts that are offered by seven commercial banks in Mexico (CGAP 2020).

Mexico is a market leader, with 394 fintech start-ups (Fintech Radar Mexico 2019). These fintechs are concentrated in three segments: digital payments and remittances, personal finance management, and uncollateralized digital lending. They deliver digital financial services through online and mobile channels. This category of players includes several prominent neobanks like Klar, Mibo, Nubank (a Brazilian fintech with over 20 million customers that recently entered the Mexico market), and Albo, among others. Improved mobile and internet infrastructure has spurred the growth of fintechs. As of April 2020, there were over 82 million unique mobile subscribers, with a penetration rate of 64 percent of the total population.¹² In addition, smartphone penetration has increased from 50 percent in 2015 to a predicted 70 percent in 2020 (GSMA 2016). See Table 6 for the country context in which Klar operates.

¹² GSMA Data, <https://www.gsmainelligence.com/data/>.

TABLE 6. Mexico country context

Area	Description	Indicator
Financial inclusion (access) ^a	Account ownership (male), %	41
	Account ownership (female), %	33
	Access to formal credit (male), %	6
	Access to formal credit (female), %	6
Financial inclusion (use)	Account owners who made at least one deposit or withdrawal in 12 months, %	92 ^a
	Adults who saved at a financial institution in the past year, %	10 ^a
	Use of cash as a share of all other transaction channels	88% Mexicans use cash as their primary form of payment ^b
Banking system	# of commercial banks (Mexican and foreign-owned)	48 ^c
	# of state-owned development banks	7 ^c
	Credit unions (SOCAPs [regulated, nonprofit institutions])	5% of the system's customers and 1.4% of the financial sector's assets ^c
	Financial companies (SOFIPOs [regulated entities that can take deposits and provide credit]; the SOFIPO license is used by some deposit-taking microfinance institutions)	0.3% of assets ^c
	Credit originators (SOFOMs [credit originators that cannot mobilize savings but can receive funding from banks or by issuing debt in capital markets]; some also are credit-only microfinance institutions and unregulated entities)	7.5% of the banking sector's assets ^c
	Branch network and ATMs (the agent model in Mexico is used by 25 financial institutions, including 21 commercial banks, 1 development bank, and 3 credit unions). The agent model has been developed under a retail network model, through which big retail convenience store chains like OXXO and 7-Eleven operate. Most are located in urban and semi-urban areas. ^e	14 bank branches and 61 ATMs per 100,000 adults ^e
Infrastructure	Unique mobile internet subscribers, as a % total unique subscribers	57 ^f
	Smartphone connections, as a % of all connections	59 ^f
Regulation	<p>In 2019, Banco de Mexico announced the launch of CoDI, a digital platform interconnected with SPEI.^g The platform enables origination and reception of payments and transfers of up to MXP \$8,000 (~US\$357) via Internet or mobile phones on a 24/7 basis, using QR codes and near-field communication.</p> <p>Banco de Mexico and CNBV promoted Mexico's first financial technology regulation law in 2018 (the Fintech Law) to support the development of fintechs while reducing operational risk, enhancing transparency, and improving security. Two new types of regulated entities have been authorized: (i) Instituciones de Financiamiento Colectivo (crowdfunding platforms) and (ii) Instituciones de Fondos de Pago Electrónico (e-money institutions). By February 2020 over 85 institutions filed for authorization, but to date only one has been approved.</p>	

a. Data from 2017, see Demirgüç-Kunt et al., 2018.

b. Data from 2019, see Villamal, 2019.

c. Data from 2020, see ITA, 2020.

d. Data from 2016, see Alvarez and Casanova, 2016.

e. Data from 2019, see IMF, 2019.

f. Data from 2020, see GSMA, 2020.

g. SPEI is an electronic funds transfer system owned and operated by Banco de México. This system was developed to facilitate payments between financial institutions, in addition to enabling them to offer safe and efficient retail payment services to the public.

Overview

Klar's mission is to provide financial access and credit to underbanked customers. It specifically is working to address gaps in access to credit by focusing on customers across income segments that lack access to affordable credit. Klar believes that traditional credit scoring based exclusively on FICO and credit bureaus has excluded millions of Mexicans from the formal financial system. Klar's key value proposition is its ability to extend formal credit to previously excluded or underserved customers based on an innovative credit underwriting model that uses purchase and behavioral patterns of debit card customers.

