

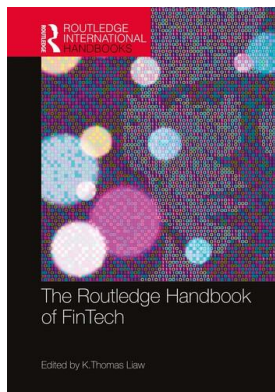
This article was downloaded by: 10.2.97.136

On: 24 Mar 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



The Routledge Handbook of FinTech

K. Thomas

Is FinTech a threat or a promise to banks?

Publication details

<https://test.routledgehandbooks.com/doi/10.4324/9780429292903-16>

Krishnan Dandapani, Mohammad Hashemi Joo, Yuka Nishikawa

Published online on: 15 Jun 2021

How to cite :- Krishnan Dandapani, Mohammad Hashemi Joo, Yuka Nishikawa. 15 Jun 2021, *Is FinTech a threat or a promise to banks?* from: The Routledge Handbook of FinTech Routledge
Accessed on: 24 Mar 2023

<https://test.routledgehandbooks.com/doi/10.4324/9780429292903-16>

PLEASE SCROLL DOWN FOR DOCUMENT

Full terms and conditions of use: <https://test.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

IS FINTECH A THREAT OR A PROMISE TO BANKS?

Krishnan Dandapani, Mohammad Hashemi Joo and Yuka Nishikawa

1 Introduction

The Financial Stability Board (2019) defines FinTech as a “technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.” Thakor (2020) cautions that the definition of the term FinTech has a variety of academic and practical interpretations. His working definitions include innovations in payment systems (including cryptocurrencies), credit markets (including P2P lending), and insurance, with blockchain-assisted smart contracts playing a role. In this chapter, we propose financial technology, often referred to as FinTech, as the innovation that combines newly developed technologies with traditional methods by financial services institutions and providers. Huang (2019) advocates that common FinTech used by banks include cryptocurrency, mobile banking, the use of mobile devices, and other investing platforms. Although disruptive innovation technology offers several challenges, FinTech impacts banking models and operations significantly and positively, offering numerous opportunities for further improvement in the future. One important catalyst for banks adopting FinTech is disruptive innovation. Disruptive innovation plays a noteworthy role in banking. Possibly, one of the most important disruptive innovations in the banking sector is the introduction and adoption of the internet within financial operations, which transformed the banking sector and its functionalities. Another major way disruptive technology has impacted banking is through its enhancement of institutional detection and prevention of fraud, a significant task. Other areas where FinTech disruptive technology has played a significant role include the area of bank payments and remittance systems and wealth management structures. Optimizing the use of customer data for analytics, lending, and the use of emerging RegTech and InsurTech techniques are the latest areas that are being impacted by disruptive technologies and that banks should look forward to.

Bofondi and Gobbi (2018) suggest that FinTech is introducing new products, business models, and players in the financial landscape. Elaborating on the relationship between FinTech and banks, they argue that FinTech represents a serious challenge for the traditional banking business model. They recommend that a flexible, pragmatic and open-minded approach to FinTech regulation is optimal. Boot (2018) reinforces information technology’s

leading role in the transformation of banking. As the deepening of financial markets has profoundly affected the business of banking, new technology driven players entering the financial services industry are the latest manifestation of the impact of information technology on the industry. Dermine (2018) identifies and analyzes the different digital disruptions on bank functions and the technological innovations that impact the banking industry: electronic processing of data, telephone banking, internet, smartphones, blockchain decentralized ledger technology, cloud computing, and applications of artificial intelligence with robo-advisors. Goldstein et al. (2019) propose that while the scope of activity in FinTech started with mobile payments, money transfers, peer-to-peer loans, and crowdfunding, it has now spread to the newer world of blockchain, cryptocurrencies, and robo-investing. Startup firms with new technology are racing to fill the holes in the customer experience left by traditional firms in all of these dimensions.

One recurring theme in contemporary finance is that large banks also want to be tech companies. The internet revolution and the availability of cheap internet, along with advancements in mobile phones and smartphones, have been a catalyst for the increased use of FinTech in many banks across the world. As Rajkumar et al. (2020) suggest, FinTech is also currently used in increasingly automated areas such as risk management, trading, banking, and insurance services, among others. The banks, deeply affected by the 2008 global financial crisis and limited by regulation, want to reduce their reliance on capital-intensive risky businesses and get more into the business of providing technology-driven platforms for their customers. In contrast, the reason major tech companies want to become a bank (curiously named TechFin) is due to the fact that managing customers' personal finances in addition to providing them new streams of revenue affords the companies an opportunity to obtain sensitive and very valuable personal data regarding the financial behavior of their customers. The traditional strengths of banking institutions have been customer trust, large customer and depository base and knowledge, and expertise in dealing with regulation compliance. The technology companies, TechFins and the evolving FinTechs, on the other hand, have the capability and agility to respond quickly and incorporate changes in concurrent time, the talent to offer innovative and newer products and services over time that enhance the customer experience, and the capacity to attract digitally savvy customers, such as millennials and other non-banked individuals, through different platforms and social media.

2 Why FinTech

Regulatory constraints, cultural dissonance, and legacy systems

Since the internet revolution and the ubiquity of the smartphone, FinTech has grown explosively. FinTech was originally focused on computer technology that could expedite the back-office operations of financial institutions, but now it has been transferred to technological innovations using personal and commercial finance. Tech companies such as Apple using Apple Card, Facebook using Facebook Pay, and Google launching checking accounts with Citigroup were trying to break into the financial services arena during the 2000s but eventually realized that instead of competing with established customer base banks with strong loyalty, it would be more advantageous to collaborate with those institutions. Much of the early lessons learned by these firms are from two prominent failed entrants of non-banking institutions. In 1994, Microsoft founder Bill Gates (see Cortese and Holland 1994) argued that while the world needed the services banks offer, it did not need banking institutions, which have become relics of an earlier era. As reported in the article, Microsoft announced the

