

“How the Fintech ecosystem changes with the entry of Big Tech companies”

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HOW THE FINTECH ECOSYSTEM CHANGES WITH THE ENTRY OF BIG TECH COMPANIES

Abstract

The digitalization of financial services has led to the emergence of new, innovative services and providers. This paper first examines which actors are defined in the related literature as members of the Fintech ecosystem and what their roles and responsibilities are. A common element in the literature reviewed is that traditional financial institutions, startups, regulators, the investment community, and technology developers are identified as actors in Fintech ecosystems. The analysis then highlights how the large technology companies that are referred to in the literature as Big Tech (Meta (Facebook), Apple, Microsoft, Amazon, Alphabet (Google), Baidu, Alibaba, and Tencent) have become active in the financial services sector. It also examines which comparative advantages have led to the possibility for Big Tech companies to become third-party and then independent providers of financial services. As a result of their previous activities (software development, marketing, social media, online retail, and content services), they have acquired both a significant global customer base and outstanding IT development capabilities. These factors have enabled them to interact with former members of the Fintech ecosystem. They have formed partnerships with traditional financial institutions, then become their competitors, and they look to Fintech startups as acquisition targets. These factors determine Big Tech companies to become part of the Fintech ecosystem as a competitive service provider. From a practical point of view, these phenomena emphasize the need for the regulatory efforts on Big Tech companies.

Keywords

Fintech, Big Tech, banking, ecosystem, startup

JEL Classification

G21, G23, G38, M13

INTRODUCTION

The concept of Fintech today is not just about digitized services of traditional commercial banking roles, but a wide range of other innovative solutions. These services are the result of an ecosystem of organically cooperating actors. According to the literature analysis to be presented later, traditional financial institutions, Fintech startups, technology providers, governments and customers have been key actors in the Fintech ecosystem. In recent years, a new type of players has emerged in the financial sector, Big Tech companies. In most of the related literature, the acronyms GAFAM (Google, Amazon, Facebook, Apple, Microsoft) (Petit, 2020), or MAMAAs (Meta (Facebook), Apple, Microsoft, Amazon, Alphabet (Google)) and China's BATs (Baidu, Alibaba, and Tencent) are used to refer to these technology giants (Bassens & Hendrikse, 2022). The original activities of these companies were not in the financial sector, but in areas such as software development, marketing, social media, online retail, and content services. However, in recent years, Big Tech companies have shown a growing interest in expanding their scope of activities and service portfolio into the financial area. The study aims to assess this relatively under-investigated phenomenon.

The preliminary hypothesis of this study is that Fintech ecosystems globally have been complemented by a new player in the form of Big Tech companies as financial service providers. The study seeks to answer the question of what factors have driven these changes and how they affect the other actors in the ecosystem. Current members of Fintech ecosystems are defined by their role or function. For example, government has a regulatory role, Fintech startups and banks provide solutions, technology developers create a favorable infrastructure, and customers use the services. The paper analyzes whether Big Tech companies have become part of the Fintech ecosystem based on their emerging roles in financial services.

1. LITERATURE REVIEW AND THEORETICAL BASIS

The literature review is conducted in three main sections. First, the paper analyzes the main actors currently identified in Fintech ecosystems in related research and the roles they play. The study then reviews the current activity of Big Tech companies in the financial services sector and the steps they are taking to increase their role. Thirdly, the paper shows the investments that Big Tech companies have made in Fintech subjects and the results that can already be identified.

1.1. Main actors and roles in Fintech ecosystems

In the evolution of the Fintech ecosystem, competitive collaboration between banks and startups laid the first building blocks. This has created innovative and convenient solutions for consumers and has allowed Fintech services to spread globally to an increasing number of target groups. Subsequently, governments and regulators have sought to monitor and control the dynamic expansion of products and services. According to Diemers et al. (2015, p. 4), “Establishing and nurturing a FinTech ecosystem is difficult given the level of sustained collaboration that is necessary among governments, financial institutions, and entrepreneurs. For a FinTech ecosystem to function, it is imperative that each participant clearly understands its role, as well as the benefits it stands to gain from involvement”.

