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**FinTech sector in the Italian market: market analysis, literature  
review and case studies**

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## **ABSTRACT**

The European financial market has been disrupted by FinTech firms, which have the peculiarity of being entirely digital and able to offer support and solutions to clients instantly and everywhere. The FinTech phenomenon has made its impact stronger after the COVID-19 pandemic, leading the technological evolution at a faster pace and more in favor of the firms focused on offering digital services. This dissertation will present the FinTech phenomenon in its entirety, including basic notions to frame the topic. It will present a market analysis of the FinTech sector based on surveys of the Bank of Italy and data drawn from the online database Crunchbase, a literature review of contributions on the subject of FinTech linked to five research questions drawn from them, and case studies related to the research questions and involving three FinTech firms and two traditional financial firms.

Il mercato finanziario europeo è stato stravolto dalle imprese FinTech, che hanno la peculiarità di essere interamente digitali e in grado di offrire supporto e soluzioni ai clienti in maniera istantaneamente e ovunque. Il fenomeno FinTech ha avuto un maggior impatto ed evoluzione dopo la pandemia di COVID-19, facendo avanzare il progresso tecnologico ad un ritmo più veloce e a vantaggio delle imprese che si concentrano sull'offerta di servizi digitali. Questa tesi presenterà il fenomeno FinTech nella sua interezza, includendo nozioni di base necessarie per inquadrare l'argomento; presenterà inoltre un'analisi di mercato del settore FinTech basata sulle indagini della Banca d'Italia e su dati tratti dal database online Crunchbase, una review letteraria delle pubblicazioni sul tema FinTech collegata a cinque domande di ricerca da esse tratte, e infine dei casi di studio relativi alle domande di ricerca e che coinvolgono tre imprese FinTech e due imprese finanziarie tradizionali.

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## INTRODUCTION

In the course of history, the European financial market has known many different events that have shaped and transformed it in many ways, from the advent of the internet to the financial crisis of 2008 with all its consequences and, more recently, to the COVID-19 pandemic and the entry of new participants in the market, namely FinTech firms. This type of firms have the peculiarity of being entirely digital, being able to offer support and solutions to clients instantly and everywhere through the use of smartphones and similar devices. Because of these firms, the market has been disrupted and forced to engage in a series of changes, from functional transformations to shifts at business and process levels; among market participants, traditional financial firms, such as banks and insurance companies, have been the ones to be affected the most. Taking into consideration this fact, the current dissertation will present the FinTech phenomenon in its entirety, including basic notions to frame the topic: in the first chapter the main reference will be what FinTech firms are and how they have emerged, the main components of this ecosystem, the recurring business models and the technologies adopted, and the reaction of regulators and traditional financial firms, including the specific regulatory framework and the main strategies employed by banks and insurance firms. The second chapter will present a market analysis of the FinTech sector, drawing data from surveys carried out by the institution “Banca D’Italia”, which refer to the period between 2018 and 2021 and illustrates the many facets of this sector in Italy; the analysis will be followed by an overview of the current state of FinTech firms in Italy, for which data will be gathered by the online database “Crunchbase”. The third chapter will include a literature review of contributions on the subject of FinTech, in particular analyzing 20 different studies and presenting five research questions drawn from the content of the publications between 2020 and the current year. Finally, the fourth chapter will contain the description of a number of case studies, three FinTech firms and two traditional financial firms, that refer to the research question illustrated in the previous chapter, giving a further representation of the Italian FinTech firms and their performance and the reaction of Italian banks to the phenomenon.

# 1. FINANCIAL TECHNOLOGY AND DIGITAL INNOVATION

## *1.1 Overview on Digitalization in the Financial sector*

“Digital transformation is the digitization of previously analog machine and service operations, organizational tasks, and managerial processes”<sup>1</sup>; from the interaction between information technology and finance comes the concept of Digital Finance, which concerns the process of digitalization of the financial industry, also referred to as the ***Banking, Financial Services and Insurance sector*** (BFSI).

Traditional industry around the world has been experiencing a rapid change mostly due to the ongoing digital transformation, accelerated by the introduction of technology that is continuously evolving. It can be affirmed that the world has experienced four industrial revolutions to date: the first industrial revolution characterized by the invention of the steam engine (at the foundation of the modern production system), the second industrial revolution with the emergence of electricity and the introduction of mass production, the third industrial revolution which introduced the first programmable logic systems and the concept of digitalization, and, finally, the fourth industrial revolution which emerged from the adoption of systems that link the physical world to the artificial one through sensors. The implementations which occurred in the last revolution previously mentioned has been referred to as Industry 4.0 and implies the “process of transforming the economy and society in tandem with intelligent robots, cloud computing technologies, artificial intelligence (AI), large data, the Internet of Things, 3D printers and other scientific developments”<sup>2</sup>.

BFSI includes, as Herrmann and Masawi (2020) state, three different sections of the financial sector:

- *Banking* covers core banking, retail, private, corporate, cards (credit, debit), credit unions, and Islamic banking.
- *Financial Services* entails financial advisors, asset management, investment banking, mutual funds, stock-broking, payment providers, and fintech providers.

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<sup>1</sup> Barroso, M., and J. Laborda (2022), “Digital Transformation and the Emergence of the Fintech Sector: Systematic Literature Review.”, pp. 2.

<sup>2</sup> Machkour, B. and A. Abriane (2020), “Industry 4.0 and Its Implications for the Financial Sector.”, pp. 2

- *Insurance* involves underwriting, claims, life insurance, home and contents, business, motor vehicle, mortgage insurance, workers compensation, travel, and health insurance<sup>3</sup>.