purchase of Intuit Inc., the maker of Quicken personal finance software, hoping to offer everything from mutual funds to brokerage services over its network. This initiative, however, was quickly aborted in 1995 due to a long-winded and complex regulatory approval process that the institution had to confront. Similarly, Walmart, a multinational retail behemoth, failed in its efforts to get a bank charter due to numerous technical obstacles and regulatory hurdles in 2007; this failure provided a detailed roadmap of challenges and impediments in this domain. Three decades after Microsoft Gates' prophecy of banks becoming dinosaurs, the growth of mobile internet and smartphone technologies are accelerating an existential threat for banking institutions from technology institutions. The banking industry is most vulnerable to technological disruption by technology institutions, as they are financial information warehouses that can be easily utilized and exploited by software companies. The primary value proposition of financial services is that it is a collection of information rather than a physical commodity; managing this well is relatively costless and uncomplicated for tech firms. The information centered nature of bank data is ideal for machine learning, protocols' codes, and for electronic processing. Due to regulatory and accounting guidelines, banks' transparent and highly standardized systems make them ideal candidates for data access and utilization for technology firms. However, two great impediments to FinTech companies are Bank Secrecy laws and Money Transmission regulations.

Philippon (2016) identifies other reasons. He opines that banks' financial services remain surprisingly expensive, which explains the emergence of new entrants. He argues that the prevailing regulatory approach is subject to significant political economy and coordination costs and, therefore, unlikely to deliver much structural change. FinTech, on the other hand, can bring deep changes and access to services, but FinTech is likely to create significant additional regulatory challenges. Navaretti et al. (2018) conclude that FinTech enhances competition in financial markets, provides services that traditional financial institutions do less efficiently or do not provide at all, and hence, FinTech widens the pool of users for such services. While FinTech provides a more efficient way to do the same old things, it will not replace banks in most of their key functions. They strongly suggest that banks are well placed to adopt technological innovations and contest competition. Chen et al. (2019) provide large-scale evidence on the occurrence and value of FinTech innovation. Using data on patent filings from 2003 to 2017, they find that most FinTech innovations yield substantial value to innovators, with blockchain being particularly valuable. For the overall financial sector, internet of things (IoT), robo-advising, and blockchain are the most valuable innovation types.

One major constraint in FinTech development in the United States has been its regulatory landscape. While the Office of the Comptroller of the Currency was supportive of the idea of awarding a special bank charter for FinTech companies, there was opposition and discord from state regulators who opposed the charter. A federal court decreed in October 2019 that a federal banking regulator does not have the authority to grant national charters to FinTech companies, effectively eliminating this option.

The second major challenge for FinTech development is the clash of cultures between traditional banking firms and newer technology firms. Organizationally, the merger or marriage of finance and technology is as much a clash of cultures as it is of identities. While technology progression inherently emboldens risk taking — innovation is common and failures are rampant — the traditional banking industry highly cherishes stability, safety, and security and implements extreme measures to avoid failure due to the conservative way of doing things. Also, bank regulators from a macro perspective value stability and have a disinclination to support potential failures; failure of institutions covered by depository insurance

and subsidized by taxpayers could accentuate moral hazard problems in the economy. The regulatory forbearance of failures could have broader economic and legal implications. While failure, a high tolerance for uncertainty, error, and correction are common characteristics for technology companies, these attributes contrast with banking practices. Technology companies' ways of experimenting with processes and protocols and successive improvisation and inventiveness are not compatible with banking business practices. From a banking viewpoint, one could argue that what is an integral characteristic of a tech firm's innovation and operation routine to achieve higher performance and efficiency could have an adversarial effect on regulatory intervention if such ventures are backed by depository insurance.

For example, both the American FinTech company Square and the Japanese e-commerce company Rakuten, which cannot legally lend to their customers, have both applied for a bank license and have faced stiff opposition from embedded banks that feel these companies pose an existential threat. LendingClub Corporation's business model was to match borrowers and investors; it tried to become a bank by acquiring Radius Bancorp for US\$185 million to achieve greater regulatory clarity and a less-expensive form of funding for its loans. Zillow, which grew its real estate commission earning, match-making intermediation platform to connect buyers and sellers, decided to take a risk, commit capital, and become a bank. Facebook's proposed plans to offer a new digital currency called Libra, which would form the basis of a global payments network that could sidestep banks, would be another infringement on banking turf. Apple's and Google's efforts to speed up the creation of payment systems create a predatory threat to the banking industry, which has spent more than one billion dollars in developing a legacy system. While all of these attempts by tech companies may be efficiency-enhancing, the cultural dissonance and the operational perspective of banking have led to the growing distrust of technology companies. These institutions have been perceived as having demonstrated shortcomings in the protection of privacy regulations and secrecy laws of individuals, thereby accentuating a Techlash, or backlash, against technology companies. The battle between banks and tech is escalating on multiple fronts in the arena of regulators. For example, in 2019, Facebook faced stiff political and regulatory obstruction for plans to launch the Libra digital currency and lost several big financial institutions as partners. Meanwhile, numerous governments are actively exploring the concept of digital and cryptocurrencies.

The third major challenge is the established legacy system of rewards and customer behavior. While China and India are witnessing rapid adoption of smartphone and digitalization in the payment system industry, FinTech's reach in other developed countries is far less. Despite growing smartphone dependence, with more than 81% of Americans owning a smartphone in 2019, major mobile payment apps had adoption rates of less than 10% in the United States the same year. In contrast, more than 80% of consumers in China have used mobile payments. In the United States, established legacy financial systems as well as multitudes of ubiquitous efficient options (such as Apple Pay, Google Pay, Samsung Pay, PayPal, Venmo, Square Cash, Zelle and rewards cards) have seen major headwinds. Conventional methods are still winning in the United States. In 2019, 80% of consumers used credit cards for purchases, according to consulting company Bain. PayPal was the most popular nonbank option at a 40% adoption rate, but it is largely used for online payments. Apple Pay had 9% adoption. It has been easier to adopt mobile payments in emerging economies that, historically, were very cash-based.

