CHAPTER 6

FinTech and Banking: An Evolving Relationship

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6.1 Introduction

The FinTech phenomenon has disrupted the banking industry. The technological transformation of financial services is resulting in a change of paradigm (Arner et al., 2017; Stiglitz, 2017) that is involving the arrival of new competitors, the emergence of new business models and the provision of fully digital financial services. Most of the new suppliers are the so-called FinTech companies (OECD, 2018; Thakor, 2020). These start-ups companies have benefited from their digital capabilities to innovate in the provision of financial services. Due to the adoption, new technologies—e.g. blockchain, artificial intelligence, big data, or biometrics—, FinTech have started to offer new financial services—e.g. digital payments, peer-to-peer lending, robo-advisory, or financial planning.

Since their emergence, shortly after the 2007–2008 financial crisis, FinTechs have gained gradually ground as alternative financial providers. Fintech credit activity has expanded rapidly in many countries over recent years, albeit from a very low base (Cornelli et al., 2020). The rise of FinTechs has also made them gain an increasing investors' attraction since 2012. In this sense, the growth of raised funds by the FinTech firms reveals that the FinTech phenomenon has achieved a certain degree of maturity. Simultaneously, the surge of new digital financial services, which are offered by non-bank companies, has also increased customers' expectations. Consumers have seen that there is a new way of providing financial services, resulting in a progressive adoption of a number of FinTech services. Worldwide, 6 out of 10 people are actively using FinTech services (EY, 2019). Consequently, the arrival of these new financial services providers and the irruption of new technologies in the finance industry have challenged the role of banks as traditional financial intermediaries.

The incumbent financial institutions have gradually undergone through its own digitalization process (Carbó-Valverde et al., 2020a), but it seems that this technological transformation remains a key challenge for the global banking industry. Unlike prior technological waves that have affected the banking industry (e.g. internet banking), the FinTech wave has the potential to lower barriers of entry to the financial services market, to elevate the role of data as a key commodity, and to drive the emergence of new business models (BIS, 2018).

Despite being a disruptive factor, the relationship between these start-ups and banks has changed over time. Initially, FinTech firms aimed to

disrupt the finance industry by replacing the traditional banks. This led to a pure competitive scenario. However, that perception has shifted over time. FinTech has realized that it is not easy to scale and grow in the finance industry. At the same time, they have understood that banks are large organizations which strong expertise providing financial services. Then, both, FinTechs and banks, have started to explore the possibilities to collaborate. Banks have realized that by establishing collaborations with FinTechs, they could benefit from the agile approach and technological background of these start-ups to transform more easily their digital capabilities.

This chapter aims to provide an overview of the competitive–collaborative relationship between FinTechs and banks. In doing so, we first examine in detail the FinTech ecosystem. This entails analysing the services offered by these new competitors as well as how the FinTech phenomenon has grown since its emergence. Secondly, we explore how do banks are facing the technological transformation of their industry. In particular, we examine the digitalization process of banks (quantitatively and qualitatively) and the risks and opportunities that this process entails for them. Thirdly, we explore how the relationships between the traditional banking sector and the fintech sector have evolved. Since the relationship has moved towards a more collaborative ecosystem, we pay attention to the types of alliances that could be established between both financial actors. Moreover, the benefits and risks of establishing these alliances are also underlined. Finally, we discuss the impact of COVID-19 on the FinTech sector and we provide an overview of the provision of digital financial services in the post-COVID-19 era.

6.2 FinTech: A Disruption in the Financial Sector

As the Financial Stability Board (2019) highlights, Fintech refers to the "*technology-enabled innovation in financial services with associated new business models, applications, processes of products, all of which have a material effect on the provision of financial services*". Similarly, The International Organization of Securities Commissions (2017) defines FinTech as "*a variety of innovative business models and emerging technologies that have the potential to transform the financial services industry*". Finally, the International Monetary Fund and the World Bank define FinTech as those *"advances in technology that have the potential to transform the provision of*

financial services, spurring the development of new business models, applications, processes, and products" (International Monetary Fund & World Bank, 2018). All these definitions of the FinTech phenomenon agree on the disruptive power of a series of technological innovations with the potential to transform the finance industry. The use of new technologies in the provision of financial services could disrupt the industry because it allows reducing the financial intermediation costs in lending, payment systems, financial advising, and insurance, along with better products for consumers (OECD, 2020). Technology makes the development of products and services cheaper and improves the exchange of information, thus allowing easy access to a wider range of opportunities. Digital financial services are faster, more efficient, and typically cheaper than traditional financial services. Moreover, due to the rise in the level of digitalization of the societies, FinTech services could be accessed by the underbanked population.

Analysing the FinTech phenomenon globally, the term FinTech could be used with two main meanings. Fintech can be understood as the technological innovation that generates new applications, processes, products, or business models in the financial services industry. Moreover, this same term could be used to name all those companies, normally start-ups, which are effectively employing some technological innovations to offer financial products and services.

6.2.1 FinTech Services

Fintech activities can be observed in different types of financial services, such as deposits, lending, and capital raising, insurance, investment management, and payments, clearing, and settlement (Financial Stability Board, 2017). Those services could be mainly oriented towards final consumers (B2C FinTech) and/or towards companies (B2B FinTech).

6.2.1.1 Services Oriented Towards Consumers: B2C FinTech

- *Payments and Transactions*: national and international payments, micro-payments, instantaneous transfers, peer-to-peer payments, mobile phone payments, overseas remittances, and wallets.
- *Personal Finance*: Include online budgeting and financial planning tools for individuals.
- *Currencies*: Exchange services, such as securities, derivatives, fiat currencies, cryptoassets, or similar financial instruments.

- *Savings and Investments*: social trading networks, financial advice based on robo-advisors, trading platforms, and financial advice on real estate assets.
- *Lending*: Online credit, wage advances, peer-to-peer lending platforms, micro-credits, crowd-lending platforms, point-of-sale finance, online credit.

6.2.1.2 *Services Oriented Towards Firms: B2B FinTech*

- *Financial Infrastructure*: using and improving existing technology to provide financial services (e.g. cloud computing services, biometric identification, large data management, user authentication, and transaction/document signing, online payments processors, Mobile Point of Sale (mPOS) payment machines and readers).
- *Tax and accounting solutions*: online billing and invoice management tools, online cash flow, and liquidity management tools.
- *Consultancy solutions*: advisory services or business consultancy.
- *Lending*: online lending, peer-to-peer lending, factoring, marketplace financing.
- *Equity finance*: raising equity for projects and/or firms with an investment purpose. Crowd-equity platforms are included in this dimension.

6.2.2 *The Global FinTech Phenomenon*

The FinTech phenomenon, that emerged after the 2007–2008 global financial crisis, has evolved and expanded globally across developed and developing areas. Then, to understand how relevant is the FinTech phenomenon in global terms, we focus mainly on four dimensions: FinTech population, the total volume of FinTech credit, the total funds invested in FinTech activities and companies, and the adoption of FinTech services by consumers.