This specific field has grown and experienced continuous change and this evolution can be divided in three different phases. The first stage (1866–1967) involves globalization in which financial interconnections, payments and other financial transactions were able to cross borders between countries; this phase ended in 1967 with the invention of the first ATM, moment in which finance and technology met for the first time. The second stage (1967–2008) saw the emergence of the first credit cards and the creation of SWIFT messages (system enabling interbank financial transactions), introducing online banking. The third phase (2008-onwards) brought the process of digitization and consequently the fact that firms started to implement innovative technology combined with the emergence of new entrants in the market, namely FinTech<sup>4</sup>.

There has been a conspicuous amount of events which have influenced the BFSI sector in the last 40 years: some examples are the Latin American Debt Crisis in 1982, the East Asian Economic Crisis in 1997/1998, the Global Financial Crisis in 2007/2008, the 9/11 terrorist attack, and COVID-19<sup>5</sup>. In particular, the lockdown established to avoid spreading the virus in the first months of 2020 affected all societies, individuals, businesses and governments; this had an important impact in every field, from social to economic, financial, and political, and during these social distancing measures, working remotely from home and executing online financial services, especially payments, became frequent and common. Therefore it can be stated that the spread of Covid-19 have profoundly affected the way people act every day and enhancing the use of electronic instruments, improving Italy’s digital progress and reducing its gap in comparison with other Eurozone countries in terms of “the number of transactions per capita settled by means other than cash”<sup>6</sup>.

From a broader point of view, Europe put a good amount of effort in trying to close the digital adoption gap with the United States, mostly in the last four years, as it can be observed in Figure 1; beyond the response to COVID-19 and the war in Ukraine, the digital transformation of the European economy requires the adoption of more advanced digital technologies; however, this

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<sup>3</sup> Herrmann, H., and B. Masawi (2022), pp. 2.

<sup>4</sup> Barroso, M., and J. Laborda (2022), pp. 2.

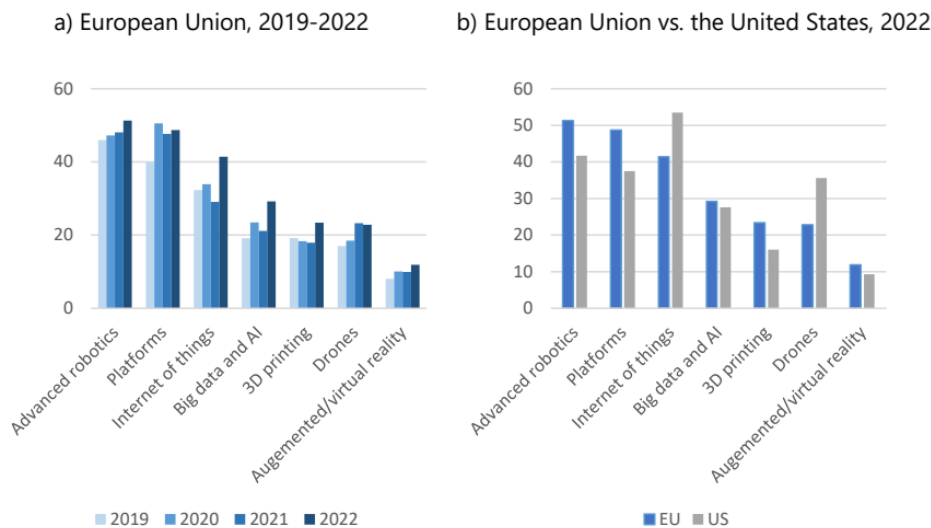
<sup>5</sup> Herrmann, H., and B. Masawi (2022), pp. 2.

<sup>6</sup> Perrazzelli, A. (2021), *L’accelerazione Digitale Del Sistema Finanziario: Nuove Sfide per Il Mercato E per Le Autorità.*, pp. 1.



type of integration require a lot more investing than simple activities like providing online services<sup>7</sup>.

*Figure 1. Adoption of specific digital technologies (% of firms) and comparison with the US*



*European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 11*

Even though there are some digital success stories in Europe, many countries are still behind in the process of digital technology diffusion and adoption; in this context firm size plays a key role in the adoption of such technologies. The European Investment Bank states that “80% of firms with more than 250 employees use advanced digital technologies, compared with 45% of firms with fewer than ten employees”. This difference may cause a deceleration of digital transformation in Europe.

An important concept to clarify is the one of digital firm; a firm can be considered as “digital” if it implements at least one digital technology in its business and/or if the entire business is based on one digital technology<sup>8</sup>. The digital economy is one of the main areas in which an important amount of EU funding is invested through the recovery instrument "Next-generation EU" and the Multiannual Financial Framework 2021-2027<sup>9</sup>. Every year the EU Commission monitors digital progress in EU countries through the reports containing the Digital Economy and Society Index (DESI)<sup>10</sup>. This index involves country profiles and determines the areas in which some sort of intervention is required. There are five main areas included in the DESI: (i)

<sup>7</sup> European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 10

<sup>8</sup> European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 12

<sup>9</sup> Hunady, J., et al. (2022), “Digital Transformation in European Union: North Is Leading, and South Is Lagging Behind.”, pp. 2.

<sup>10</sup> Hunady, J., et al. (2022), pp.3.

Human capital, (ii) Connectivity, (iii) Integration of digital technology, (iv) Digital public services, and (v) Research & Development in information and communication technology (ICT).<sup>11</sup> For what concerns the current state of the digital economy, it is strikingly different among countries in the EU, particularly for those enterprises in the EU's newest member countries which are shown to be extensively lagging behind in digital transformation.