The FedNow Service, which is set to begin by 2024, will enable real-time payment and could change the mobile-payment landscape because of its capability to immediately transfer money. This service could change the current mobile-payment state by allowing

entrepreneurs and companies to take advantage of the direct, real-time access to customers' accounts. It could also inspire more bank-like offerings from tech giants such as Facebook's WhatsApp, Amazon, and Google embedding mobile payments. However, for this to be successful, these FinTechs must have a compelling value proposition to convert the customer base. While it could help nonbanks to move into the payment space, credit card payments in the United States may still co-exist, as individuals value the inherent time delay for payments. While immediacy of payment is highly advantageous to the seller, from the borrower perspective the delay in the conventional payment system is still valuable, as it enhances liquidity as well as enables pecuniary and other coveted rewards that credit cards offer. Thus, differing models will offer niche services for customers.

How can we make FinTech work?

While FinTech is changing the world of finance, institutions have to leverage the strengths of the two competing industries. Generally, banks have the depositor base: legacy relationships,

Panel A: Brick and mortar community banks with contemporary tasks

Lending	• Affects marketplace lending and alternative underwriting platforms
Mortgage/Real Estate	• Affects mortgage lending, digitization, and financing platforms
Personal Finance	• Enables tools to manage bills and track personal and/or credit accounts
Wealth Management	• Creates investment and wealth management platforms and analytics tools
Payments/Billing	• Improved payments processing, card developers, and subscription billing software tools

Panel B: Evolving FinTech enables digital banking by incorporating additional automated functionalities

Blockchain/Crypto	• Enables banks leveraging blockchain technologies for financial services
Capital Markets	• Automates sales and trading, analytics protocols, and infrastructure tools for financial institutions
Money Transfer/Remittances	• Incorporates international money transfer and tracking software
Insurance	• Promotes companies selling insurance digitally or providing data analytics and software for (re)insurers
Regtech	• Optimizes compliance in audit, risk, and regulatory compliance using software

Figure 13.1 FinTech impact on banking operations

Figure 13.1 is based on CB Insights Global FinTech Reports (2019). See that article for a detailed discussion of the issues presented here.

scope, and scale of economies. New FinTech companies have an innovation edge, enabling efficient client interface, speed, and accuracy of operations. In the competitive landscape, banks have to use innovation in each of the product segments, including payments, lending, and savings, to achieve operational efficiency.

Figure 13.1 Panel A and Panel B identify some of the major areas of banking operations affected by FinTech. Panel A details the impact on brick and mortar community banks while Panel B presents the effects on digital banks and how the functionalities change.

3 Prospects and challenges of FinTech

One of the biggest challenges facing banks is cybercrime, and FinTech offers some efficient and optimal solutions to prevent and combat cybercrime in finance. Voice and facial recognition technologies have been successful in establishing a linkage to digitalization, and incorporation of biometric tools will be the next-generation identification controls to fight financial fraud. These measures will ensure secure transactions, elevating enhanced customer user experience.

As previously noted, the second challenge faced by FinTech is regulatory constraints. As digital banking evolves, enforcing regulations and implementing government guidelines and mandates become difficult and expensive to administer in synchronized time using traditional banking legacy systems. FinTech offers an easy resolution by establishing automated, interactive, fail-proof routines and protocols.

The third major challenge FinTech addresses is the knowledge gap of consumers. Another strategic advantage of FinTech is in customer retention. Customer retention becomes a significant challenge as predatory competitors offer a wide array of optional services and products using social media, leading to cannibalization of the customer base. This predatory competition can lead to an erosion of the customer base, affecting profitable segments, products, services, and margins. Standardization and personalization of FinTech protocols enable automation to provide easier, less expensive access due to the economies of scale and scope. Finally, the integration of Artificial Intelligence systems (AI) into operations is one of the most significant enhancements offered by FinTech firms and can be a useful tool. While AI is expected to transform multiple aspects of the banking industry, its efforts to curtail financial fraud are valuable. Banks may have to invest in machine learning techniques, data analytics, and AI systems as well as develop products such as robot advisor to confront competition. These are presented in Figure 13.2.

4 Why banks need FinTech

The adoption of FinTech is not only an efficiency enhancing opportunity, but it is also a response to customer needs. As banks shift from physical interactions and move to digital engagement, they achieve significant enhancement of revenues, cost reductions, and customer satisfaction. Enhanced technology enables banks to generate additional revenue streams.

Banks with open Application Programming Interfaces, or API, empower FinTech firms to build applications that utilize their infrastructure. This affords new opportunities for both cost reduction and revenue growth. As the banking ecosystem expands beyond traditional banking services, new products can be developed, and potential customer segments can be expanded to provide differentiated offerings and monetization opportunities. The use of open APIs enables third-party developers to build applications and services around financial institutions. There are several jurisdictions that have implemented a version of

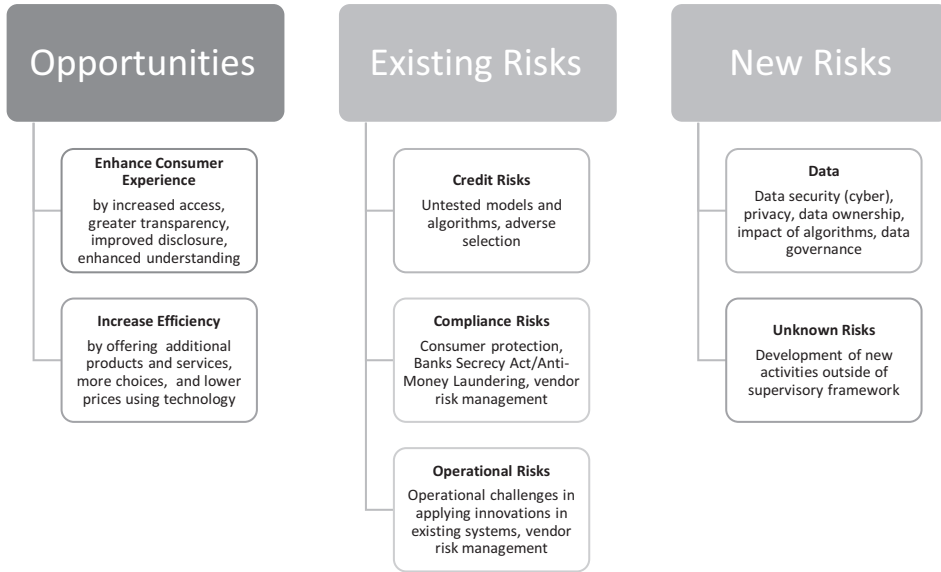


Figure 13.2 Banks prospects and challenges impacted by FinTech

open banking, including the European Union (EU) via General Data Protection Regulation (GDPR), the United Kingdom, and Australia. It allows access to data, which is a cherished commodity in financial services, potentially allowing FinTechs to access financial data and develop solutions to capture the customer relationship.