Another approach from Mittal (2019) also sees talent institutions as part of the ecosystem alongside regulators, financial institutions, investors and Fintech startups (Mittal, 2019). In and Shin further expand and refine these actors in their analysis and identify five main broad groups as the

pillars of the Fintech ecosystem: Fintech startups, Traditional financial institutions, Government, Financial customers, Technology developers (In & Shin, 2018). The related literature identifies the following main characteristics and roles of each ecosystem actor.

Fintech startups and their disruptive attitude are the key drivers in the development of Fintech ecosystems. Harasim’s study found that “there is a consensus that FinTech sector includes young, small technology companies (often start-ups), focusing on developing innovative products and/or process in the financial services industry, with special emphasis on improving user experience (UX)” (Harasim, 2021, p. 2). This attitude has enabled Fintech startups to compete with strong tradition, well-capitalized financial institutions.

Based on its relationship with other actors in the Fintech ecosystem, there are two types of Fintech companies based on Accenture’s report:

1. “Competitive companies are defined as direct challengers to the incumbent financial services institutions”. They are targeting less profitable segments by delivering better experiences directly to customers (Accenture, 2016, p. 5).
2. Collaborative companies “which offer solutions to enhance the position of existing market players” (Accenture, 2016, p. 5).

Traditional financial institutions have to compete in a constantly changing environment, serve their existing customers and expand and develop their service portfolios. According to Vovchenko et al., “a traditional bank should gradually move from the position of a “universal bank” to a position of a “universal partner” to support the customers that go beyond strictly banking products”

(Vovchenko, 2019, p. 152.). To remain competitive with the processes started by Fintech startups, traditional financial institutions need to either develop digital business areas in-house or acquire them through partnerships. The European Banking Authority has identified two main trends, namely (i) digital transformation and (ii) digital disruption. Digital transformation involves a transformation of internal processes, and it aims to digitalize and optimize operations. Digital disruption is a change to the traditional banking market from its current form through the creation of a new market enabled by the use of innovative technologies, which includes new ways of customer interaction to enhance customer experience (EBA, 2019, p. 3).

Brummer and Yadaw (2019, p. 276) believe that the complementarity of FinTech products and services in relation to banking products and access to the customer base of banks enabled them to create innovative supply chains for FinTech products.

Financial customers can be divided primarily into two main groups: individuals and organizations. The report of the Fintech startup Plaid found that while Fintech adoption remains most prevalent among younger generations (95% of millennials reported that they use Fintech services), growing adoption among older demographics helped drive the overall growth of financial technology applications (Plaid, 2021). According to Schmidt et al. (2018, p. 5012), “customers of fintech’s almost equally distributed among B2B, B2C and B2B/B2C”.

“**Governments**, the legislature and their regulatory agencies play a key role in the ecosystem since they are in charge of the legal infrastructure upon which banking and finance operates and within which other FinTech operators navigate their business” (Gagliardi, 2019, p. 23). According to In and Shin (2018, p. 3), “depending on the national economic development plans and economic policies, different governments provide different levels of regulation (e.g., licensing of financial services, relaxation of capital requirements, tax incentives) for fintech startups to stimulate fintech innovation and facilitate global financial competitiveness”. With such a dynamically expanding and digitally accessible range of services, it is therefore of paramount importance to have the right regulatory framework in place.

“**Technology developers** provide digital platforms for social media, big data analytics, cloud computing, artificial intelligence, smart phones, and mobile services. Technology developers create a favorable environment for fintech startups to launch innovative services in rapidly” (In & Shin, 2018, p. 3). These actors can be IT development companies, telecom service providers, and some of the large technology companies that first entered the Fintech ecosystem in this role.

It is only in recent years that the related literature has begun to address Big Tech companies as intermediaries or direct providers of Fintech services. However, the related literature does not yet consider Big Tech companies as a dominant, named member of the Fintech ecosystem. The literature review will continue by categorizing financial services and presenting the growing role of Big Tech companies in these areas.