An additional index which has a significant academic importance is the EIBIS (European Investment Bank Investment Survey) Corporate Digitalization Index, which includes several indicators on digitalization and firms' valuation of digital investments and infrastructures, in order to examine the degree of digital adoption in the EU and in the US<sup>12</sup>. This index consists of six different components, of which the advanced digital technologies' application, digital penetration during COVID-19, digital infrastructures, investment dedicated to software and data, investments in employee training, and implementation of a strategic monitoring system; furthermore, it is based on firm-level data collected by the EIBIS in 2022<sup>13</sup>. The main differences between these two indexes are illustrated in the following table (Table 1):

*Table 1. Differences between EIBIS and DESI indexes*

<b>EIBIS CORPORATE DIGITALIZATION INDEX</b>	<b>DESI INDEX</b>
ITS COMPONENTS ARE BASED ON FIRMS' ASSESSMENT OF DIGITALIZATION AND QUESTIONS FROM THE SAME SURVEY, WHICH SIMPLIFIES COMPARISON ACROSS COUNTRIES.	ITS COMPONENTS COMBINE DATA ON HOUSEHOLDS, INDIVIDUALS, E-GOVERNMENT SERVICES AND ENTERPRISES FROM DIFFERENT SOURCES AND DATA PROVIDERS.
INCLUDES DATA ON US FIRMS.	DOES NOT INCLUDE DATA ON US FIRMS.
INFRASTRUCTURE COMPONENT CAPTURES IF FIRMS CONSIDER IT AN OBSTACLE TO INVESTMENT. DOES NOT COVER DIGITAL PUBLIC SERVICES.	CONNECTIVITY COMPONENT CAPTURES THE QUALITY OF BROADBAND OFFERED TO HOUSEHOLDS IN EU. INCLUDES DIGITAL PUBLIC SERVICES
INCLUDES PARAMETER TO ASSESS IF FIRMS ADOPT FORMAL STRATEGIC BUSINESS MONITORING SYSTEMS BUT DOES NOT COVER INDIVIDUALS' USE OF ONLINE SERVICES AND INTERNET.	FOCUSED ON INDIVIDUALS' USE OF INTERNET AND ONLINE TRANSACTIONS.

*EIB Group Survey on Investment and Investment Finance (2022) and Hunady J., et al. (2022)*

Going back to the concept of digital firm, it can be stated that this type of firms have a tendency to invest more in fields like research and development, but more fundamentally in innovation. One aspect that is important for digital transformation is the availability of workers with digital skills; firms operating in places where the population has above-average digital skills implemented more advanced digital technologies. They also had the tendency to invest in

<sup>11</sup> Hunady, J., et al. (2022), pp.3.

<sup>12</sup> European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 13.

<sup>13</sup> European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 13.

becoming more digital as a response to COVID-19. The reason for this fact could be that firms in those regions usually prefer hiring skilled labour already on the market rather than paying for in-house training<sup>14</sup>. The most advanced digital firms in the EU achieved to increase the level of employment compared to the period before the pandemic; on average, more digitally advanced EU firms that invested in becoming more digital during the COVID-19 pandemic have increased the number of workers since the beginning of 2020.

An additional study (Hunady et al., 2022) has been presented that proposes the comparison of EU countries on the basis of different variables related to the level of readiness for digital transformation and digital economy. The variables include the most relevant aspects of digital transformation, among which there are e-commerce, use of security measures and advanced technology and so on, for a total of 10 different but thematically connected variables. The results from this study divides firms in 3 main clusters which result in countries with the best digital readiness (for example, Belgium or Denmark), countries with the lowest digital readiness (like Romania, Portugal or Poland) and countries with medium digital readiness (among which there is Italy).

In the particular context of banks and insurances, the traditional intermediaries (also known as incumbents) have undergone an important process of digital evolution, mainly in response to the appearance of new entrants in the market which are based completely online. This type of firms has been named Financial Technology and shortened in FinTech; it can be currently considered as an umbrella term that includes several different types of spheres in the financial sector, such as insurance, regulation, lending, crowdfunding and many others. In the following subchapter, there will be a more detailed presentation of this specific phenomenon, including business models and the explanation of its composition.

### *1.2 FinTech*

In this section, the term FinTech will be defined and the composition of its ecosystem will be explained; the description will include also the historical evolution of the phenomenon, the different types of business models mainly adopted in the FinTech market and the main technological applications related to FinTech. Furthermore, this part will also present the reaction of traditional financial entities to FinTech and the regulatory framework that concerns this market.

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<sup>14</sup> European Investment Bank Group Survey on Investment and Investment Finance (2022), pp. 32.

### 1.2.1 Definition of “FinTech”

The European Union (EU) defines FinTech as a “technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services”<sup>15</sup>. They emerged in the period of the financial crisis of 2008, and they posed themselves as an alternative to traditional banks; FinTech firms appeared and filled in the gap left by banks, which brought to an important increase in global investments in FinTech ventures, for example in the US, investments increased from USD 4.05 billion in 2013–12.21 billion in 2014<sup>16</sup>. Traditional banks have been put in a position with strong pressure where FinTech firms introduced innovative technology in order to offer commercial and corporate banking products and services that aimed to raise customer experience.

Banking had no choice but to embrace digitalization, completely transforming the way it provides services and interacts with both commercial and corporate customers. It is important to clarify that the use of the term “financial services” by the European Union includes BFSI, used by industries dedicated to business process outsourcing (BPO) and information and communication technology (ICT) to further partition “financial services”<sup>17</sup>.

### 1.2.2 Emergence of FinTech

Financial markets all around the world were greatly impacted by the internet revolution in the early 1990s, with one of the major developments being that it lowered costs linked to financial transactions. The internet revolution brought many technological advancement and changed the image of the financial services industry, leading to the development of electronic finance, also known as e-finance. The term “e-finance” relates to every form of financial service, a few examples might be banking and insurance accomplished by way of electronic mechanisms, among which the internet and World Wide Web. Through e-finance, individuals and businesses are able to access accounts, perform business transactions, and gather information on financial services without entertaining physical connection with financial firms. A number of e-finance business models appeared in the 1990s, some examples being online banking, mobile payment,

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<sup>15</sup> Herrmann, H., and B. Masawi (2022), pp.1.