6.2.2.1 *FinTech Population*

According to Crunchbase,[1] there are around 30,416 FinTech firms actively operating (as of December 2020). Figure 6.1 shows the number of FinTech firms which are providing financial services in some selected

[1] https://www.crunchbase.com/.

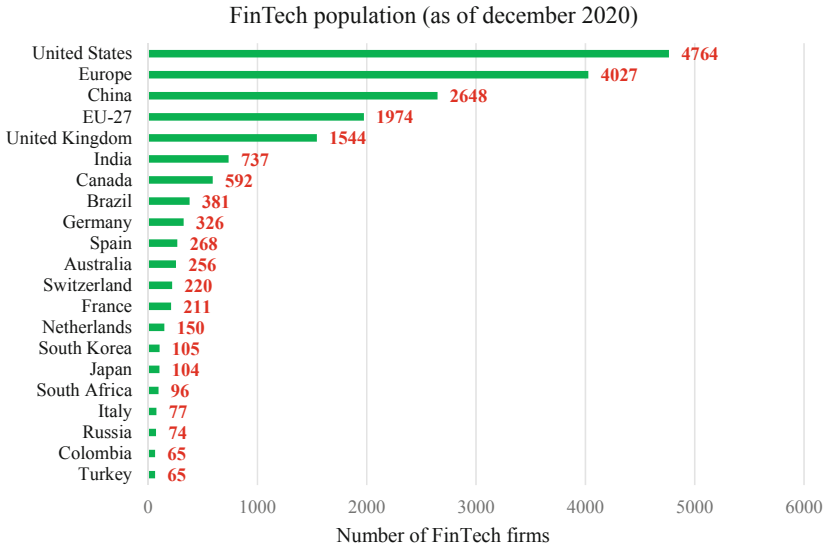

Fig. 6.1 FinTech population: number of FinTech firms (*Source* Crunchbase and own elaboration)

countries. This graph reveals that while FinTech firms are born all over the world, there are mainly for three FinTech geographical clusters: United States (accounting for 15,6% of the total FinTech firms), Europe (accounting for 13,2% of the total FinTech firms), and China (accounting for 8,7% of the total FinTech firms). To explain the drivers of FinTechs emergence, Haddad and Hornuf (2018) find that countries witness more FinTech start-up formations when the economy is well-developed and venture capital is readily available.

In this sense, the United States (U.S.) has the largest FinTech population, with 4764 FinTech firms. The U.S. FinTech sector is considered the largest in the world with many of those FinTechs based on some clusters areas such as Silicon Valley, San Francisco, or New York. In this sense, some of the more popular FinTech companies in terms of customers and valuation are based on these U.S. cities—Square, Ripple, RobinHood, Chime, Plaid. This geographical allocation in the United States is not random. In this sense, Gazel and Schwienbacher (2020), using data from France, find that most Fintechs are geographically clustered and that the

location of new Fintech start-ups is affected, among other things, by the size of clusters and the presence of incubators.

Then, we can also observe that the European FinTech sector is also relevant, with 4027 FinTech firms. However, most of these European FinTechs are based in the United Kingdom (UK). UK FinTech firms represent around 38% of the European ecosystem. In this sense, the "City of London" plays an important role in attracting the creation of FinTechs.

Figure 6.1 also reveals that the emergence of FinTech firms does not merely occur in developed economies. The Chinese FinTech ecosystem is vibrant, with more than two thousand FinTech firms. While the FinTech phenomenon arrived later to China, the Chinese FinTech ecosystem is achieving scale and innovation rapidly. In the case of China, Hua and Huang (2020) identify three key drivers for China's fintech development: a shortage of supply in traditional financing, strong government support for promoting financial inclusion through digital technology, and a more tolerant regulatory environment. However, the evolution of the Chinese seems to be different, while U.S. and European Fintech firms have tried to succeed via specialization in a core field to expand geographically (e.g. the largest European neobanks are growing by expanding overseas), most of the Chinese Fintechs have typically focused on their domestic market by offering high-engagement consumer platforms. In this sense, the growth of some Chinese companies has made them become BigTech companies such it has occurred with Tencent and Ant Financial.

Moreover, also India and Brazil rank among the countries with more FinTech companies. In both cases, the emergence of this sort of companies is related to the provision of financial services to the unbanked or underbanked population. The large percentage of the unbanked population in those emergent countries is perceived as an opportunity for those FinTech born in those countries. Frost (2020) shows that unmet demand is a strong driver in emerging and developing economies and in underserved market segments.

6.2.2.2 FinTech Credit

While, as already mentioned in Sect. 2.1, FinTech activities can be observed in different types of financial services, the relevance of the FinTech sector could also be observed by the volume of credit provided by these FinTech companies. In this sense, a large volume of credit provided by FinTech companies would mean that those companies are

playing a relevant role in the economy by financing consumers and businesses in the world. In this sense, Cornelli et al. (2020) find that FinTech lending is more developed in countries where banking sector mark-ups are higher and where banking regulation is less stringent.

During the period 2013–2019, the total volume of FinTech credit amounts to $1391,94 billion (Cornelli et al., 2020). Fintech credit activity has expanded rapidly in many countries over recent years, albeit from a very low base. In 2013, the global FinTech credit granted was about $9,94 billion. Then, six years later in 2019, the FinTech credit granted amounted to $223,30 billion. FinTech credit has become a relevant alternative source of financing in some countries. Figure 6.2 shows the FinTech credit per capita granted from 2013 to 2019 for some selected countries. The United States and China exhibit the largest ratio of FinTech credit per capita. On average a U.S (Chinese) consumer has received $761 ($745) during the period 2013–2019. This means that on average consumers of both countries have received annually more than a hundred dollars from FinTech companies. In global terms, this means that during this period the total credit granted by the FinTech sector accounts for $250 billion in the case of the United States and $1,037 billion in the case of China. Moreover, the FinTech credit is also relevant in the United

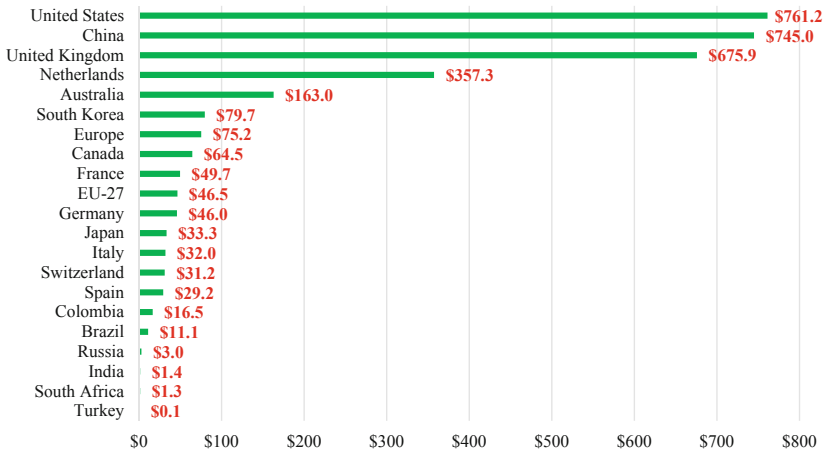

Fig. 6.2 FinTech credit per capita $ (2013–2019) (*Source* Cornelli et al. [2020] and own elaboration)

Kingdom, where the FinTech credit per capita exceeds $675. The rise of peer-to-peer lending platforms and online marketplaces in these countries would explain why FinTech credit is playing a larger role in these jurisdictions.