Among the numerous advantages FinTech companies bring banks, the following have the greatest potential for efficiency enhancement: First is the introduction of chatbots for customer services, which enable instant interaction and enhance communication. The machine learning and artificial intelligence (AI) for fraud detection systems address a significant and consistently problematic area. AI systems adopted by many banks also improve automatic compliance as they help process transactions quickly and efficiently. Automated processes of standardized systems help mitigate errors by humans. AI systems also are very helpful in meeting the e-KYC (Know Your Customer) requirements that are required of banks and help in connecting with customers seamlessly, thereby making interactions more compatible. Customers' identity can be verified by the use of a mobile app and voice recognition as well as by other biometric processes. AI analytical tools can process large volumes of data, enabling the development of multichannel customer access, and can be used to achieve greater insight into customer needs. This enables banks to turn out products and services that are tailored to customer needs.

Evolving Omni-channel banking channels reduce the redundancy of brick-and-mortars, reinforce cost containment, and necessitate the implementation of biometrics, thereby bolstering stronger customer security. The enhancement of confidence and trust is a prerequisite for the evolving blockchain applications of digital transactions and distributed ledger technology. By fully embracing these technologies, banks can speed up transactions while ensuring security and lowering costs. The evolving Distributed Ledger Technology (DLT) has the potential to affect significant changes to financial services. Some DLT developments focus on facilitating value transfer exchanges between parties without the need for intermediation by traditional financial sector participants, by reducing settlement times or improving the

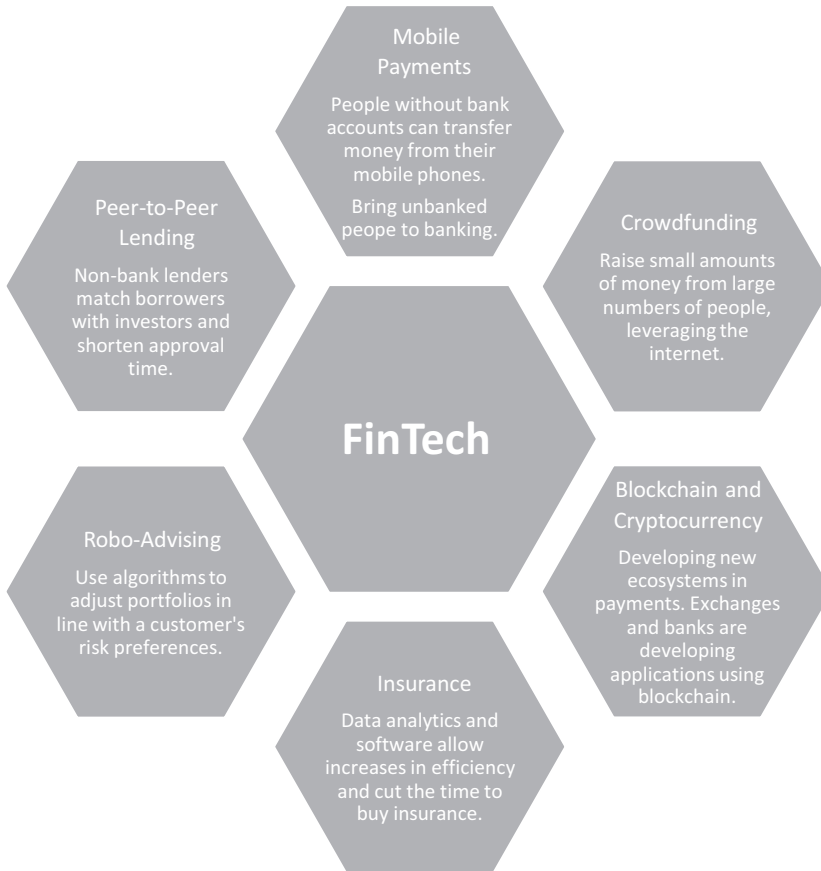


Figure 13.3 Evolving FinTech possibilities and potentials

Source: Figure 13.3 is based on the works of Robinson and Verhage (2018). See their presentation for a detailed discussion of the topics outlined here.

transparency of recordkeeping and reporting. The DLT solution could benefit by eliminating data duplication and reducing maintenance costs to support different databases.

Another frontier area banks can use and benefit from is cloud computing. This allows computer processing resources to promote efficiencies and economies of scale. Cloud computing platforms offer several benefits, including cost savings and reduction of computer technology budgets and resources. Numerous cloud applications have been deployed in the banking arena, including public, private, and hybrid clouds. These developments may shape future banking models. Many of the startup FinTechs are developing numerous APIs that are expected to benchmark Banking as a Service (BaaS) using cloud platform, and bankers expect these applications to grow in the years to come.

Figure 13.3 presents the evolving FinTech possibilities and potential.

5 Disruption, regulation, and FinTech

Treleven (2015) identifies the major regulatory barriers to financial innovation and how the rapid improvements in technology are enabling financial services' business models that were

not operationally feasible in earlier decades. However, these innovations and newer business models of banks have to operate within a regulatory system that is struggling to keep pace. In response, regulators are starting to establish a new relationship with the financial services industry, including FinTech companies, telling them what they wish to achieve. The companies can respond with how they will deliver the regulatory requirements. This is likely to involve a better use of technology to support people processes, including a real-time analysis of transactions: online registration, international standard data formats, standard (risk-weighted) asset indices, automated reporting, opensource compliance systems, and big data analytics. A notable example is PayPal's use of a new decision-making model — SMART Governance — to better deliver the goals underlying payment)regulation in a manner that benefits government, consumers, and industry.