1.2. Financial services and Big Tech activity

Today, more and more specialized Fintech service areas have launched, providing more and more solutions for both B2C and B2B customers. According to Ghahroudi and Jafari (2021, p. 6), “Fintech was initially applied to the technology used at the back-end systems of established financial institutions when Fintech emerged in the 21st century. Fintech now includes different sectors and businesses such as education, retail banking, fundraising and nonprofit, and investment management”. The report of the World Economic Forum gave the following classification by functions and innovation of Fintech services: Payments, Deposits and lending, Insurance, Capital rising, Investment management, Market provisioning (World Economic Forum, 2015). In and Shin identified six fintech business models implemented by the ever-growing number of fintech startups: Payment, Wealth management, Crowdfunding, Lending, Capital market, Insurance services (In & Shin, 2018). An analysis by Ian Martin company created a very similar typology: Payments, Lending, International money transfer, Personal finance, Equity financing, Consumer banking, Insurance (Gakman, 2022). According to Bassens and Hendrikse (2022, p. 4), “FinTech developments have centered around the

digitization of payments and other customer services, but it is increasingly entwined with developments in Artificial Intelligence (AI), Big Data analysis, machine learning, and Internet of Things (IoT), which can be deployed for business-to-business, business-to-customer and customer-to-customer purposes". Digital transformation has brought new areas, tools and operating models to financial services. The next step in the literature analysis is to analyze the operations, mindsets and motivations of Big Tech companies, most of which were born and raised in the virtual world.

According to Padilla and Croxson, "the experience from other industries – from online advertising to software; from traveling to retailing – shows that Big Tech firms scale up their businesses very quickly, tailoring their services around customers' needs, exploiting economies of scope and data advantages, and cross-subsidizing their services with the revenues obtained in their primary markets" (2021, p. 6). Based on Armantier's research, consumers are aware that Big Tech companies have increasing control over their data and are the least trusted compared to government agencies, traditional financial institutions, and Fintech startups (Arman-tier et al., 2021).

In the beginning, Big Tech firms offered financial solutions as a complement to their original services. Then, in recent years, these companies have realized that the direct provision of financial services can create synergies with the delivery of their existing services and build deeper customer relationships. Based on the analysis of the Financial Stability Board, various ways of interaction between BigTech firms and incumbent financial institutions are emerging. Broadly speaking, they can be classified as:

"Direct competition, where BigTech firms directly compete with the offering of incumbents, for ex-

ample by creating their own online banks, insurance or asset management firms.

Partnership, where BigTech firms partner with financial institutions in offering financial services. Such partnerships take numerous forms: BigTech firms provide technology services and infrastructure (e.g. cloud computing and data analytics) to financial institutions; and vice versa, i.e. incumbent financial institutions provide their infrastructure and funding to operationalize BigTech firms' offering of financial services. Such partnerships can also take the form of 'interfacing', where BigTech firms act as intermediaries between financial institutions and their customers" (2019, p. 14).

About the report of the online portal CB Insights, in the US, Amazon is one of the most focused Big Tech companies on building financial services products and building a bank for itself. It is taking core components of modern banking (deposits, credit cards, loans, insurance) and tweaking them to suit Amazon merchants and customers. In addition to offering an in-house loan program, Amazon also partners with traditional financial institutions to scale its SME (Small and Medium Enterprises) loan offerings. The partnership will help Amazon transfer credit risk while increasing the lending capacity within its merchant ecosystem (CB Insights, 2021).

Similar to the operating model of Amazon, the Chinese Alibaba group includes a financial services company, called Ant Financial. One of its subsidiaries is Alipay, a mobile payment company, and it also has a money market fund, an online bank, and an insurance company (Stulz, 2019).

According to Crisanto et al. (2021), in past few years, Big Tech companies "expanded into other sectors and are now also involved in the provision

Table 1. Financial services offered by Big Tech companies

Source: Crisanto et al. (2021).

Big Tech comp.	Main business	Payments	Credit provision	Banking, debits	Insurance
Google	Internet search/advertising	X			
Apple	Tech/producing hardware	X			
Facebook	Social media/advertising	X			
Amazon	E-commerce/online retail	X	X		X
Alibaba	E-commerce/online retail	X	X	X	X
Tencent	Tech/gaming and messaging	X	X	X	X

of credit (particularly consumer financing and microloans with shorter maturities), banking, crowd-funding, asset management and insurance” (p. 2).

1.2.1. *Big Tech presence in payment services*

The payment services are the area in which all the Big Tech companies surveyed have been active in recent years. According to Bassens and Hendrikse, “Big Tech firms have been mobilizing their own platforms to offer payment facilities, either working with established banks or installing systems running parallel to the ones anchored in incumbent financial institutions” (2022, p. 2). In August 2020, Facebook announced the formation of a new team, Facebook Financial (F2), to build a cohesive payments strategy across Facebook, Instagram, WhatsApp, and Portal (Snyder, 2020).