The relatively smaller volume of FinTech credit in some emergent economies such as India and Brazil, compared with their large number of FinTechs, reveals that in those economies, FinTechs are mostly offering mobile payments or digital money accounts.

6.2.2.3 FinTech Investments

The relevance of FinTech, and more significantly, its potential for growth could be observed by analysing the funds that the FinTech sector has been able to raise from worldwide investors. Investors' appetite for FinTechs would serve as an indicator of how markets assess FinTechs' capacity to transform the finance industry. Figure 6.3 shows the total funds raised by FinTech firms in some from 2010 to 2019. These figures consider the whole of external funds raised by FinTech (e.g. venture capital, seed capital, debt, equity crowdfunding, etc.). This graph reveals that FinTech has been gaining attraction from investors since 2012. The total volume of investments has increased annually since 2012, just except for 2017. In 2019, FinTech firms were able to raise $135,7 billion. The growth of raised funds by the FinTech firms reveals that the FinTech phenomenon has achieved a certain degree of maturity. Many investors have understood

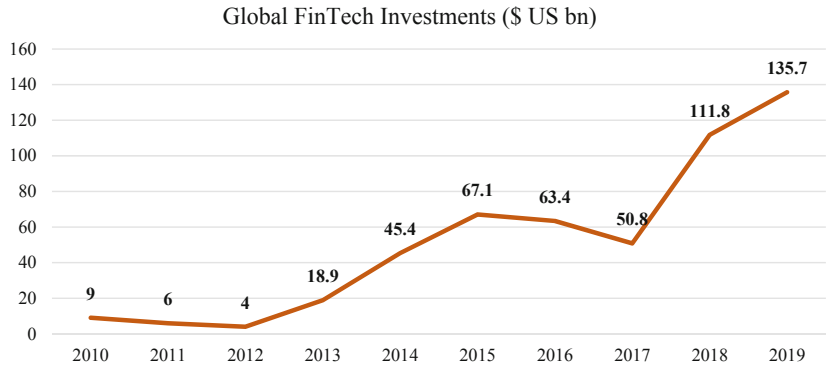

Fig. 6.3 Evolution of global FinTech investments ($US bn) (*Source* Statista and own elaboration)

that there are solid FinTech projects which could potentially transform the finance industry. Moreover, the rise in global FinTech investments also reflects that FinTechs firms have the potential to scale and grow.

6.2.2.4 FinTech Adoption

On the demand side, consumers also seem to adopt gradually FinTech services. The adoption of FinTech services has moved steadily upward during the last years across the world. On average, the FinTech Adoption index elaborated by E&Y reveals that the use of FinTech services has increased from 33%, in 2017, to 64%, in 2019. A consumer is considered a FinTech adopter, only if that individual has used two or more FinTech services during the last year. Then, worldwide, 6 out of 10 people are actively using FinTech services (EY, 2019). Figure 6.4 shows that the percentage of FinTech adopters for some selected countries. This figure reveals that, as above-mentioned, the adoption of FinTech services has increased between 2017 and 2019 in developed and developing countries. However, the largest adoption indexes are observed in emerging economies. Countries like China, India, and South Africa exhibit the largest adoption rates. In those countries, more than 80% of the population are using FinTech apps to conduct several financial activities. This finding suggests that FinTech is playing a key role in the financial inclusion of many people. As it has been underlined by the International Monetary Fund (Sahay et al., 2020) digital finance is increasing financial inclusion.

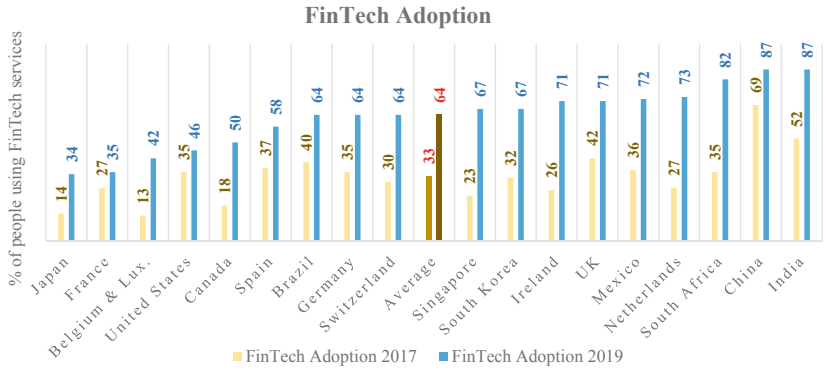

Fig. 6.4 Adoption of FinTech services in the world (*Source* EY and own elaboration)

In any case, high adoption index rates are also observed in developed economies such as Netherlands, United Kingdom, South Korea, or Ireland, which are above the average. In this sense, it is also relevant to observe that FinTech services are also gaining ground in many traditional bank-based societies, where banks are the primary financial intermediary to finance consumers and enterprises, to provide payment instruments, or to provide financial advisory.

6.3 The Banking Sector in the Face of the Emergence of FinTech

The provision of digitally enabled finance solutions is not exclusive to the FinTech sector. While the origin of the FinTech phenomenon could be partially explained by the relatively high cost of traditional channels in financial services (Philippon, 2018) and a relatively low level of trust in financial services incumbents (Cojoianu et al., 2020), banks have also reacted to the digital transformation of the finance industry. This digital transformation in the provision of financial services has become an opportunity, but also a challenge for banks. On the one hand, banks are currently adopting new technologies to transform their processes, products, and services to meet the digital needs of their customers. These technological innovations have helped banks to be more efficient and also to generate additional revenue. But at the same time, technology has also opened the door for new competitors (mainly FinTechs and BigTechs). Banks are facing the arrival of new competitors, which unlike them, are purely digital, by implementing a digital transformation of their business models to match today's pace of innovation and to keep them competitive.

6.3.1 Banks' Digitalization

The financial sector, and in particular the banking industry, have stood out for leading the technological transformation as well as in aggregate terms for having adopted new technologies faster. According to Computer Economics (2019), IT spending as a percentage of revenue in the financial services industry ranges between 4.4% at the 25th percentile to 11.4% at the 75th percentile. Across all industries, the finance industry is above the average in terms of IT expenses (Flexera, 2020), being substantially

above other industries such as retail & e-commerce, healthcare, or manufacturing. In this sense, a financial entity at the 25th percentile spends more than a discrete manufacturer at the 75th percentile.

Focusing on the banking sector, from 2013 to 2017, banks' technological spending has grown by 19.7%, which represents an annual growth rate of 4.6%. Worldwide, the IT spending in the banking and securities sector will reach $523.9 bn in 2020 (Gartner, 2020). Moreover, this spending is also predicted to increase by 6.6% in 2021. To put this figure in perspective, that amount would represent 3% of the European Union's GDP or 2.5% of the U.S. GDP.