While studying the mortgage markets, Buchak et al. (2018) use a simple model to decompose the relative contribution of technology and regulation to the rise of shadow banks. Their study shows that increasing the regulatory burden faced by traditional banks and growth of FinTech can account, respectively, for about 70% and 30% of the recent shadow bank growth. Shadow banks with predominately online mortgage application processes, FinTech lenders, accounted for roughly a quarter of shadow bank loan originations by 2015. Relative to non-FinTech shadow banks, FinTech lenders serve more creditworthy borrowers and are more active in the refinancing market. They appear to use different information in setting interest rates, consistent with a big data component of technology, and charge a convenience premium of 14–16 basis points.

Thakor (2020) examines InsurTech, the branch of FinTech that is dedicated to the insurance sector. The basic economics driving FinTech in insurance is that connected devices (phones, watches, computers, etc.) in homes, cars, and worn as personal gear gather huge amounts of personal information about individuals. This leads to big data that insurance companies can use to calculate risk more precisely and in a more dynamic way than they do presently.

Figure 13.4 classifies the disruption in the retail banking sectors that is happening due to a combination of regulation and technology.

6 US banks and FinTech

While some describe FinTech as a threat to traditional banking, it is quite obvious that FinTech plays an inevitable role in banking in today's digital world. One of the main drivers of the rapid growth of the FinTech banking industry is the shift in customer base in banking. As millennials come to represent a large segment of the bank customer population, banks have no choice but to prioritize their preferences and needs. They are not only more familiar with the internet and mobile apps but also more conscious about speed, convenience, and transparency in services than their older counterparts. On the banks' side, there are two main motives. One is the potential for high returns. For this purpose, banks, corporate venture capital groups, and strategic bank funds will invest in a startup strictly for the purpose of future returns, as well as to gain exposure to emerging subindustries. The other is strategic partnerships. In this case, a bank will invest strategically, partnering with a FinTech startup to further its own internal goals.

US banks have been actively investing in FinTech. The record-breaking 45 equity deals made with FinTech startups by US banks in 2018 confirm how they are preparing themselves for the technology-driven future. Among those major banks that operate in the US, Goldman Sachs, Citigroup, and J.P. Morgan are the top three firms that have been aggressively

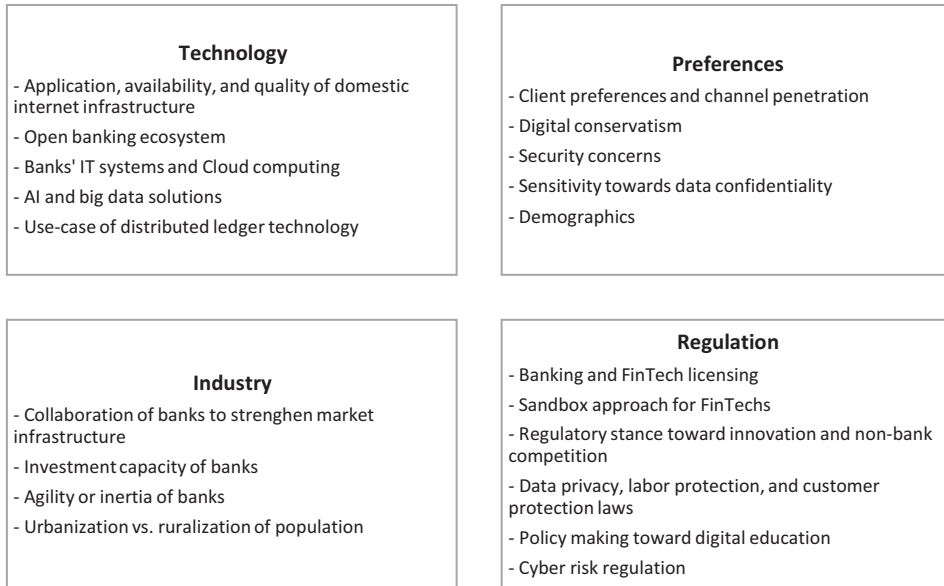


Figure 13.4 Disruption in retail banking sectors

Source: Figure 13.4 is based on the work of Schmaus, Duran and Steinaecker (2019). See that article for a detailed discussion of the concepts presented here.

spreading their wings in the new technology. Morgan Stanley, Wells Fargo, Bank of America, and PNC Financial Services Group are also known to be active investors in FinTech startups.

The primary fields of FinTech in which the major US banks' funds flow are payments and settlements, capital markets, and data analytics. The payments and settlements mainly consist of payment infrastructure for business and consumers as well as trade settlement solutions. The capital markets category includes enhancement of operations, trading, securities issuance, and clearance. The data analytics provide artificial intelligence and machine learning based support for data cleaning and comprehension.

While these are the common types of FinTech that major banks foresee using in the future, each bank takes a different approach in their FinTech investments. Goldman Sachs, the largest FinTech investor, has mostly bet on data analytics, payments, and settlements as well as real estate. These deals appear to have been made to scale Marcus, Goldman Sachs' consumer brand, offering an online platform initiated in late 2016. Marcus provides consumers with personal loans, high-yield savings, and certificate of deposits in a transparent and simple way. The bank currently uses a platform by Even Financial, a FinTech firm that specializes in digital matching between consumers and banks' product offerings and that Goldman Sachs invested in back in 2018. Citigroup focuses on a strategy of building open banking infrastructure and has invested in blockchain, capital markets, and payments and settlement since 2017. In the meantime, J.P. Morgan retains its focus on its capital market solutions and payments business.