The report of the online portal CB Insights shows that while Apple is a hardware giant, the company is growing its “services” portfolio, which includes payment services and plans to turn iPhones into contact free mobile payment terminals, without requiring any additional hardware. Also, Amazon’s contactless payment technology, Amazon One, is being tested out in Whole Foods stores and locations. Offered to merchants as a service, Amazon One has the potential to significantly reduce the use of physical credit and debit cards (CB Insights, 2021).

So, payment service is the area of financial services that Big Tech companies have entered in recent years and have started to test their functionality in their existing activities, with a perspective to offering them as a stand-alone service. Amazon followed a similar model when it first developed its cloud-based solutions for itself and then, armed with experience, started selling them to external customers (AWS – Amazon Web Services).

1.2.2. *Big Tech presence in lending and deposit services*

Besides payment solutions, lending and deposits are the other main areas that are good indicators to measure the activity of Big Tech companies in financing services. To succeed in this area, Big Tech companies need to first identify customer segments that are more difficult to finance with traditional banking instruments. Frost et

al. (2019) revealed that many SMEs in emerging and developing economies do not comply with the minimum requirements for filling a loan application, especially because they cannot provide a bank with audited financial statements and may not have other official documentation. BigTech firms can overcome these limitations by using information provided by their core business, such as e-commerce, without the need for additional documentation from merchants.

Another important question is whether Big Tech’s lending capacity is constrained by the funding side. The analysis did not reveal any major constraints in this area, as Big Techs offer the following possible ways to overcome this limitation about the report of the Bank for International Settlements:

- “One is to establish an online bank. But in some countries, regulatory authorities restrict the opening of remote (online) bank accounts.” (2019, p. 61).
- “A second option is to partner with a bank. Big techs can provide the customer interface and allow for quick loan approval using advanced data analytics; if approved, the bank is left to raise funds and manage the loan. This option can be attractive to big techs as their platforms are easily scalable at low cost and they interface directly with the client.” (2019, p. 61).
- “A third option is to obtain funds through loan syndication or securitization – already a common strategy among fintech firms.” (2019, p. 61).
- There is a fourth, non-traditional, way of funding, Big Tech companies could introduce their own crypto currency to fund this kind of activity.

Big Tech firms could choose a blended approach as well mixing the above-mentioned options.

According to Stulz, these giant technological companies “have all the technical knowhow and up-to-date systems that FinTech aspires to” (2019, p. 21). Lending services are therefore primarily an opportunity for Big Tech companies because they allow them to provide financing to their existing

Table 2. Top Big Tech Fintech acquisitions

Source: Own editing about the CB Insights report 2021.

Acquirer	Target Fintech startup	Deal amount	Description
Apple	Mobeewave	\$100M	Mobeewave offers technology that allows phones to securely receive payment transactions made with contactless cards and wallets.
Amazon	Perpule	\$20,4M	Perpule is an India-based self-checkout, queue management, omnichannel engagement, and payments platform for offline retail stores.
Facebook	Chainspace	N/A	Chainspace using blockchain technology and offers a smart contract development platform that facilitates payments and other services for customers.
Google	Orbitera	\$100M	Orbitera's Cloud Commerce Platform enables multi-channel software delivery and commerce on cloud platforms.

customers, e.g., through e-commerce activities. But if they can build trust in this area, they can move on to small loans and SME lending.

1.2.3. Big Tech presence in insurance services

In addition to payment services and lending, the insurance market also offers opportunities for Big Tech companies to build on synergies from their existing services. Based on the research of Bank for International Settlements, Big Tech companies “use their platforms mainly as a distribution channel for third-party products, including auto, household liability and health insurance. In the process, they collect customer data, which they can combine with other data to help insurers improve their marketing and pricing strategies” (2019, p. 60). In line with this, the pandemic has also strengthened Big Tech’s position in the insurance market (Volosovych et al., 2021).