Banks' technological expenses are not just employed to improve or develop existing technologies, a significant share of banks' IT spending is used to implement new technologies. Table 6.1 shows that banks are increasing the technological expenditure which is specifically employed to adopt innovative technologies. In this sense, in 2020 U.S. banks are allocating 40% of their IT budget to new technologies, while European banks are allocating around 29%. Additionally, according to the predictions, it seems that the importance of new technologies on banks' IT budget will increase in the coming years. These figures suggest that banks have been also very proactive regarding the adoption of those technological innovations that will shape the future of finance (Table 6.1).

Table 6.1 % of banks' IT spending on new technology in North America and Europe from 2013 to 2022

	North America (%)	*Europe (%)*
2013	25	13
2014	26	15
2015	27	17
2016	28	19
2017	30	21
2018	33	24
2019	37	27
2020	40	29
2021f	44	31
2022f	48	33

Source Deloitte; Celent; Wall Street Journal and own elaboration

6.3.2 *New Banking Technologies*

Consumers aren't necessarily making their banking choices based on whether its main bank offers the latest new technology or not, consumers value an enhanced customer experience—simple, personalized, easy to access, and fast. However, to provide this type of experience, banks acknowledge that adopting the latest technologies is a must. Then, while banks are keen on adopting technological innovations in order to meet their customers' demands and to compete with the new players, there seems that the adoption of some technologies is being key for the banking industry. Due to the gradual implementation of these technologies in the banking industry, a new term has been coined: the *new banking technology*. Experts and insiders coincide in pointing out that seven technologies are believed to be the most disruptive in finance: big data, artificial intelligence, blockchain, cloud computing, mobile technology, biometrics, and the Internet of Things (IoT).

New technologies in the banking industry are being implemented by banks with several different applications. The adoption of these technologies allows banks to be more agile and efficient on their internal processes, to handle more efficiently information/data, or detect potential frauds. However, most of these new banking technologies are mainly oriented towards enhancing customers' experience. In this sense, it seems that banks are using these new banking technologies to improve their customers' experiences in an attempt to attract new customers and to retain the existing ones.

Moreover, banks are not implementing all these emerging technologies at the same pace. While cloud computing, mobile technology, and biometrics have been largely adopted in the banking industry, there are other technologies such as blockchain and the IoT, which are nowadays in an incipient phase of adoption. The complexity of developing a full blockchain network could explain why this technology, which is expected to revolutionize the finance industry, is not largely adopted. In this sense, it is important to highlight that some global projects have emerged within the banking industry to develop joint blockchain networks such as Interbank Information Network (IIN), We.trade, Marco Polo, and Komgo. Nowadays, IIN is the largest global blockchain-based network, with more than 200 member banks and with more than 300,000 daily transactions. IIN is a live blockchain platform aimed at facilitating overseas transactions using decentralized technology.

Finally, it is evident that banks are employing different strategies to implement these new technologies. In some cases, they prefer to purchase the technology due to their large costs of developing it internally, as it happens with cloud computing, artificial intelligence, and biometrics. In other cases, they establish partnerships with third-party providers, mainly with large technological companies, as is the case with blockchain and IoT. Finally, in the case of big data and mobile technology, they opt for developing them in-house.

6.3.3 The Digital Transformation of the Finance Industry: A SWOT Analysis

The digital transformation of the finance industry, as well as the arrival of FinTech competitors, depicts a challenging scenario for banks. Banks are ready to compete in this new competitive ecosystem due to their strong internal capabilities on the provision of financial services (strengths) but, at the same time, they also have some internal limitations (weaknesses) undermining their ability to face successfully a digital competition. While the FinTech phenomenon has been considered a disrupting factor in the banking industry (threats), banks may also benefit from the advantages (opportunities) that entail being competing in a more digital environment. Figure 6.6 provides a SWOT analysis of the banking sector regarding the digital transformation of the industry and the arrival of FinTech competitors.

Regarding banks' internal capabilities to face the challenging scenario, banks have some strengths and weaknesses. On one hand, banks are organizations with large expertise and a solid reputation providing financial services. Moreover, by providing several financial services, they hold strong relationships with their customers. In many cases, the same bank provides funding (e.g. personal loans or mortgages), payments instruments (e.g. credit and debit cards), financial advice (e.g. investments or pensions), and even insurance to their customers. Furthermore, while they are not pure digital organizations they already spend a significant fraction of their budget on technology. For example, banks were pioneers adopting online and mobile banking at the beginning of the 2000s. And more importantly, due to their larger size compared to FinTechs, banks have more resources ready to be invested in new technologies. On the other hand, while banks have tried to catch up with the latest technologies, they are not digital natives. FinTechs are born to be technological

companies to provide financial services, while banks are traditional financial intermediaries aiming to digitalize themselves. Then, since they are not 100% digital companies, this implies that they tend to have larger difficulties to attract more digital customers. Moreover, unlike newcomers, they face larger regulatory costs, mainly because they take deposits. As heavily regulated companies, they face more difficulties to innovate. Additionally, banks have a strong organizational culture with rigid and solid structures that are not particularly agile to adopt innovations.

Despite the risks that entail the arrival of new technological competitors, banks may also benefit from the FinTech phenomenon. By adopting new technologies (e.g. artificial intelligence, big data, blockchain, etc.), banks could improve customers' experiences, which ultimately, improves customers' satisfaction. Moreover, banks could also use technological innovation to pursue a customer-centric approach based on improving the personalization of their products and services. In this sense, the deployment of big data and machine learning techniques may improve the knowledge about their customers. The technological transformation of their industry is also an opportunity to improve banks' efficiency. Some of these technologies are internally used to reduce costs (e.g. automatization of processes, implementing virtual assistants, etc.).

However, some threats may damage banks' competitive capabilities. The technological transformation of the industry and the emergence of new providers of financial services could make banks' customers, especially largely digitalized customers, to be more prone to switch to these newcomers. This may damage banks' market shares. Moreover, the entrance of FinTechs in the industry and their relatively good performance has also brought the attention of larger competitors. The arrival of BigTech companies, which are even larger and more profitable than banks, is likely to generate a large threat for banks. Moreover, being in a rapid changing ecosystem increases the risk of being made redundant if customers' needs are not met timely. Besides, the implementation of new technologies increases the risks of data breaches—digital companies are more vulnerable to cyberattacks—and could lead to technology biases—the use of artificial intelligence may generate biased decisions (e.g. biases on credit scoring due to sex, race, or religion beliefs).

6.3.4 Scenarios of Future Banking

The technological transformation of the finance industry and the arrival of new competitors increases the uncertainty about the future of banking. In this sense, the shape of the future banking industry will highly depend on the impact of these new competitors on banks' activities. Given the high level of uncertainty, the Bank for International Settlements has depicted a set of five scenarios, which are not mutually exclusive, towards which the banking industry may evolve.