<sup>16</sup> Barroso, M., and J. Laborda (2022), pp.2.

<sup>17</sup> Herrmann, H., and B. Masawi (2022), pp.2.

and mobile banking. With the emergence of e-commerce, many changes brought to the downsizing and reduction of physical locations for banks<sup>18</sup>.

Another event that brought some change in the banking industry is the growth of smartphone use in the mid-2000s which enabled the improvement and evolution of mobile finance, among which mobile payment and mobile banking, which can be considered as an extension of e-finance<sup>19</sup>. Through this process, financial institutions have been able to allow customers to access bank account information, but also to make transactions, like paying bills, via their mobile device.

FinTech innovation began its rise after the worldwide financial crisis of 2008 and proceeded to merge e-finance with internet technologies, social networking services, social media, AI, and Big data. FinTech startups proved to be different from traditional financial firms through their use of personalized niche services, data-driven solutions, while also the presence of an innovative culture and smart organization.

The FinTech sector has been influenced by three main technological changes, which Palmié et. al (2020), have divided in three different waves: the first one concerns electronic payments, considering the development of the Internet and smartphones, FinTech startups enjoyed the advantage of the increasing use of electronic fund transfers performed through online banking and mobile payments, therefore the emerging technologies in these areas provided opportunities for new businesses. The second wave is represented by Blockchain and cryptocurrencies, because riding on the success derived from famous cryptocurrencies like Bitcoin, FinTech firms implemented a generous amount of blockchain technology in their operational systems and their business models and even if traditional financial firms have also focused on this type of technology, FinTech startups have a huge advantage on this matter. The third and last wave consists of Artificial Intelligence, which is another important part of FinTech firms' business models and this fact alone poses a threat to incumbents (traditional firms) which lag behind and struggles to innovate with a high speed, while FinTech firms present themselves already with this type of technology, becoming more important players in the market<sup>20</sup>.

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<sup>18</sup> Lee, I., and Yong J. S. (2018), "Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges.", pp. 2.

<sup>19</sup> Lee, I., and Yong J. S. (2018), pp. 2.

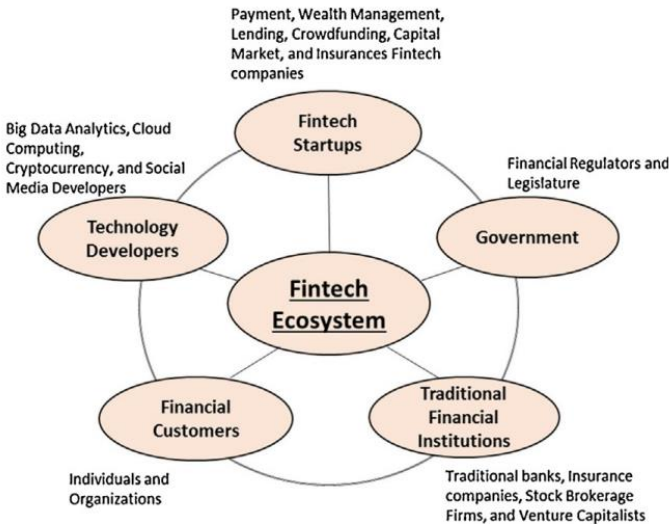
<sup>20</sup> Palmié, M., et al. (2020), "The Evolution of the Financial Technology Ecosystem: An Introduction and Agenda for Future Research on Disruptive Innovations in Ecosystems.", pp. 4-5.

FinTech firms are considered both as a threat and as a potential benefit to traditional financial firms, mostly because they enabled these firms to have a competitive advantage over competitors. The majority of financial firms have started to consider FinTech seriously and are continuously presenting strategies in order to compete, coexist, and collaborate with fintech startups. In the next section, it will be outlined in more detail the structure of the FinTech market.

1.2.3 Composition of the Fintech’s ecosystem

From the study of Lee I. and Yong J.S. (2018), the ecosystem belonging to FinTech can be divided into five main components: FinTech startups, technology developers, government, financial customers and traditional financial institutions; this five components are represented in Fig. 2.

Figure 2. Five units of the FinTech ecosystem



Lee, I., and Yong J. S. (2018)

These elements together support innovation, encourage economy, help collaboration and also competition in the financial industry, while creating a beneficial environment for consumers in the financial industry.<sup>21</sup>

The first part of this ecosystem is made up of *FinTech startups*, which specialize in different fields, such as payments, lending, wealth management, crowdfunding, insurance companies and capital market. These companies are at the center of the ecosystem, they are for the most part entrepreneurial and they have led the industry to important technological innovations in

<sup>21</sup> Lee, I., and Yong J. S. (2018), pp. 3.

the areas in which they operate achieving lower operational costs, targeting niche markets and providing their customers personalized financial services (more personalized than the ones offered by traditional firms). One particular feature that poses them one step ahead of traditional financial firms is their ability to offer consumers separate financial services, in this way customers can choose different services from a variety of distinct FinTech companies in order to fulfill their needs. This ability is one of the main drivers of the growth of the financial sector and has been highly disruptive for banks, which in these circumstances are disadvantaged.

The second pillar of this ecosystem is made up of *technology developers*, which supply digital platforms that can be used for several purposes, among which social media, AI, cloud computing, big data analytics, mobile services and smart phones.<sup>22</sup> These firms allow FinTech startups to present new innovative services in a rapid way, therefore creating an environment that fosters technological evolution. The benefits are multiple: big data analytics can produce unique personalized services for customers and cloud computing may help fintech startups with limited funding to expand web-based services at a much lower cost of domestic infrastructure development. On the other side, technology developers also benefit from interacting with FinTech startups because their relationship creates revenues in favor of these developers.