Based on a report by CB Insight online portal, Big Tech companies also have the hardware to improve key insurance processes, such as utilizing

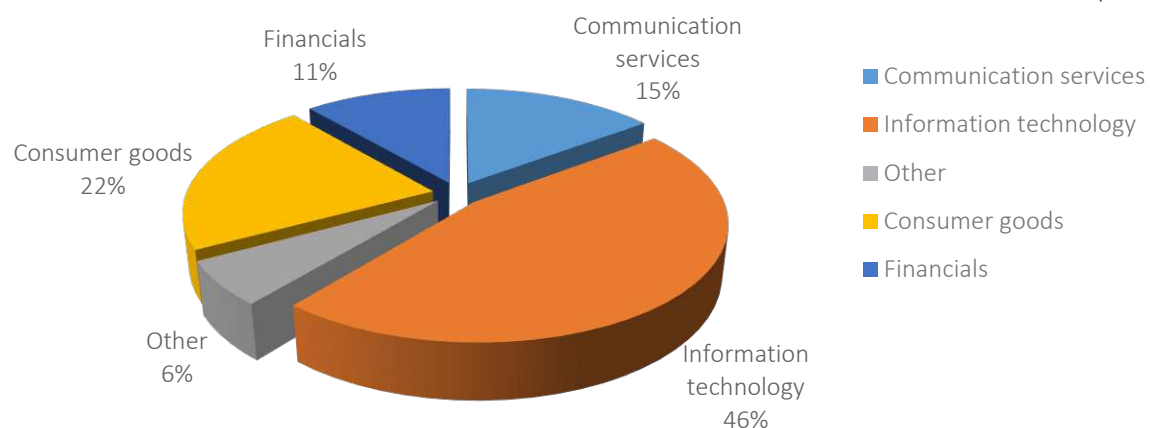
their smart home and wearables product suites for underwriting and claims. For example, wearables, which constantly collect data on users’ health behaviors, can help life insurers better quantify mortality probabilities, leading to more accurate underwriting. Similarly, smart home devices can sense when an incident occurs (e.g., a water leak) and trigger an automatic response (e.g., shut off the water line) to mitigate or even prevent losses from occurring (CB Insights, 2020).

Thus, in insurance services, Big Tech companies are still mainly acting as third-party intermediaries, but as more and more data becomes available for analysis, they will have a greater chance of entering this service segment in increasing numbers on their independent basis.

1.3. Fintech M&A activities and financial results of Big Tech companies

Big Tech companies like Apple, Google, Amazon, and Facebook have been actively investing in pay-

Source: Calculations of the Bank for International Settlements based on S&P Capital IQ 2019

**Figure 1.** Revenue of Big Tech companies in different sectors

ments and the fintech landscape over the past few years. Despite a raging pandemic, Big Tech companies have invested significant amount in Fintech, as shown in Table 2.

The integration of acquired Fintech startups offers new opportunities for Big Tech companies to expand their service portfolio.

As Big Tech companies have started to integrate financial services into their operating models, related revenues have begun to appear in their financial results (BIS, 2019).

This factor also supports the finding that Big Tech companies are no longer just planning to enter the financial services role but can already be counted on to be present in this position.

2. GENERALIZATION OF THE MAIN STATEMENTS

The literature analysis of the study started with a synopsis of the actors in the Fintech ecosystems. Related research has defined ecosystem members along the dimensions of their roles and responsibilities. The main groups of Fintech actors identified in the related literature show significant similarities, and Big Tech companies have not yet appeared in these models. However, it is also noticeable that the most relevant literature on the subject was written before 2020, and Big Tech companies have only started to make significant moves into financial services in the last few years.

Based on their roles and responsibilities, traditional financial institutions and Fintech startups

as service providers; governments as regulators; and technology developers, talent institutions and investors in a supporting role are included in the models examined. To understand the role of Big Tech companies, it is therefore necessary to analyze the role they play in financing services.

So, the next step in the literature analysis was to look at the growing scope of financial services and the role of Big Tech companies in these subjects. The question arises: Why Big Tech companies appear more and more in the related literature and why in the context of financial services? In examining the success of Big Tech companies, the literature review has highlighted the following main aspects: They scale up their businesses very quickly, tailoring their services around customers' needs, using big data effectively, and cross-subsidizing their new services with the revenues obtained in their primary markets (Padilla & Croxson, 2021). Consumers are sharing more and more information about themselves when using the core services of Big Tech companies. The evaluation of this data enables the analysis, prediction and even influence of consumer behavior. Due to their original areas of operation, Big Tech companies have outstanding IT development capabilities.