- *Scenario 1—the better bank*: under this scenario the traditional banks go digital and to transform themselves becoming modern technological institutions. By doing so, banks can retain the customer relationship and their core banking services. In this scenario, banks adopt new banking technologies to enhance banks' products, services, and operations. Moreover, in the "better bank" scenario, banks have changed their business models to meet the digital demands of their fully digital customers.
- *Scenario 2—new banks*: this scenario implies that the traditional banks cannot survive the technological transformation of the sector and they are replaced by new fully-digital banks. Unlike traditional banks, these "new banks" do not have to adopt new technologies because they are born digital. Technology is in their genes. Under this scenario, the future belongs to those "new banks" which are able to provide more cost-effectively and innovatively banking services.
- *Scenario 3—distributed banks:* in this scenario the financial services become increasingly modularized. This implies a fragmentation of financial services into different niches. Traditional banks and new competitors (Fintech or large technological companies) coexist providing financial services. Under this scenario, traditional banks survive but they have to compete with other actors to own the customer relationship as well as to provide core banking services. Under this scenario, customers are able to have multiple financial service providers, each one provides different or complementary financial services.
- *Scenario 4—the relegated bank:* this scenario implies that the current banks become commoditized service providers and cede the customer relationship to other financial service providers—mainly

FinTech and BigTech companies. Under this scenario, these alternative financial service providers make use of front-end customers' platforms to offer consumers a variety of financial services from a diverse group of providers. Banks, which are able to survive thanks to their banking licenses, are relegated to provide core commoditized banking services through the front-end customers' platforms managed by FinTech and BigTech companies. However, the relegated banks may also retain the risk of the banking services that they provide.

- *Scenario 5—the disintermediated bank:* banks are no longer needed because the provision of financial services is disintermediated. This means that financial services are provided by agile platforms and technologies, which ensure a direct matching of final consumers depending on their financial needs (borrowing, making a payment, raising capital, etc.).

None of the scenarios could be potentially discarded. Moreover, as the Bank for International Settlements underlines some of the scenarios may coexist. In this sense, the lending segment may move to a "*disintermediated*" scenario—through the rise of peer-to-peer lending platforms—, the payment segment could move to a "*relegated*" scenario—with the surge of "super financial apps"—, and the provision of financial advisory services may evolve to a "*distributed*" scenario with the rise of automated investment advisory services by fintech firms through a bank or as part of a joint venture with a bank.

In any case, the impact and evolution of the technological transformation of the finance industry will depend on the response provided by the regulators. Especially, regulators have a say in the future of banking in three main areas:

1. Regulation of financial service providers: regulators may opt for moving towards the level-playing field which implies that new providers of financial services are regulated by the activities that they conduct not by the industry to which they belong. This means that new competitors would face the same regulation as banks if they conduct the same sort of financial activities. The fear of being heavily regulated, as it is the banking industry, could potentially deter some new competitors (FinTech and BigTech companies)

to enter the finance industry. In this sense, Jun and Yeo (2016) examine the entry of FinTech firms in the retail payments market to argue that there is a need for proper regulatory measures to reach a socially desirable outcome. Regulatory policies have the potential to shape competition. For example, Polasik et al. (2020) show that the adoption of PSD2 at the European level led to an increase in the number of newly established FinTech which operated in the payment industry.

2. Cybersecurity: a technological future requires to be prepared for a larger technological risk. The challenge of offering digital banking services at a high level of safety may shape who are the financial providers of the future. In this sense, only those companies that could ensure a high level of security could be able to provide banking services in the future.
3. Consumer protection: the evolution of the banking industry is also likely to depend on the ability of financial providers to ensure the protection of consumers' rights. It would be essential to ensure that the future financial providers have the ability to handle efficiently customers' data (avoiding potential data breaches) or to implement all the mechanisms to avoid discriminatory practices when employing technological innovations.

6.4 Banks and FinTechs: An Evolving Relationship

6.4.1 FinTech' License

Fintech companies can also be classified in terms of the license under which they operate. While in some jurisdictions, entities that engage in granting loans are not regulated under financial law and may only be subject to requirements under commercial law, most of the FinTechs need a license to provide financial services (Ehrentraud, Garcia Ocampo, et al., 2020). Accordingly, the following licenses exist: banking license, electronic money license, participatory financing platform license, and the payment institution license.

- The Banking License: It is granted to those Fintech companies that carry out the same activities as any other traditional bank, even

though they may currently offer only some of the products available. There are some cases in which FinTechs have been granted a banking license, mostly it has happened in the case of neobanks and challenger banks. For example, N26 (a German neobank) and Revolut (a UK neobank) and have secured a banking license in 2016 and 2018, respectively, to operate in the whole European Union. In some jurisdictions, such as Singapore, Malaysia, Taiwan, Hong Kong, and South Korea, their competent authorities are granting specific digital banking licenses. Some of them have been gained by large FinTechs as Ant Financial. Obtaining a banking license (even if it is a digital banking license) allows digital banks to offer a full range of banking products and services to their customers. In this sense, digital banks are licensed to take deposits and use the deposited money to carry out their banking activities.

- The Electronic Money License (EDE): It is has been granted to those online platforms that issue electronic money, which is accepted as a means of payment by companies other than the issuing institution. These FinTechs with this type of license act as Electronic Money Institutions (EMIs). In Europe, there are 394 EMIs and most of them are relevant FinTechs in the European ecosystem as BNext (Spain), PayOne (Germany), Checkout (France), Monese (UK), or Flowe (Italy).
- The Participatory Financing Platform License (PFP): Fintech platform financing refers to those fintech activities that are facilitated by electronic platforms and provide a mechanism for intermediating funding over the internet (Ehrentraud, Garcia Ocampo, et al., 2020). This license enables the development of collaborative projects-financing mechanisms (crowdfunding). The requisites to obtain such type of license depend largely on each jurisdiction's regulatory body.
- The Payment Institution License (PI): It allows the institution to make payments or bank transfers, although its range of banking products is much smaller compared to traditional banking. This license, in turn, further contains a set of two sublicenses, which are the Payment Initiator License (PISP) and the Financial Aggregator License (AISP).
  - The Payment Initiator License (PISP) allows entities with online services the possibility to offer their customers to pay

immediately for their online reservations or purchases on the Internet.
- On the other hand, the Financial Aggregator License (AISP) is a tool that concentrates all the banking products contracted by a person or an entity in just one platform or application, thereby gaining greater control over the distribution of their money.

6.4.2 Competition, Collaboration, and Coopetition

The relationship between FinTechs and banks has moved from a pure competitive scenario to a more collaborative one. Relationships between the traditional banking sector and the FinTech sector have evolved significantly over the last several years.

When the FinTech phenomenon took off in the wake of the crisis, the relationship between these newcomers and the banking sector was viewed through the prism of direct competition. The first generation of FinTech companies aimed to disrupt the finance industry by replacing the traditional banks. At the same time, banks perceived them as a threat to their market shares. Banks viewed Fintechs as disruptors capable of disintermediating the core financial services, which consequently, would lead them to lose their customer relationships in favour of these technological innovators. However, that perception has shifted over time as banks and Fintech firms have explored the possibilities of collaboration. Banks realized that by establishing collaboration with FinTechs they could benefit from the agile approach and technological background of these start-ups to transform more easily their digital capabilities. At the same time, FinTech realized that replacing banks was not an easy task even if they had a technological competitive advantage. Moreover, FinTech understood that to survive, grow, and have access to a large base of customers some form of partnerships with banks were important. Through an alliance, an incumbent bank and a fintech start-up may achieve a midway approach that harnesses each other's expertise to achieve a competitive advantage in the financial ecosystem transforming around new technology (Svensson et al., 2019). Carbó-Valverde et al. (2020c) show that the adoption of non-bank payment instruments happens when consumers are already diversified digital banking customers. Their findings suggest a certain degree of complementarity between banking and non-banking digital services that could be exploited with strategic partnerships. In a similar vein, Cornelli et al. (2020) examine the growth of FinTech credit to

conclude that these alternative credit seems to complement other forms of credit, rather than substitute for them.