The third component is represented by the *government*, which, since the 2008 financial crisis, provides a favorable regulatory environment for FinTech startups.<sup>23</sup> Each country presents different economic development plans and economic policies and on these features depend the different governments provision of regulation, which can be on different levels (some examples are licensing of financial services and tax incentives); regulation is applied to FinTech startups in order to stimulate their innovation and promotes global financial competitiveness. At the same time, since the 2008 financial crisis, government regulators imposed more rigorous regulation, capital requirements, and reporting requirements on traditional financial firms. The fact that FinTech startups are restrained by looser regulatory requirements enables them to provide more customized, inexpensive, and easy-to-access financial services to consumers. From the startups' point of view, certain regulations are favorable, but how regulations may affect their service provisions is still an uncertain matter.

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<sup>22</sup> Lee, I., and Yong J. S. (2018), pp. 3.

<sup>23</sup> Lee, I., and Yong J. S. (2018), pp. 3.

The fourth part of the ecosystem includes *financial customers*, which represent and produce the main revenues for FinTech startups, especially for what concerns individual customers and small/medium-sized enterprises (SMEs) rather than large companies. In early stages of FinTech adoption, the typical customer of these firms were younger, urban, highly technological and higher-income individuals. At the moment, from a general point of view, millennials (people between the age of 18 and 34)<sup>24</sup> are the main consumers of FinTech services in most countries, privileging the more innovative approach of FinTech startups instead of traditional financial firms.

The last pillar of this ecosystem is represented by *traditional financial institutions*, which constitute another major driving force in this context. Traditional financial institutions have started to reevaluate the role and importance of FinTech startups after realizing its disruptive nature and power on the market, while also revolutionizing their existing business models and developing strategies to implement FinTech innovation. Traditional financial institutions tend to offer bundled services, supplying a comprehensive array of financial products instead of unbundled specialized products, which are the main focus of FinTech startups as already mentioned. Currently, many traditional financial institutions do not see FinTech as a threat, but as a collaboration opportunity supporting the business with funding provisions<sup>25</sup>.

The next step is to categorize the different business models that have been adopted in this specific market and that shape the work of startups as much as the one of traditional firms, and they will be cited in the next section.

#### *1.2.4 Main Fintech Business Models*

Drawing data from the existing literature, it can be assessed that there are six main business models adopted in the Fintech sector by the various startups; as it can be seen in Figure 3, the six models concern banking (including lending, investments and many other), payments, crowdfunding, insurance, wealth management and regulations, as it will be more deeply assessed in the following paragraphs.

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<sup>24</sup> Lee, I., and Yong J. S. (2018), pp. 4.

<sup>25</sup> Lee, I., and Yong J. S. (2018), pp. 4.



**Table 2. FinTech Business Models**

FINTECH BUSINESS MODELS	Main Applications
Banking	P2P Lending
Payments	POS, digital storefront, mobile/online payments, NFC payments, Bitcoin payments
Crowdfunding	Reward-based, donation-based and equity-based crowdfunding
Insurance	InsurTech
Wealth Management	Robo-advisors and Digital Twin
Regulatory	RegTech to prevent fraud, money laundering and other financial crimes

Lee, I., and Yong J. S. (2018) and Palmié M., et al. (2020)

The first category of Fintech startups operates in the *banking sector*. Banking FinTech companies specialize in offering alternative banking solutions for retail banking. Some of their services may include digital lending, online and mobile banking, P2P lending, personal finance and investment management<sup>26</sup>. P2P lending companies offer their clients the opportunity to access funds on a P2P lending basis, meaning that clients borrow directly from lenders and on some rare cases, a number of companies directly lend to borrowers. On a side note, online banking has become popular as the smartphone market has increased and it has been estimated that around 46% of consumers use only digital channels for banking services, which is in contrast with the 27% in 2012<sup>27</sup>. The rapid rate at which new technologies and smartphones have been developing created opportunities for new digital-only banks to provide exclusively online services through digital applications. The new generation of FinTech banks can operate without offices or facilities; therefore, without the cost of physical locations, FinTech digital-only banks can offer lower fees and rates to clients. Another advantage of these digital-only banks is that they can ensure continuous access to banking services without the need to visit a physical bank. Alongside the shift in preferences of consumers that tend to use online and mobile banking, there are also higher expectations regarding those services, because consumers demand “easy-to-use digital services with seamless approval and flawless processes”<sup>28</sup>. Besides

<sup>26</sup> Palmié, M., et al. (2020), pp. 5.

<sup>27</sup> Palmié, M., et al. (2020), pp. 5.

<sup>28</sup> Palmié, M., et al. (2020), pp. 5.

all the benefits, Fintech banks face the problem of having to build a customer base from the start, in a context in which many customers still hesitate to transfer money from well-known traditional banks to new Fintech startups. The success or failure of this specific business model is heavily dependent on the behavior of interest rates, which is an aspect that firms are not able to control<sup>29</sup>.