The main difference between Klar and the other three cases is Klar's regulatory status and the limitations it imposes on its business model. Unlike banks, Klar is not allowed to intermediate retail deposits. To address this limitation, it has created two companies with a different regulatory status that allows them to solicit money from the public and keep it in government securities while extending credit to customers from their own funds. This may be a less significant difference from the customer point of view—that is, as long as the deposited money receives protection comparable to bank deposits—but it limits Klar's revenue structure and potential for long-term growth. Therefore, Klar and other neobanks likely will aspire to become fully licensed banks, as has been the case with European neobanks.

Klar was founded in 2019 and is backed by the following investors:

- Quona Capita, which is, in turn, backed by the International Monetary Fund and Accion
- Santander Innoventures
- aCrew, which also has invested in U.S. neobank Chime
- FJ Labs, which has invested in Uber
- WTI, which has invested in Google and Facebook

Customer value

Incumbent banks in Mexico have been largely unsuccessful in catering to lower income customers in the past 50 years—65 percent of adults in Mexico do not have access to an account at a financial institution (Demirgüç-Kunt et al. 2018). Just 15 percent of adults in Mexico have access to a credit card, and only 3 percent of the credit applications from middle-class consumers are approved (Wood 2019).

Klar targets individuals who face challenges accessing traditional banking services and those who normally find it difficult (if not impossible) to access formal credit. It bundles services that generate granular customer data that help automate credit decisioning for thin-file clients. Customer access to credit grows as they adopt a Klar account for daily financial activity. The cashback on the debit card and the eventual access to credit can be a significant motivator for low-income customers who have never used an account. The remote sign up and the access to agent networks for cash-in and cash-out transactions address the two primary logistical challenges that low-income customers typically face when accessing bank branches.

CUSTOMER PROFILE

Klar has 150,000 customers and has issued more than 20,000 lines of credit. It aims to scale to 500,000 customers and 100,000 lines of credit by the end of 2020. Its customers typically have US\$150 in their transactional accounts and complete roughly 15–20 transactions a month. One-third of the customer base is in Mexico City, while the remaining two-thirds of the base is spread out across the country. Klar is the first debit account for 20 percent of its debit customers and the first credit account for 65 percent of its credit customers.

PRODUCTS: BASICS THAT GENERATE DATA RECORDS

Klar's anchor product is a free current account that is linked to a Mastercard debit card that yields 1–4 percent cashback on all purchases. The cashback feature is linked to account balances—the higher balance, the higher the cashback—and use of the payroll deposit service.

The Klar mobile app gives customers access to payment services such as utility bill payments and mobile top-ups and enables them to track their spending. Customers cash out through Mexico's network of ATMs. Klar reimburses customers MXP \$25 (US\$1) of their first three ATM withdrawal fees per month. It offers WhatsApp, email, and phone-based customer support systems 24/7. Customer interactions are managed through Freshdesk, which provides automated support for simple interactions.

Importantly, Klar offers a suite of credit products that are underwritten with automated algorithms based on customer account use patterns. It has structured some of its credit products with installment payments rather than a typical revolving credit line. The installment product is similar to the established customer practice of financing large household purchases at major retailers through installment payments. As of May 2020, 20 percent of Klar's active customers use some of the credit products, and Klar expects this to grow to about 50 percent in the next 12 months.

As Klar scales, it is hoping to expand its product offering to include more payroll, savings and investment, and life insurance products.

CUSTOMER ON-BOARDING: TIERED KYC

Customers sign up for the current account through Klar's Android and iOS apps. They enter their details and scan their official IDs (voter's card or passport). Klar has a tiered approach to KYC checks that is in line with Mexican regulations. The basic Level 1 online national ID check allows customers to complete the sign-up process within three minutes. They receive the debit card linked to their transactional account within 48 hours of signing up through mail. The debit card allows them to hold a balance and carry out transactions up to a threshold. To allow transactions beyond the threshold, Klar collects supplemental information with video KYC.