Additionally, as Cygler et al. (2018) underline, one of the generic motivations of strategic alliances between banks and FinTech surge from the need to compete with a stronger common competitor. In this case, the arrival of BigTechs firms in the finance industry has also made banks and FinTech to collaborate in order to offer better digital solutions to face the threat posed by these large technological companies.

In this sense, Hornuf et al. (2020) conducted a research that examines the alliances between FinTech and Banks. In doing so, they examine the 100 largest banks in Canada, France, Germany, and the United Kingdom with the aim of discovering the different forms of alliances with FinTechs. They document a perceptible increase in bank–FinTech alliances in all these countries from the year 2013 onwards. During the period from 2007 to 2017, around 39% of all banks covered in their study engaged in some form of alliance with a FinTech. Carbó-Valverde et al. (2020b) also show, in the case of Spain, that FinTech and bank ties were particularly strong since 2018. Recently, there have been a number of successful partnerships between banks and FinTechs: Bank of Montreal and Blend (2019—to deliver digital mortgages and home equity experiences to customers), Bank of America and Zelle (2017—allowing customers to send, receive, and request money via mobile), TD Bank and Flybits (2015—to provide customers with more personalized mobile banking experience), Unicaja and Ebury (2019—to provide customers currency exchanges).

Nevertheless, the establishment of strategic partnerships between both actors does not hide that banks and FinTech have the same objective, to gain market share in the provision of financial services. For some financial services, banks and FinTechs have realized that is better to collaborate, providing jointly some financial services, intending to obtain mutual benefits. However, there are some other segments of activity where it is more difficult to enjoy synergies, so they have opted for competing. This double-side relationship, where banks and FinTech compete and collaborate simultaneously in different segments of activity, has been coined as "coopetition". For example, nowadays many banks are collaborating with FinTech companies to develop joint solutions to offer new mobile onboarding services, enabling customers to open an account with just a photo ID and a selfie. Simultaneously, there is fierce competition in the lending markets in order to finance consumers' financial needs. Figure 6.5

	BigData	Artificial Intelligence	Blockchain	Cloud Computing	Mobile Technology	Biometrics	Internet of Things (IoT)
Definition	Technology that allows handling large amount of information/data within an organization for business purposes	Technology that enables the use of cognitive techniques, such as natural language processors and advanced algorithms to analyze texts and identify feelings and other information from unstructured data	Technology that structures data and information in a chain of blocks with the aim of creating a single, consensual and distributed registry network with several nodes	Technology that allows the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over a public or private net	Technology used for cellular communication and other related aspects	Technology that analyzes physical or behavioral human characteristics in order to digitally identify a person to grant access to systems, devices or data	Technology that interconnects via internet of a number of computing devices which are embedded in everyday objects, enabling them to send and receive data.
Main uses in banking	o Enhance consumer experience	o Personal assistant and augmented reality	o Cross border payments	o Data management	o Enhance consumer experience	o Enhance consumer experience	o Enhance consumer experience
	o Credit scoring	o Automated decision-making	o Regulatory compliance	o Enhance consumer experience	o Offer new services	o Authentication and digital identity	o Customization of products and services
	o Customers' segmentation	o Regulatory compliance	o Smart contracts	o Improve efficiency/Cost saving		o Customers' segmentation	o Transaction automatization
	o Risk management and fraud detection	o Enhance consumer experience	o Back-office processing	o Business agility			o Back-office processing
Adoption in the banking sector	Medium-high	Medium	Incipient	High	High	High	Incipient
Implementation	Developing in-house	Purchasing the technology	Partnering	Purchasing the technology	Developing in-house	Purchasing the technology	Partnering
Fuente: EY Global Banking Outlook y elaboración propia							

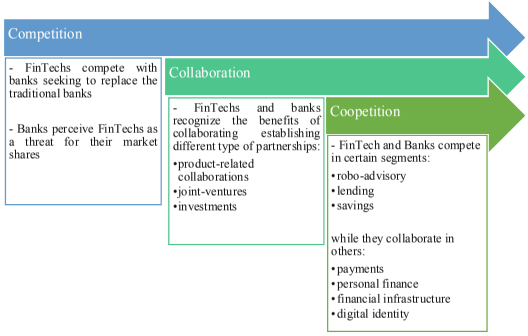

Fig. 6.5 Relationship between FinTechs and banks: Evolving landscape

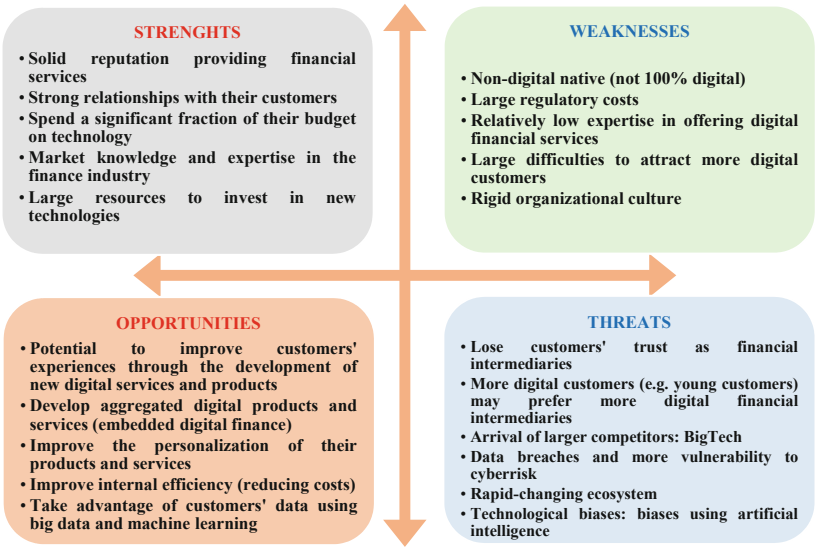

Fig. 6.6 SWOT analysis for the arrival of FinTech competitors to the banking industry

summarizes the use of the new technologies in the banking industry and provides an overview of the different settings of banks and FinTech relationships.

6.4.3 Bank and FinTechs Alliances

Banks and FinTechs have established collaborations since they have both understood that there are mutual benefits. Their different approaches to their businesses could generate synergies for both players. Specifically, for banks, working together with FinTechs allows them to improve their technological capabilities and reduce costs. It could be more costly for banks to develop their internal solutions than working closely with FinTechs that, unlike them, have the technology in its DNA. Moreover, through strategic partnerships, banks would be able to offer new and better technological solutions to their customers. This would allow banks to enhance customers' experience of their customers (e.g. adding functions and features, improving the ease of use, offering safer solutions, etc.),

and also they could serve new customers' segments. Particularly, those consumers looking for better digital solutions to manage their finances could be more prone to switch banks.