The second business model adopted by Fintech startups regards *payments*, which in the context of Fintech make up a large portion of their activities. Fintech companies that focus on this service gain customers rapidly and at lower costs, while also having an advantage in terms of innovation and adoption of new payment options. Fintech startups operate mainly in two markets, which are consumer and retail payment and wholesale and corporate payment<sup>30</sup>. Payments represent one of the most used retail financial services used on a daily basis and they are also one of the least regulated financial services<sup>31</sup>. FinTech startups that specialize in payments offer several electronic payment services, which differ extensively depending on the purpose of their intended use. This type of companies provides tools like point-of-sale (POS) payment services (for example digital storefronts), personal payment services and mobile or online payments. Considering the continuous uptrend of cryptocurrencies, a number of Fintech payment startups include also Bitcoin payment services in their array of offers, which enables customers to use digital currency for payment. A popular approach that some companies use is the one that involves mobile payment services that makes payments on mobile devices convenient and secure; a few strategies adopted in this context are charging to a phone bill, barcode or QR code, near field communication (NFC), and direct mobile payment without using credit card companies. A few examples of widely known NFC-based mobile payment applications are Google Wallet, Apple Pay, and Samsung Pay and alongside them there are also payment business models based P2P payment services, that allows users to send each other money through apps such as PayPal, without any additional cost<sup>32</sup>.

The third business model is represented by *crowdfunding*, and companies in this category offer digital platforms to raise funding for projects and startups that interest investors of angel or venture capital. Crowdfunding can be defined as “a way for individuals, businesses, and organizations to raise funds in the form of donations or investment over the Internet”<sup>33</sup>.

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<sup>29</sup> Lee, I., and Yong J. S. (2018), pp. 5.

<sup>30</sup> Palmié, M., et al. (2020), pp. 4.

<sup>31</sup> Lee, I., and Yong J. S. (2018), pp. 4.

<sup>32</sup> Lee, I., and Yong J. S. (2018), pp. 4.

<sup>33</sup> Palmié, M., et al. (2020), pp. 5.

Crowdfunding companies give people the power to control the creation of new products, media, and ideas, through raising funds for charity or venture capital. In the crowdfunding process there are three actors: the first is the entrepreneur who needs funding, the second involves the contributors who may be interested in supporting the project/cause, and the third is the moderating organization that connects the two other parties. There are three main crowdfunding business models: reward-based, donation-based, and equity-based crowdfunding; reward-based crowdfunding has been used to fund thousands of small businesses and creative projects, donation-based crowdfunding is used mainly in cases concerning charity projects and equity-based crowdfunding involves the contact between entrepreneurs and investors that might be interested in acquiring equity in their startup or other privately held small business<sup>34</sup>. What makes equity-based crowdfunding different from the other types is the fact that in this case entrepreneurs which are in need of funding give away a part of their ownership in order to have funds.

The fourth business model deals with the *insurance* sector and companies that operate in this field are named InsurTech, also known as companies that offer insurance services relying on technological innovation. The types of insurance that they can offer are multiple and among those there are healthcare, life, and rent and housing insurance. In the insurance sector, FinTech companies work towards a more direct relationship between the insurer and the customer, through the use of data analytics. This business model has been revealed to be the most well-accepted model by traditional insurance firms<sup>35</sup>. A strategy frequently used by InsurTech is the one involving peer-to-peer insurance, which has the objective linking different customers and grouping their premiums in order to insure them. An important feature used by InsurTech companies is also artificial intelligence (AI) which may be employed to help clients customize their policies. These companies have made insurance more user friendly and affordable by exploiting the technological advantages and benefits derived from FinTech applications<sup>36</sup>. InsurTech has flourished and is becoming one of the most active segments of the FinTech ecosystem simplifying and improving the efficiency of traditional insurance. Traditional insurance companies consider InsurTech startups both as competition and as an opportunity for collaboration; for what concerns competition, the threat is still limited because many customers still place greater trust in traditional insurance companies, while in the case of collaboration,

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<sup>34</sup> Lee, I., and Yong J. S. (2018), pp. 5.

<sup>35</sup> Lee, I., and Yong J. S. (2018), pp. 5.

<sup>36</sup> Palmié, M., et al. (2020), pp. 6.

there is an increasing number of collaborations between these two parties which enable traditional firms to innovate and upgrade their services and work.

The fifth business model involves *wealth management*, FinTech startups involved in this sector offer alternative wealth management services and solutions based on technology, of which some examples are robo-advisors, portfolio management and investment platforms. FinTech startups focused on wealth management include companies that aim to develop exchange and/or trading platforms for financial assets like stocks, foreign exchange, and other asset classes<sup>37</sup>. The most well-known among these subcategories is robo-advisors, which refers to companies that provides automated investment platforms. Robo-advisor services have the objective of helping clients customize their investment portfolios on the basis of the analysis of their risk profiles and investment goals. Robo-advisors are quickly transforming into the biggest form of disruptive technology in the field of investment and online stock trading. The automation of advisory services represents a benefit both for firms and customers, particularly because it suits the needs of clients in a better way while customizing individual clients' services<sup>38</sup>. If on one side traditional wealth management firms are restrained both online technology, startups based on robo-advisors turned it in an opportunity to access this market through the growing popularity of mobile and cloud technologies. Some features from which this business model benefits are low or no investment minimums, a straightforward and clear fee structure, and shifting demographics and consumers' behavior<sup>39</sup>.

The sixth and last business model evolves around *regulations* and companies that operate in this field are known as RegTech. RegTech (which means regulatory technology<sup>40</sup>) concerns FinTech companies that have the objective of helping clients with the compliance process. Providing tools based on innovative technology for the implementation and compliance with regulations and reforms, these companies help customers with risks related to compliance, laws and regulations. These firms provide an array of instruments that are used for legislative and regulatory analysis, to help customers in the know-your-customer (KYC) process or to prevent the risk of anti-money laundering (AML)<sup>41</sup>. Other notable areas of RegTech include cybersecurity, trade monitoring and tax management. The United Kingdom was the RegTech leader in Europe up to 2020, followed by Switzerland, Germany, Ireland and the Netherlands

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<sup>37</sup> Palmié, M., et al. (2020), pp. 6.

<sup>38</sup> Palmié, M., et al. (2020), pp. 6.

<sup>39</sup> Lee, I., and Yong J. S. (2018), pp. 5.