7 Global FinTech market

FinTech is reshaping the traditional role of financial services. While this is a borderless affair, the global FinTech market has seen segmentation in implementation of new technologies at a national level based on the needs of consumers and the existing financial ecosystem. Among

Table 13.1 Top FinTech firms in 2020

Name	Valuation	Focus
1 Stripe	\$22.5 billion	Online platform designed to integrate electronic payments and to enable secure transactions
2 Coinbase	\$8.1 billion	Currency exchange brokers of Cryptocurrencies such as Bitcoin, Ethereum, Lite coin in approximately 32 countries
3 Robinhood	\$7.6 billion	Investment platform that offers commission-free trading in stocks, ETFs, options, cryptocurrencies
4 Klarna	\$5.5 billion	A Swedish bank that provides online financial services
5 Social Finance (SoFi)	\$4.8 billion	An online personal finance company that provides student loan refinancing
6 Credit Karma	\$4.0 billion	Multinational personal finance company providing free credit report and financial management platform
7 Opendoor	\$3.8 billion	An online real estate marketplace simplifying home buying and selling
8 Gusto	\$3.8 billion	Cloud based technology company helping with payroll processing, benefits, and HR services
9 N26	\$3.5 billion	German direct bank that offers its services throughout Eurozone providing account and card services
10 TransferWise	\$3.5 billion	Online money transfer supporting currency exchange

Source: Table 13.1 data source is from various issues of *Fortune Magazine* (2020).

all, a small number of countries including China, Hong Kong, and Singapore have been leading the new era of financial services in the past few years.

While analyzing trends in European and US Banks, Romanova and Kudinska (2016) conclude that timely integration of FinTech into business allows banks to get an advantage in growing competition. They recommend that commercial banks strengthen the provisions in financial innovations and control risks associated with the introduction of financial innovations. Demertzis et al. (2018) conclude that FinTech has the potential to change financial intermediation structures complementing Europe's bank-based operations substantially. It could disrupt existing intermediation with new business models empowered by intelligent algorithms, big data, cloud computing, and artificial intelligence. Lower costs and potentially better consumer experiences could be the driving forces. Yet, empirically, FinTech remains very small, especially in the EU. In the EU, much of FinTech is concentrated in the UK.

China is one of the leading countries in innovation, including FinTech. The unique landscape of the Chinese market where physical banking infrastructure is relatively undeveloped as a large finance market may have laid the groundwork for the explosive advancement of the digital market. China is home for the world's giant FinTech firms such as Ant Financial and Tencent. Almost three quarters of online lending transactions, as well as approximately half of the global digital payments, take place in this nation. The top two players in the advanced digital payment arena, Alipay by Ant Financial and WeChat, together account for \$2.9 trillion worth of transactions as well as more than 1.5 billion users in 2019.

Ant Financial Services is a spin-off from the Alibaba Group, a multinational technology company from China. Ant Financial received the highest valuation among all FinTech companies in the world, with the amount of \$150 billion in 2018. Ant Financial operates several financial units including Alipay, Ant Fortune, and Ant Financial Cloud, and these units

together provide services in payments, cloud computing, credit reporting, private banking, and wealth management

FinTech is also rapidly transforming the operations of Chinese commercial banks. Privately owned banks as well as state-owned banks, such as Bank of China and China Construction Bank, have created their own FinTech subsidiaries in recent years. They put emphasis on cloud computing to enhance efficiency as well as retail and corporate banking services.

Similar to Mainland China, Hong Kong is also a center of digital transformation in finance. It has one of the fastest growing economies in the world. Unlike Mainland China, Hong Kong creates a landscape for free trade with low taxation, and this applies to the finance industry as well. Despite this openness, Hong Kong still utilizes a currency pegged to the US Dollar. While the market is dominated by traditional banks, the finance sector has recently opened the door to the digital market, and FinTech is slowly increasing its presence in the market. In 2019, the Hong Kong Monetary Authority (HKMA) offered virtual banking licenses to eight financial institutions including Ant SME, a subsidiary of Ant Financial, granting the right to digitally provide financial services in the region.

Singapore is known not only for its rapidly growing economy but also one of the largest international financial markets. It houses the headquarters of world-class banks as well as main branches of the largest multinational banks in the world. Because of this, financial institutions in Singapore must stay competitive, resulting in efficient operations. This environment has contributed to the remarkable evolution of the FinTech ecosystem in Singapore. The Monetary Authority of Singapore (MAS) has invested actively in blockchain technology, artificial intelligence, data analytics, and cybersecurity in recent years. Hundreds of FinTech ventures have been initiated in this region, and a number of multinational banks have chosen Singapore to develop their FinTech units. In Singapore, five factors crucial to the success of FinTech have been identified as: 1. Government support; 2. Conducive regulatory framework; 3. Active and developed secondary financial markets; 4. Availability of capital; 5. Talent. The government and industry have aggressively pursued to make this available. It is estimated that in 2019 the Singapore FinTech Association had 3,000 trained FinTech professional members and an additional 7,500 students in training. Globally, mobile payments have been a key early developer with broad implications for inclusion. Africa has seen rapid growth in mobile money as a driver for greater financial inclusion; while both Asia and the European FinTech market is growing rapidly, the focus in Europe remains unevenly distributed. Many important infrastructural gaps and regulatory impediments remain.

An analysis of the FinTech firms in Asia reveals that there are three main technologies that are currently shaping FinTech developments, and these are focused on payments, micro-credit lending, and insurance. Some prominent technology firms providing FinTech services in Asia are Grab in Singapore, Go-Jek in Indonesia, and Alibaba and Tencent in China. Studies that have examined the impediments to global growth of FinTech identify the increased risks posed by FinTech to banking systems and gaps in the regulatory monitoring frameworks.

In the United States and Europe, only a small fraction of the consumer banking wallet has been disrupted by FinTech so far. Emerging markets often have a high percentage of unbanked population, relatively weak consumer banks, and a high penetration of mobile phones. Hence, they are ripe for FinTech disruptions. M-PESA launched in Kenya in 2007 has at this time of writing 23 million active customers in 11 countries. In Somalia, mobile money has a profound impact, with about 40% of adults users. Similarly, in the giant Asian countries such as India, Indonesia, and the Philippines with an almost 400 million unbanked

population, mobile money can also help solve a societal problem. This has led many policymakers and world central bankers to have a favorable view of FinTech. Many regulators understand that FinTech can help these nations leapfrog the growth and impediments of the unbanked population and help in the policies of financial inclusion.