Simultaneously, FinTechs also may benefit from collaborating with banks. For these start-ups, a partnership would allow them to broaden their consumer base and scale. In their early stages, many FinTechs are struggling to reach customers, a partnership allows them to offer their innovations to large bases of consumers. This also allows FinTechs to build up a reputation. Finally, as already mentioned, collaborations between banks and Fintech allow them to join forces to face common competitors such as BigTech companies (Fig. 6.6).

However, while both players may obtain mutual benefits by working together, there are also some risks that they have to assess when deciding to go for a partnership. Even if they both could reach a high level of complementary there are some cultural shocks. While FinTechs thrive on being fast-growing, agile, and innovative with new technology, major banks tend to have more solid and rigid structures. These cultural shocks and misunderstandings may generate difficulties in sharing information. Moreover, since FinTechs are having access to banks' customers, banks may face the risk of losing customers' relationships. Eventually, some customers may perceive that the FinTech is able to perform the same services without being a bank customer, so they could be more keen on leaving the bank to be FinTechs' customers. Additionally, the safety controls implemented by FinTechs (in terms of reducing the risks of cyberattacks, protecting customers' financial information, etc.) do not seem to be as solid as those implemented by banks (which are the organizations that spend the largest amounts on security). In this sense, FinTechs' vulnerabilities may also damage banks, especially if FinTechs have direct access to customers' data.

But not only do banks take on some risks when they collaborate with a FinTech, but the latter can also be harmed. By sharing technological innovation with a bank, the FinTech may lose some control of the innovation. Moreover, having access to banks' customers means facing larger regulatory costs. Banks are heavily regulated and third-party providers also face regulatory costs when they are providing financial services to banks' customers. Table 6.2 summarizes all the benefits and risks for both actors in establishing a partnership.

There are several ways by which banks and FinTechs are able to interact and to establish alliances/partnerships:

Table 6.2 Banks and FinTechs: Benefits and risks of establishing a partnership

	Banks	*FinTechs*
Benefits	• Offering more functions and features to consumers • Reduce costs • Improve technological capabilities • Opportunity to serve new segments of customers • Access to top talent and cutting-edge technology • Join forces to face the arrival of BigTech companies	• Building up brand reputation • Increase ease-of-use • Broaden consumer base • Ability to scale quickly • Join forces to face the arrival of BigTech companies
Risks	• Face a cultural shock • Share customers that could potentially switch • Face difficulties with information sharing • Lose customers' relationship • Face safety issues	• Face a cultural shock • Lose the control of the innovation • Face regulatory and compliance costs • Share key/secret aspects of the technological innovation

- Collaborations through innovation facilitators: As the FinTech ecosystem grows around the world, many jurisdictions are setting up innovation facilitators to foster the digital transformation of the finance industry. As a report from the Financial Stability Institute (FSI) of the Bank for International Settlements establishes (Ehrentraud, Garzoni, et al., 2020), there are three main types of facilitators: innovation hubs, regulatory sandboxes, and accelerators. While there are differences among them,[2] these innovation facilitators allow banks and early-stage FinTech to work together on a common project. Moreover, by interacting under the supervision of the regulators both players receive support, advice, or guidance in navigating the regulatory framework or identifying supervisory policy or legal issues and concerns. Typically, this type of collaboration is established at the early stage of the FinTech. In some cases, banks also develop their private accelerators in order to track since the very first moment those most promising start-ups.
- Product-related partnerships: Banks and FinTechs may decide to collaborate together to develop jointly a product or service. This kind of partnership, which is strictly a single-project alliance, could be mainly developed in three ways:

    1. *Internalization*: The FinTech company integrates directly with the internal bank system in order to provide a product or service for the bank customers. In this case, the bank and the FinTech partner bear responsibility and control over the customer experience.
    2. *Outsourcing*: The bank outsources the overall product to the Fintech company. By doing so, the bank relies on FinTech, which acts as a third-party service provider, for operational support of technology-based financial services. While operations can be outsourced, the risks and liabilities associated with those operations remain with the banks.
    3. *Separate joint venture business*: the bank and the FinTech set up a separate joint venture business, possibly a new company. By doing so, both offer a new product or service which is not

[2] See Ehrentraud, Garzoni, et al., (2020) for a distinction of the characteristics of innovation hubs, regulatory sandboxes and accelerators.

offered with the brand of the bank nor the FinTech, it is offered by a new company that is owned by both entities.

- Equity investments: This implies that the bank invests actively in the FinTech firm. This means that the bank acquires some stocks from the FinTech, becoming owning part of the FinTech. Some banks decide to invest in FinTech in order to ensure the stability of prior partnerships. These equity investments should be differentiated from acquisitions. Typically, an equity investment represents a minority stake in a FinTech (the bank owns less than 50% of the FinTech's capital). Through an investment, banks are able to internalize the knowledge of the FinTech better and gain control over the company by having a seat on the board of directors. This allows the bank to align FinTech and bank's interests. For FinTechs, these kinds of investments allow them to raise capital, which is essential for them to scale and grow. There are several types of investments depending mainly on the stage at which they are done: seed capital, early venture capital, series A capital, series B capital, series C capital, late venture capital, and growth equity. Hommel and Bican (2020) argue that banks have shifted from traditional money-lending activities (i.e. debt-financing) to becoming stakeholders in FinTechs, and hence, equity investors.
- Merger and acquisition (M&A): It is not an alliance "per se" because it means that the bank has acquired a majority stake in a Fintech. Then, the bank becomes the main owner of the FinTech. This means that the acquiring bank runs the FinTech. Over the last years, there have been large deals. Morgan Stanley bought E-Trade for $13bn (2020), ING bought PayVision for $360 mn (2018), JPMorgan bought WePay for $220 mn (2017), Santander acquired a majority stake in Ebury for €453 mn (2019). However, as FinTechs are gaining scale they have also started to buy some banks. LendingClub, a San Francisco-based peer-to-peer (P2P) lending firm became the first fintech to buy a U.S.-regulated bank following the $185 million acquisition of Radius Bank in February 2020.

6.5 FinTech and Banks: The Provision of Financial Services in the Post COVID-19 Era

COVID-19 has profoundly impacted financial systems across the world, including the provision of digital financial services and the functioning of FinTech markets (CCAF; World Bank; World Economic Forum, 2020). On one hand, the global pandemic has had a negative impact on the FinTech sector, as the sharp decline in the total FinTech investments during the first half of 2020 reveals. During the toughest times of the pandemic FinTech firms have experienced large difficulties to attract investors' attention which undermines their capabilities to scale and grow. Moreover, the coronavirus outbreak has also caused an increase in the percentage of loan impairments within the FinTech sector. Despite these negative effects, COVID-19 has presented an unexpected opportunity to make further use of digital channels. There has been a major shift in customer behaviours. The sharp rise in the use of banks and FinTechs apps shows that people, especially those who have the lowest levels of digitalization, have rapidly increased the use of digital channels to conduct several financial activities. Moreover, FinTechs, but primarily, banks have also reacted to the crisis by being increasing the speed at which they are transforming themselves. While the arrival of the vaccine forecasts that the more difficult times are over, the acceleration in the digital transformation of societies and organizations seems to continue.