<sup>40</sup> Palmié, M., et al. (2020), pp. 6

<sup>41</sup> Palmié, M., et al. (2020), pp. 6

which had increasing market shares. The introduction of new regulations like “the International Financial Reporting Standards (IFRS 9) and the Markets in Financial Instruments Directive (MiFID II)”<sup>42</sup> has compelled organizations and swiftly to rapidly adjust and put compliance guidelines into place. A lot of companies need to invest time and resources to comply with new regulations and even if this new regulatory framework can result in being a burden for firms, RegTech startups seize the opportunity to innovate and create solutions for established companies<sup>43</sup>.

### *1.3 Relevant players in the FinTech market*

After presenting the six business models abovementioned, there is the need to specify the other players that influence the market of FinTech startups and may or may not be more influential and successful. In the next paragraphs, two important players will be presented, namely BigTech (for example Amazon, Apple or Microsoft) and InsurTech, which has already been mentioned but represents a big part of the FinTech market.

#### *1.3.1 BigTech or “Techfins”*

The term BigTech refers to the combination of the words Big and Technology, referring to a group of technological companies that offer direct financial services; another term that is used to indicate these companies is Techfin (fusion of Technology and Finance)<sup>44</sup>. The main difference between FinTech and BigTech is that the first focuses on finance, while the other on technology, even if they offer almost the same services. Given the size of BigTech, the most important feature is data analytics, that enables them to have an advantage against the competitors of the market and to manage information from their customers to present financial service. Being able to access all this information creates a higher barrier to entry, which increases firm’s profits and interests’ rates<sup>45</sup>.

BigTech companies can act both in the role of marketplace and reseller in the market; the marketplace sells the products directly to the final customer while the reseller acts as a middle intermediary, buying from suppliers and selling to the customers. Famous examples are US

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<sup>42</sup> Palmié, M., et al. (2020), pp. 6

<sup>43</sup> Palmié, M., et al. (2020), pp. 6

<sup>44</sup> Barroso, M., and J. Laborda (2022), pp. 3.

<sup>45</sup> Barroso, M., and J. Laborda (2022), pp. 3.

based firms, like Google, Amazon, Facebook or Apple (known as GAFA) and the Chinese firm Alibaba<sup>46</sup>.

Techfin firms have focused for the most part the payment sector of the financial industry, managing to reduce friction and to simplify mobile payments. This tendency is possible because of how easy it is to retrieve payment or e-money licenses, which does not have strict legal requirements, and because payment activities are easily integrated into their core business<sup>47</sup>. Some examples are Amazon that launched Amazon Pay which is a “payment network and a digital wallet for online and brick-and-mortar consumers and merchants”<sup>48</sup>, both Apple and Google have also developed mobile-payment apps which are available on contactless devices, namely Apple Pay and Google Pay<sup>49</sup>.

From the point of view of regulators, the entrance of Techfins in the financial market raises many challenges, which are different from the ones brought by Fintech startups. The first one relates to the size of the firms, in fact Fintech firms usually start small and are problem-driven, characteristics that make them easier to restrain by the legal framework. Furthermore, if a Fintech firm collapses either because of external shocks or liquidity crises, the financial system would be able to absorb the failure<sup>50</sup>, action that may not be possible in the case of Techfins, which have a big customer network and brand recognition. Another challenge involving Techfins may be connected to the fact these companies are data-aggregators that possess a lot of data obtained by non-financial activities, which could be potentially exploited in banking<sup>51</sup>. There is also the concern that Tech giants and established banks may exchange data, which leads to possible unauthorized uses of personal data of bank clients. An additional challenge involves the question of whether Techfins improve competition and efficiency in the banking sector or whether they create concentration powers, using data superiority and networks effects and therefore creating additional barriers to entry within the industry<sup>52</sup>.

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<sup>46</sup> Barroso, M., and J. Laborda (2022), pp. 5.

<sup>47</sup> Bilotta, N., and S. Romano (2019), pp. 6.

<sup>48</sup> Bilotta, N., and S. Romano (2019), pp. 6.

<sup>49</sup> Bilotta, N., and S. Romano (2019), pp. 7.

<sup>50</sup> Bilotta, N., and S. Romano (2019), pp. 10.

<sup>51</sup> Bilotta, N., and S. Romano (2019), pp. 10.

<sup>52</sup> Bilotta, N., and S. Romano (2019), pp. 13.

### 1.3.2 *InsurTech*

As already mentioned, one particular category of Fintech startup that established itself in the insurance sector has been named “InsurTech” and it has developed as a consequence of the current digital innovation environment, using advanced technology to meet the needs and standards of clients<sup>53</sup>. This kind of startup has significantly increased their market share in the insurance industry in recent years and the most part of these companies invest mainly in the non-life sector, especially in motor and health insurance. The focus of the investments has been shifting also on other innovations, such as analytics and underwriting, through the implementation and use of different technologies.

Most insurance startups use data and technology as their main source of competitive advantage. Artificial intelligence, advanced analytics including predictive analytics, automatic interpretation of data and text (“data/text mining”), automatic and adaptive learning (“machine learning”), Internet of Things (IOT), telecommunications and mobile applications (“telematics & mobile applications”), cognitive robots (“robots”) applied to office work automation, technology based on distributed databases (“blockchain”) are the technologies most used by insurance technology startups<sup>54</sup>.

Insurtech startups can be divided into two macro categories based on the functions they can perform in the market. On the one hand, the “disruptors” focus on competing with the traditional companies operating in the market and on the other hand the “enablers” aim to cooperate with the traditional companies to help them improve processes throughout the value chain, developing specific skills and advanced technologies<sup>55</sup>. Enablers often develop their services in an “Insurance as a Service” mode and with a “pay-per-use” consumer model, they do not require investment from traditional companies<sup>56</sup>. InsurTech firms can also be characterized as being a digital intermediary through which a traditional company can access distribution channels/methods and that allows them to improve interactions with customers (“customer experience”) and meet specific needs, including niche needs.