Business strategy

TECHNOLOGY STACK

Klar built its own core banking system on a platform that is modular, API-driven, and scalable. At current scale, its 30-person developer team in Berlin outnumbers its business staff. The platform integrates with Galileo and Mastercard for payments, Jumio for remote customer due diligence, and Freshworks for customer support. The technology stack also supports the data architecture that enables Klar to warehouse customer behavioral data that are used in an automated decisioning engine.

BUSINESS MODEL

Klar generates revenue from interchange fees on card transactions, investment of customer account balances in government securities, and loan interest and fees. Its goal is to have 50 percent of its customer base using credit by 2021. Klar's credit offering averages 50 percent APR, which is lower than the average APR offered by traditional banks (Wood 2019). Klar's overdraft is free, and a fee is charged on bullet loans, which are paid in a lump sum at the end of the term, and payroll products.

It is investing heavily in human resources and technology. Its major cost drivers are as follows:

- Customer acquisition costs.
- Technology development costs, including the cost of developing and running its technology stack from Berlin.
- Operational human resources (payroll) to run 150,000 accounts. Klar reports that it operates at the national scale with less budget than a bank's branch.
- Licensing costs of operating as a fintech, including legal expenses, risk management, and compliance costs.
- Cost of lending capital.

REGULATORY STATUS

Klar operates through two entities in Mexico. Credit operations are managed through a credit provider company that does not require a regulatory license. Klar also has a transitory authorization issued by the banking commission (CNBV) to operate under the FinTech Law through a subsidiary company (an e-money institution). Its fintech license application is being reviewed by the banking commission. Meanwhile, the fintech authorization allows Klar to accept deposits and hold balances through a subsidiary. While the fintech license is a step toward being a regulated FSP, such licenses still present limitations in the long run because customer deposits are not protected by deposit insurance and the license holder cannot intermediate deposits. Klar is permitted to invest deposits into government securities only.

Additionally, although fintechs have much lower capitalization requirements than banks, they are subject to risk management and compliance requirements that entail compliance costs. For many, the question is (or should be) whether these costs, particularly the prohibition to intermediate retail deposits, are commensurate with the limitations faced compared to fully licensed banks. Klar aspires to become a full-scale bank in the midterm after it reaches a certain scale in its operations.

CONCLUSION

TymeBank, Kotak 811, and UnionBank are very different from each other, but they share important commonalities:

- They leverage granular data to better understand the target customer segments.
- This understanding translates into product offerings that cover most common needs and have appealing affordable prices.
- They use technology-enabled approaches to optimize the on-boarding process.
- They blend offline and online interfaces to address different levels of digital inclusion among their client base.

From the financial inclusion point of view, the most encouraging shared feature is their recognition that excluded and underserved customers represent a large economic opportunity that is increasingly within reach as technological advancements have reduced cost structures. At the same time, digital banks as fully licensed financial intermediaries do not experience the same limits to their business model as nonbank e-money issuers, including mobile money providers, which typically depend on revenue from transaction fees.

The clear difference among the three firms lies in their starting points, which affect their overall strategy and implementation. TymeBank represents a start-up bank that has been built from scratch with financial inclusion as a key business objective and with a technology stack that uses the latest technology and a lean system architecture.

UnionBank was operating as a traditional bank before taking a strategic decision to undergo a comprehensive digital transformation and reinvent its business. It has carved out space to experiment with new technologies and business ideas, such as UBX. As these are tested and approved, UnionBank likely will use them to modernize its core business.

Kotak 811 represents a popular strategy among traditional banks that understand the need to modernize but are reluctant to face the risks of a substantial digital transformation. It illustrates that even incremental changes can yield significant results, but there is a risk that it will be held back by the limitations of Kotak's core digital capabilities and culture.

Klar is an example of a different business model—a neobank—that offers banking services within limits set in regulation. Regulations do not allow neobanks to intermediate retail deposits in a way fully licensed banks do. In this regard, the neobank business model resembles the business model of mobile money providers, which heavily depends on revenue from transaction fees and has limited prospects for long-term growth. While Klar has overcome this challenge

by combining two independent businesses (licenses), in the long term it will likely apply for a full banking license.

Digital banking players need to address three external factors: (i) available technology and its use, (ii) the legal and regulatory framework in which they operate, and (iii) the available infrastructure.