6.5.1 The Impact of COVID-19

The coronavirus outbreak has had a strong negative impact on FinTech financing. Global Fintech funding dropped significantly since the outbreak of the pandemic. According to KPMG (2020), global FinTech investments reached $25.6 billion in the first half of 2020, which is a 32.45% decrease compared with the first half of 2019. Fintech deals dropped during the toughest times of the pandemic as investor appetite for fintech financings slowed, mainly due to the broader market uncertainty. Deals are fell across all geographies, indicating that COVID-19's impact on FinTech was global (CB Insights, 2020). During the second half of 2020, the level of investment in the FinTech sector has been progressively recovering, although without yet reaching pre-pandemic levels. The decline in global FinTech investments has relevant implications for the industry. In this sense, the lack of funding as a result of

the pandemic is putting more pressure on FinTech companies to obtain profits sooner to scale, grow, and survive.

Despite the global drop in FinTech investments, the impact has not been homogeneous across FinTech activities. FinTech lending companies and platforms are the ones that have experienced the biggest drop in their level of financing. In Europe, during the first half of 2020, these online FinTech lenders raised 38% less through venture capital compared to the first half of 2019 (PitchBook, 2020). The fear that the deterioration in economic activity will increase the volume of unpaid loans could explain why many investors were reluctant to finance these FinTech companies. By contrast, the payments sector is on track to beat last year's record investment. The boom in digital payments due to the health crisis has meant that FinTechs that offer new forms of payment—contactless, QR, voice payments, or ultrasonic payments—captured the appetite of a large number of investors.

Moreover, the COVID-19 crisis has also increased the loan default rates in the FinTech lending sector. The slowdown in economic activity caused difficulties to a significant number of FinTech borrowers, in many cases individuals and small companies that had not obtained bank financing due to their risk profile, to have repaid their FinTech loans. The Global COVID-19 FinTech Market Rapid Assessment Study led by the World Bank (CCAF; World Bank; World Economic Forum, 2020) report a 14% increase in arrears or late repayments and a 9% rise in the number of defaults on outstanding loans relative to Q1 and Q2 2019. In the United States, one of the countries with the highest level of FinTech credit per inhabitant, the growth of FinTech loan defaults increased significantly during April 2020. The total percentage of FinTech loans with payment impairments reached 16%, while before the coronavirus crisis that percentage was around 6% (Dv01 Insights, 2020). This increase was even greater in some segments of borrowers. Thus, in those FinTech loans granted to debtors who had a higher risk profile, the percentage of defaults reached 20%.

Furthermore, the financial position of FinTechs has deteriorated during COVID-19. According to CCAF; World Bank; World Economic Forum (2020), more than half of FinTechs reported that COVID-19 negatively impacted their capital reserves, with 21% of firms reporting a significant impact and 30% reporting a slight impact.

6.5.2 *Digital Finance in the Post-COVID-19 Era*

In just a few months, we've seen the kind of consumer behavioural shifts that usually take decades. Consumers have started to adopt the digital channel to conduct their financial activities—check current account balances, open a bank account, apply for a loan, transfer money, make regular payments, etc.,—and to interact with their provider of financial services. The acceleration of the digital transformation of societies, and particularly, in what regards to the management of personal finances, depicts a new scenario for the provision of financial services in the post-COVID-19 era that is likely to be characterized by:

- Further use of digital channels (rise of banks and FinTech apps): Financially speaking, consumers have gone digital. Banking and FinTech apps have grown significantly in use since the pandemic. Some of the most popular applications in the *apps stores* were banking apps. Similarly, in Europe, the use of FinTech apps increased by 72%. As societies are increasingly digital, the sudden boom in the adoption of these apps as a result of the COVID-19 pandemic may anticipate a social change towards societies used to manage their personal finances through the online channel.
- Adoption of new digital payments: The usage and adoption of digital payment methods have increased dramatically since the outbreak of COVID-19. It is estimated that contactless payment methods have grown by 40% globally since the beginning of the epidemic. According to Capgemini (2020), more than a third of consumers discovered a new payment provider during the COVID-19 crisis. Their research finds that 64% of consumers say they use contactless payments often and 48% use digital wallets, including QR code-based payments. Customers are more willing to adopt non-cash payment methods: contactless cards, smartphone payments, QR codes, wearables (e.g. bracelets, watches), voice payments, or payments methods with augmented reality devices. Consumers welcome different alternatives. They consider that this possibility of choice is beneficial.
- The emergence of new relationships: The confinement and social distancing measures that emerged as a result of the COVID-19 health crisis have altered how banks and other banking service providers interact with their customers. To transmit and gain the

trust of consumers in a post-COVID-19 environment, where the digital channel prevails, it is key that the client and entity maintain contact but in a more intelligent way. This type of "intelligent relationship" that must permeate all business areas is, however, key in those where human relations have traditionally prevailed, such as wealth management. Artificial intelligence makes it possible to improve the user experience, the user interface, usability, and, of course, data management. Smart systems can learn about customers and then can integrate more data sources and translate that data into actionable insights to make customer–bank interaction more successful.

- Transformation of banking channels: The implementation of measures to ensure social distancing has increased the use of alternative online channels such as video banking. This channel provides the opportunity to carry out banking transactions or professional banking inquiries through a remote video connection. This connection can be made through smart ATMs, in bank branches enabled for videoconferencing, or from a mobile phone using the bank's app. Thus, although its use was already on the rise before the coronavirus health crisis, some studies confirm that video banking has gained since the pandemic and it is estimated that it will continue to grow in the new post-COVID-19 reality. During the health crisis, this new technology has proven its usefulness especially in China where the technology has spread to more than 30 financial institutions and is in use in large and small branches. One of the main providers of video-banking solutions, POPi/o, points out that communications between customers and banks via video tripled since the coronavirus pandemic began.
- Improving financial inclusion: During the COVID-19 pandemic, technology has created new opportunities for digital financial services to accelerate and enhance financial inclusion. Digital finance is increasing financial inclusion and is associated with higher GDP growth (Sahay et al., 2020). The large penetration of the smartphone across the world—in 2020, the number of smartphone users in the world today is 3.5 billion, which translates to 44.69% of the world's population owning a smartphone—allow people who were underbanked to have access to digital financial services.
- New financial products: The COVID-19 pandemic has created new financial needs for digital consumers. Banks and FinTech have started

to innovate creating new financial products to meet their customers' needs. Banks will offer digital mortgages, crypto saving accounts, or digital currency exchanges. According to CCAF; World Bank; World Economic Forum (2020), 60% of surveyed FinTech firms reported launching a new product or service in response to COVID-19, with a further 32% planning to do so. Especially, in the segment of digital payments and digital lending.

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