While Big Tech companies have become "big" by building on their presented strengths, financial services have also undergone a significant transformation. The literature analysis showed that Fintech emerged in the early 2000s and was initially applied to the technology used at the back-end systems of financial institutions. Subsequently, the collaboration between traditional financial institutions and Fintech startups has paved the way for many new innovative services. As shown in the analysis based on Diemer et al.'s study (2015), all actors need to see the benefits and coopera-

Table 3. Key actors in fintech ecosystems

Source: Own edition 2022.

Diemers et al. (2015)	In & Shin (2018)	Mittal (2019)
Entrepreneurs	Fintech startups	Fintech startups
Financial institutions	Traditional financial institutions	Traditional institutions
Governments	Government	Regulators, governments
	Financial customers	Customers
	Technology developers	Talent institutions
		Investors

tion frameworks that a given ecosystem offers. Traditional financial institutions had professional experience and a significant customer base, while Fintech start-ups had an innovative approach and development capacity.

As a result of digital transformation, financial services have moved into the online space, where Big Tech companies are already at home because of the services they originally provided. The analysis revealed that for many financial services (e.g. payment services, credit, insurance), Big Tech companies first made their platforms, data analytics capabilities and development capacity available to members of the Fintech ecosystem. Building on this experience, they have announced a series of in-house developments (e.g. Facebook Financial, Amazon One, Alipay) or acquisitions in recent years. Furthermore, their regulation has only recently come to the attention of authorities in a growing number of countries. The only competitive disadvantage of Big Techs appears in consumers' trust in counterparties to safeguard their data.

Big Tech companies therefore have advantages in terms of customer relationships and IT development capabilities that traditional financial institutions and Fintech startups only have in combination. This is coupled with the fact that they have no difficulty in raising funds for fi-

ancial services, especially for lending activities, but are currently not subject to the same strict regulatory framework as traditional financial institutions. Together, these circumstances offer significant growth opportunities for Big Tech companies in the financial services sector.

The role of Big Tech companies as financial service providers is further strengthened by the significant investments they have made in Fintech in recent years. All this shows, based on the literature analysis, that Big Tech companies are not stopping at their current role, but are looking to expand their role as financial service providers in additional areas. This also confirms that Fintech ecosystems can count on Big Tech companies as a major player in the service provider role.

As a result of the analysis of the main subjects of the literature presented above, the study presents the following main points:

- Financial services were initially provided by traditional financial institutions, but in the early 2000s, Fintech startups emerged to compete or collaborate with the incumbents by bringing a disruptive approach. This led to the creation of Fintech ecosystems, which, in addition to financial institutions and Fintech

Table 4. Competitive mapping

Source: Own edition 2022.

Competitiveness aspects	Traditional financial institutions	Fintech	Big Techs
Customer base (economy of scale), customer information	Large, in case of large institutions. But the processing of customer information is less developed	Rarely large enough, only in case of the biggest players, developed processing of customer information	Very large (global), processing of customer information in the core their business model
Customer trust in data safeguard (Armantier et al., 2021)	Highest	Medium	Lowest
Customer influence	Mostly indirectly by a third service (marketing) provider	Mostly indirectly by a third service (marketing) provider	The core of their business model
IT development capability	Moderate, legacy core banking systems characterizing the sector	Strong	Strong
Economy of scope	Limited to the financial sector	Limited to the financial sector	Broad, but financial services could compete with other services (advertisement)
Funding opportunity	Very good	Medium depend on market situation	Very good
Regulation	Tailored to the sector, defending the traditional players	Disadvantage	Their activities are not in the traditional scope of central banks and financial regulators

startups, included governments, IT developers and investors as members alongside customers.

- In parallel with the digital transformation of financial services, Big Tech companies have built a globally prominent user base in areas such as social media, online advertising, cloud services, hardware and software development. Based on this customer base, they first started to offer financial services in an intermediary role, working with both traditional financial institutions and Fintech startups.
- Building on the experience of these partnerships, in recent years they have started to develop their own financing services and have been looking for acquisition targets to integrate additional Fintech-related solutions and technologies. The customer relationships, IT development capabilities and financing background are advantages that have enabled Big Tech companies to become independent financial service providers as part of the Fintech ecosystem.