By contrast, China is past the tipping point: FinTech companies have both scale and innovation. India is the next biggest opportunity. Paytm, considered to be a cashback business model in India, has become an undisputed leader in the domain of mobile payments, e-wallets, and e-commerce. Paytm had a great impetus to growth due to the government decision to demonetize, and mobile payments became one of the prime sources to run the economy. Taking into consideration the lack of flow of cash, people were lured to use Paytm. This company, which was originally targeting tech-savvy millennials due to an oddity of regulations, became the torchbearer of the cashless economy. Demonetization opened a new door of success to the company. It helped the company spread its base among less-educated and digitally aware people, such as hawkers and street vendors. This unique approach helped it gain 100 million registered users. In 2019 the company was valued at \$8 billion.

In a joint study of IMF and World Bank, which prepared the Bali FinTech Agenda (IMF 2018), there are an estimated 1.7 billion adults in the world without access to financial services. These global central monetary institutions concluded that FinTech could have a major social and economic impact on the welfare of the population. This study encouraged national governments and central banking institutions to adopt and deploy rapid advances in financial technology to help the unbanked. The Bali FinTech Agenda was focused on supporting the Sustainable Development Goals particularly in low-income countries, where access to financial services is low. The way forward for countries demanding deeper access to financial markets was by delivering FinTech solutions that enhance financial services, mitigate risks, and achieve stable, inclusive economic growth for the welfare of banking customers.

8 Neobanks — threats to banks and FinTech companies

While the big technology firms were focused on FinTech solutions, globally numerous neobanks started targeting potential product and service segments of consumer and small-business loans. As per consulting company McKinsey, in 2019 there were 5,000 startups worldwide offering new and traditional financial services. This has increased threefold in three years. A CB Insights study shows that these neobanks attracted more than \$3 billion in venture capital funding. Technology developments and venture capital support have enabled many disruptive startup companies to expand. With less than \$500,000 in capital and a few months of concentrated work, many startups can offer bank products. Using middleman platforms, tiny neobanks can offer big-bank products: savings accounts insured by the Federal Deposit Insurance Corporation, checking accounts with debit cards, ATM access, credit cards, currency transactions, and even paper checks. This landscape frees FinTech entrepreneurs to concentrate on cultivating their niche. While investors invested more than \$53 billion in FinTech startups globally, much of the new institutions in 2019 were digital-first banks. One example is MoneyLion, a neobank whose app offers free checking accounts, debit cards, and paycheck advances as well as managed ETF portfolios. Dave is a \$1-a-month app whose five million-plus users get help building their credit scores, plus checking accounts with no minimums or overdraft fees. In Insurtech, there are four new companies to break into the ranks, including Ethos, which uses predictive technology to quote term-life insurance prices in 10 minutes and verifies applicants' self-reported data with their medical and pharmacy records,

so that most are approved without a medical exam. In all, 19 companies on 2020 FinTech 50 — the fifth-annual list — are first-timers.

9 FinTech impact and evolving bank models

During this stage of transformation, there is a resulting increase of uncertainty in the global financial system developments. During this stage, the economic system suffers from the complication of institutional structures. FinTech plays an important role in the modern transformation of the financial system. FinTech not only helps to improve the financial activity, but it also increases its profitability.

The majority of FinTech focuses on providing improved banking assistant services, development of an accounting background, and payment systems, in contrast to modern FinTech that focuses on innovations such as cryptography and cloud technologies. Additionally, the main function of FinTech is to create innovations in financial systems. The new digital economy is influenced by people, their behaviors, and new values. With the development of the internet, there are no clear boundaries for the rapid spread of modern information technologies.

Banking institutions experience the greatest threat from FinTech. According to PWC consulting company, 24% to 28% of banking business can go to non-financial companies. Nowadays, mobile apps are used to borrow from other people than provide loans themselves. Most of the time, commercial banks actively implement digital banking and provide financial services through mobile and online platforms.

Following Hatami (2015), we can demarcate and classify the five potential scenarios for FinTech developments as:

1. The better bank. Modernization and digitization of incumbent players.
2. The new bank. Replacement of incumbents by challenger banks.
3. The distributed bank. Fragmentation of financial services among specialized FinTech firms and incumbent banks.
4. The relegated bank. Banks become commoditized service providers, and customer relationships are owned by new instruments.
5. The disintermediated bank. Banks have become irrelevant as customers interact directly with individual financial service providers.

10 Conclusion

The future of the financial system is going to be a mix of banks and non-banks, and the winners will be those who can rapidly transform themselves in the emerging landscape. As technology companies try to solve problems with hardware and software, transformation will occur when they realize that their goal is more about providing digital tools to address bank efficiency than trying to be a bank. While technology companies have been eyeing a bank charter as a particular piece of technology, like a mobile app or a blockchain, the inherent business culture would change the implementation process. The future of banking is for those institutions that can embed digital technologies in virtually all of their practices and processes.

Banks that are successful in automating services and building products and services that customers can access continuously from remote corners easily will maintain a competitive advantage. Due to the fast-moving pace that the FinTech industry has been experiencing, it

is inevitable it will have a major impact on the banking industry in the near future. Future trends will see more new models of collaboration between startups and traditional banks.

The future of banking is highly dependent on the ability of financial institutions to control customer powers, their insights, current analytics, and technological advancements. It will also depend on whether banks offer innovative products and services that match today's tech-savvy consumers and help them manage finances and live better than they do currently. In the forthcoming years, the banking models, inspired by the Fourth Industrial Revolution will adopt the internet of things technology and artificial intelligence to its old legacy systems. As the projected number of internet-connected devices by the year 2025 will be in excess of 75 billion, significant modifications to existing bank models will be necessary. Due to technology capabilities, customers will be accessing and transferring balances and payments digitally, and biometrics authentication will become routine. Chen et al. (2019) conclude that innovations affect financial industries more negatively when they involve disruptive technologies from nonfinancial startups, but market leaders that invest heavily in their own innovation can avoid much of the negative value effect. While evaluating FinTech platforms by analyzing data, Thakor (2020) concludes that FinTech underperforms traditional bank performance, raising the question whether FinTech platforms will continue to remain unlevered, or will they eventually rely on the high-leverage strategies of banks?