Several technological advancements have greatly benefited digital banks. These include the following:

- Cloud computing, which allows for flexible scaling of core functions.
- Biometrics, which allow for remote customer due diligence.
- Data collection and analytics that enable a granular understanding of narrowly defined customer segments.
- Microservices architecture, which provides for flexible and fast configuration and reconfiguration of products based on customer feedback.
- Open APIs that make collaboration across players easier.

For example, solutions by players such as BPC Banking Technologies and Jumio often appear in technology stacks of digital banks. Technology also lowers the operating cost because it automates many processes, integrates with partner solutions, and becomes cheaper over time.

There are other differences between legacy core banking systems and the modern technology stack. Most significant is their distinct architectural structure. In simple terms, we can think of a banking stack as having (i) front-end channels for user interfaces, (ii) business rules that configure products and services, and (iii) a ledger that keeps track of accounts. Traditional core banking systems combine these features into monolithic structures that vertically integrate front end, business rules, and ledger functions. Functionality is created by programming code that bundles the features into unique combinations for specific purposes. Data are generated and warehoused in niches. Changes to the system require deep structural engineering.

In contrast, a modern technology stack is modular. The front end, business rules, and ledger are separate levels that communicate with each other through API layers. Functionality can be created by assembling the modular components in different combinations and coupling them with standard links. New functionality can be introduced without disrupting the rest of the system. Digital banks have been able to leverage this modern architecture into new corporate capabilities to create:

- An **agile work culture** of continual product development that is capable of testing and prototyping new products and services based on customer feedback.
- **Integration** with third-party solutions and services through an API layer.
- Readily **scalable** solutions that respond to actual demand and business needs.
- Superior **data analytics** that yield business insights in real time.

Regulation is another significant factor—specifically the willingness and capacity of regulators to address innovation. Regulators around the world recognize that digital banks can bring more competition to the highly concentrated banking sector and prompt its modernization. To incentivize new players, some regulators, such as those in Hong Kong, Korea, Malaysia, and Singapore, offer a digital banking license specifically for these new market entrants.

Other countries, such as Australia, Switzerland, the United Kingdom (and also Singapore) use a licensing process in which new entrants commence operations with limited activities before becoming fully licensed. This approach allows applicants to launch their business at a small scale and subject to restrictions such as a maximum amount of deposits to be collected. The regulatory approvals are expanded depending on the continuous strengthening of the bank's capabilities to comply with a fuller suite of legal requirements applied to full-fledged banks.

Interestingly, however, among the countries in which the case studied firms operate, only the Central Bank of the Philippines has been piloting one of the approaches mentioned above—the bespoke digital banking license. BSP has granted permission to the digital start-up Tonik to operate under a pilot regime. Successful results may lead to adoption of a digital banking license. Yet, many markets have a vibrant digital banking sector without a special regulatory approach in place, which suggests that a digital banking license may not be necessary. For example in South Africa, rather than a focus on a special license, it has been more important to focus on encouraging innovation through (i) a risk-based approach driven by activity-oriented risk assessment; (ii) openness to new solutions, such as cloud computing, including a cloud-based core banking system; and (iii) open communication channels, such as innovation offices or a regulatory sandbox. The Mexico example underscores that the regulatory framework also may steer newcomers into business models that do not require a full banking license. However, some neobanks ultimately aspire to obtain a banking license.

The key regulatory areas that enable digital banking models concern (i) flexible outsourcing requirements; (ii) use of cloud computing services; (iii) risk-based AML/CFT requirements; (iv) support for open data architecture, including open APIs and data and privacy protection; and (v) regulation of third-party distribution, such as through agents.

Infrastructure relies on a variety of enabling factors, including (i) smart phone penetration and online connectivity; (ii) an established national ID system that can be used for remote on-boarding or its equivalent, such as SIM registration; (iii) a network of physical contact points, such as agents, merchants, and ATMs, that can be used for offline interaction with customers instead of traditional bank branches; and (iv) the level of digital commerce, including merchant payments and e-commerce platforms.

These enabling factors can determine viability of the value proposition—for example, low smart phone penetration and connectivity limit the addressable market for most digital banks. They also shape the business model, for example, TymeBank's approach of using retail stores as distribution partners compared to UnionBank's approach of cooperating with rural banks. Finally, they shape the operational model, for example, Kotak 811's use of a video-based KYC process that leverages the Indian ID system and UnionBank's use a solution developed by Jumio.

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