3. DISCUSSION

The literature analysis of this study has shown that previous research has not considered Big Tech companies as main actors of Fintech ecosystems. The literature analysis also highlighted that previous research has identified actors based on their roles in the ecosystems. Therefore, the next step was to investigate whether there are activities of Big Tech companies, which are similar or identical to the roles of existing actors in Fintech ecosystems.

The literature review and the analysis of the service portfolios of the Big Techs showed that these companies have emerged as service providers in at least two areas, namely payment services and lend-

ing, on their own, and insurance, as third-party service providers. The role of Big Tech companies in the financial sector has certainly been less studied, as they have only started to provide such services in the last few years, probably to an increased extent due to the global pandemic. This study also analyzed how Big Tech companies can interact with the other service provider actors of the Fintech ecosystems. When evaluating the acquisition activity of Big Tech companies, the question rightly arises: In the future, what comparative advantages will traditional financial institutions and Fintech start-ups be able to offer if the cooperation with Big Tech companies completely turns into a competitive situation? Based on the activity of Big Tech companies in the financing services sector so far and their future plans powered by acquisitions, the models analyzed in the literature review need to be extended by adding Big Tech companies on the service provider side to the Fintech ecosystem.

While the digitalization of financial services makes significantly more convenient for consumers to use them, there is an intense public debate about the Big Tech regulation. When examining public consciousness, a number of threats from Big Techs can be identified: data and consumer protection problems, addiction, manipulation, dominant market position, tax evasion, etc. Therefore, public policies can no longer ignore Big Tech regulation. The banking and insurance regulation is entity based. While other specific business lines (e.g., payment) have activity-based regulation (there are unified licensing requirements). This paper agrees with Carstens et al. (2021) that the current regulatory system could not answer to the challenges raised by Big Techs (Carstens et al., 2021). Some Big Tech specific entity-based rules complemented by activities-based requirements might be an optimal solution. The next step of the research is to identify the regulatory challenges that the growing financial services activity of Big Tech companies brings with it at the national and international levels.

CONCLUSION

Big Tech companies provide services in more and more fields of our lives. The aim of this study was to analyze in which areas these companies have started to provide financial services and in what role they are doing so. When customers make purchases online, or apply for credit or insurance, they share im-

portant information about themselves, their financial situation, and their future plans. The operating model of Big Tech companies is based on trying to monetize the information that users share with them. In this context, it is understandable that they would want to extend their operations to financial services, as they can get to know their customers even better. The analysis has presented a detailed overview of the financial services areas in which Big Tech companies have started to provide services, first as third parties and then as independent providers. These include payment services and certain credit products, which are increasingly being offered by Big Tech companies to their customers. This is achieved either through in-house development or through acquisitions of Fintech start-ups. The analysis also shows that Big Tech companies are beginning to realize a return on their investments and have been generating revenues from their financial services in recent years. The literature on Fintech ecosystems has so far focused on traditional financial institutions and Fintech startups in the role of service providers. However, this study has highlighted that Big Tech companies have significant added value and advantages in terms of customer base, development capability, and the ability to analyze and shape consumer habits. This knowledge base was initially offered to the financial institutions cooperating with them through third-party partnerships. However, all these factors also allow them to offer financial services independently, without banks and Fintech startups. Based on all these factors and findings, it can be also assumed that Big Tech companies are part of the Fintech ecosystem in a service provider role. Considering this, the regulation of Big Tech companies would be one of the most important policy challenges in the coming period. Because never before in history has so much information about members of the consumer society been concentrated in so few hands.

AUTHOR CONTRIBUTIONS

Conceptualization: András Bethlendi.
 Formal analysis: András Bethlendi.
 Investigation: Árpád Szőcs.
 Methodology: András Bethlendi.
 Project administration: Árpád Szőcs.
 Resources: Árpád Szőcs.
 Software: Supervision: András Bethlendi.
 Validation: András Bethlendi.
 Visualization: Árpád Szőcs.
 Writing – original draft: Árpád Szőcs.
 Writing – review & editing: András Bethlendi.

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