Another emerging development is the application and adoption of quantum computing. It is unclear whether the technology is moving beyond the hype. AI laboratories predict that small quantum technologies will be commercially available in five years and will help businesses increase revenue, reduce costs, and lower investments in infrastructure. The evolving big themes of FinTech are focusing on lowering the fees and commission charges. Schwab, TD Ameritrade, and Etrade all dropped their trading fees to \$0, matching Robinhood and Square. Every technology company big and small is entering into the banking business. In addition to the big firms such as Apple, Google and Facebook, FinTech startups Acorns, Betterment, and Dave have launched checking accounts. Uber and Lyft are adding banking features. There is huge saturation in banking services. Finally, blockchain made inroads within large enterprises. Fidelity launched a crypto custody service. Facebook has launched a new digital currency called Libra. J.P. Morgan created a digital coin (to speed up payments). Bison Trails, a startup, is helping companies build blockchain. Amazon Web Services is strengthening its cloud applications for financial services. All of this portends a glorious future for FinTech and banks.

Bibliography

- Arnoud, W.A. Boot (2018) The Future of Banking: From Scale & Scope Economies to Fintech, *FinTech and Banks: Friends or Foes?* European Economy, Banks Regulation, and the Real Sector, 3(2).
- Bofondi, Marcello, Giorgio Gobbi (2018) The Big Promise of Fintech, *FinTech and Banking, Friends or Foes?* European Economy, Banks Regulation, and the Real Sector, 3(2).
- Buchak, Greg, Gregor Matvos, Tomasz Piskorski, Amit Seru (2018) Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks, *Journal of Financial Economics*, 130(3): 453–483 Available Online: <https://doi.org/10.1016/j.jfineco.2018.03.011>
- CB Insights (2019) Global FinTech Reports Q1 2019. Available Online: <https://www.cbinsights.com/research/report/fintech-trends-q1-2019/>
- Chen, Mark A., Qinxi Wu, Baozhong Yang (2019) How Valuable is FinTech Innovation? *The Review of Financial Studies*, 32(5) May: 2062–2106. Available Online: <https://doi.org/10.1093/rfs/hhy130>
- Cortese, Amy and Kelley Holland (1994) Bill Gates is Rattling the Teller's Window. for Bloomberg 31 October, 33. Available Online: <https://www.bloomberg.com/news/articles/1994-10-30/bill-gates-is-rattling-the-tellers-window>

- Demertzis, Maria, Silvia Merler, Guntram B. Wolff (2018) Capital Markets Union and the Fintech Opportunity, *Journal of Financial Regulation*, 4(1) March: 157–165. Available Online: <https://doi.org/10.1093/jfr/fjx012>
- Dermine, Jean (2018) Digital Disruption and Bank Lending, *FinTech and Banking, Friends or Foes? European Economy, Banks Regulation, and the Real Sector*, 3(2).
- Financial Stability Board (2019) FinTech and Market Structure in Financial Services: Market Developments and Potential Financial Stability Implications Available Online: <http://www.fsb.org/what-we-do/policy-development/additional-policy-areas/monitoring-of-fintech/>
- Forbes Magazine* (2019) The Dawn of the Neobanks: The Fintechs Trying to Kill the Corner Bank. November 30.
- Fortune* (2019, 2020) Various issues reporting FinTech firms data and growth.
- Goldstein, Itay, Wei Jiang, G. Andrew Karolyi (2019) To FinTech and Beyond. *The Review of Financial Studies*, 32(5) May: 1647–1661. Available Online: <https://doi.org/10.1093/rfs/hhz025>
- Hatami, Alessandro (2015) The Future of Banking: Four Scenarios, October 5. Available Online: https://medium.com/@a_hatami/the-future-of-banking-a607c121ff9d
- Huang, L.K. (2019) Culture and Internet Banking Technology: Long-Term Orientation Over the Acceptance. *Handbook of Research on the Evolution of IT and the Rise of Esociety* (pp. 239–259). IGI Global.
- IMF (2018) Policy Paper on Fintech: 2018. The Staff Report prepared by IMF staff for Executive Board's consideration. Bali FinTech Agenda, October.
- IMF (2019) Policy Paper. FinTech: The Experience So Far: The Staff Report, prepared by IMF staff and completed on May 17 for the Executive Board's consideration on June 17, 2019.
- Navaretti, Giorgio Barba, Giacomo Calzolari, Alberto Franco Pozzolo (2018) Banking and FinTech: A Challenge or Opportunity? *FinTech and Banks: Friends or Foes? European Economy, Banks Regulation, and the Real Sector*, 3(2).
- Philippon, T. (2016) The FinTech Opportunity. National Bureau of Economic Research, Working Paper 22476, August 2016 Available Online: <http://www.nber.org/papers/w22476>
- Rajkumar, S.R., P. Ronak, V. Jha, D. Dilip (2020) A Research Study on Awareness of FinTech among Millennial. *International Journal on Integrated Education*, 3(2): 78–87.
- Robinson Edward and Julie Verhage (2018) Quicktake Fintech. Bloomberg, 26 November 2018. Available Online: <https://www.bloomberg.com/quicktake/financial-technology-companies-disrupt-comfy-banks>
- Romanova, I. and M. Kudinska (2016) Banking and Fintech: A Challenge or Opportunity? *Contemporary Issues in Finance: Current Challenges from Across Europe (Contemporary Studies in Economic and Financial Analysis)*, 98: 21–35. Available Online: <https://doi.org/10.1108/S1569-375920160000098002>
- Schmaus, M.W., C. Duran, S. Steinaecker(2019) The Future of Banking: Will Retail Banks Trip Over Tech Disruption? S&P Global Ratings, 14 May 2019. Available Online: <https://www.spglobal.com/en/research-insights/articles/the-future-of-banking-will-retail-banks-trip-over-tech-disruption>
- Thakor, Anjan V. (2020) Fintech and Banking: What Do We Know? *Journal of Financial Intermediation*, 41, January. Available Online: <https://doi.org/10.1016/j.jfi.2019.100833>
- Treleven, Philip (2015) Financial Regulation of Fintech. *Journal of Financial Perspectives*, 3(3). Available at SSRN: <https://ssrn.com/abstract=3084015>