The main difference between traditional insurance firms and InsurTech companies is that the former are product-oriented, because their goal is to offer better services and products than the competitors, while the latter is process-oriented, because its aim is to provide the best

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<sup>53</sup> Cappiello, A. (2020), “The Digital (R)Evolution of Insurance Business Models.”, pp. 2.

<sup>54</sup> American Chamber of Commerce in Italy (2021), *LO STATO DELL'INSURTECH in ITALIA*, pp. 11.

<sup>55</sup> American Chamber of Commerce in Italy (2021), pp. 12.

<sup>56</sup> American Chamber of Commerce in Italy (2021), pp. 12.

experience for customers when receiving products<sup>57</sup>. In an effort to oversee innovation and new business ideas in the insurance sector, many traditional insurance companies have established organizational units dedicated to managing investments and/or partnerships in the insurance industry with startup companies. Depending on the level of development of the startups involved, there are four main operational methods by which traditional insurance companies try to manage innovation:

1. “Innovation labs” set up teams dedicated to developing innovations, often collaborating with universities within the framework of observatories or through specific initiatives to create and validate get new ideas (“hackathons”)<sup>58</sup>. An example of observatory is the one linked to Politecnico di Milano, which publishes a report every year considering the various sphere of research in this sector.

2. “Joint venture building” in which the insurance company promotes the development of separate activities to bring the business idea to fruition, above all so that innovation can flourish in an entity that falls outside the general governance rules typical of a large traditional insurance company and very often hinders the development of an innovative idea<sup>59</sup>.

3. “Acceleration programs”, in which the development process of selected startups is sped up, providing them with the necessary management, financial, organizational and skills resources to strengthen and promote commercial development of an innovative idea.

4. “Corporate joint ventures” through the management of direct venture capital investment of startups that have passed the initial stage by demonstrating that they can sustain in the market and should be supported in their international expansion<sup>60</sup>.

These collaborations between traditional insurance companies and fintech startups demonstrate the value of a collaborative approach because of the benefits that can result for both. For traditional businesses, they can provide exposure to new technologies, new business models, and additional revenue streams thanks to the effectiveness of newly deployed marketing methods. For startups, it is an opportunity to take advantage of the skills of companies that are already established in the market and have incentives, compared with huge management, organizational and financial resources as well.

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<sup>57</sup> Cappiello, A. (2020), pp. 2.

<sup>58</sup> American Chamber of Commerce in Italy (2021), pp. 14.

<sup>59</sup> American Chamber of Commerce in Italy (2021), pp. 14.

<sup>60</sup> American Chamber of Commerce in Italy (2021), pp. 14.



#### *1.4 Financial Sector's Innovation and Reaction to FinTech*

In this section, the phenomenon of technological evolution that the financial sector went through as a reaction to the entrance of FinTech in the market and as a response to the crisis caused by the COVID-19 pandemic. In the following paragraphs, different drivers, processes and strategies will be delineated connected to technological advancement and furthermore, the regulatory framework in which this market finds itself will be discussed.

##### *1.4.1 Digital evolution process of the financial sector*

Digital transformation and the business model innovation resulting from it have profoundly altered expectations and behaviors of customers, while also putting pressure on traditional firms and disrupting several markets<sup>61</sup>. However, digital transformation is not an entirely new phenomenon, in fact banks have always been in a perpetual evolution, since 1472, year in which Banca Monte dei Paschi di Siena opened its business.<sup>62</sup> In the past decade, the industry has experienced declines in profitability and this trend has accelerated ever since the 2008 financial crisis, even if technology, at the same time, made banks more competitive. These advanced technology innovations are changing banking at its core, for example leading them to provide services via mobile technology<sup>63</sup>, while also changing the services provided and the way they are delivered. Subsequently, traditional financial companies need to adapt to be able to compete in the changing digital landscape; Broby (2021) uses the term “bank of the future”<sup>64</sup>, referring both to incumbents (traditional firms) and challengers (new entrants), and stresses how both actors need to address several aspects, among which there are trust, competition, and the digitalization of financial services. On one hand, incumbents are reinventing themselves, while on the other, challengers have the advantage of starting from zero and with a blank canvas.

Verhoef et al. (2021) presented three fundamental drivers for the digital transformation of the financial sector: the advent of digital technology due to the emergence of the Internet, the increase of competition on a digital level and the change of consumers' behavior in response to the digital evolution which makes them more connected, informed and active<sup>65</sup>. On another note, an important feature to consider is the difference between three specific processes connected to this evolution, which are digitization, digitalization and digital transformation.

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<sup>61</sup> Verhoef, P. C., et al. (2021), “Digital Transformation: A Multidisciplinary Reflection and Research Agenda.”, pp. 1.

<sup>62</sup> Broby, D.. (2021), “Financial Technology and the Future of Banking.”, pp. 1.

<sup>63</sup> Broby, D.. (2021), pp. 2.

<sup>64</sup> Broby, D.. (2021), pp. 2.

<sup>65</sup> Verhoef, P. C., et al. (2021), pp. 3.

The first term refers to “the encoding of analog information into a digital format (i.e., into zeros and ones) such that computers can store process, and transmit such information”<sup>66</sup>; typically, digitization affects mainly internal and external documentation processes, while leaving unchanged value creation activities. The second term outlines how digital technologies can be used in order to change existing business processes, and IT represents an important instrument to achieve new business possibilities by changing existing business processes<sup>67</sup>. Digitalization focuses at the same time on cost savings, process improvements and enhancing customer experiences. The third concept describes “a company-wide change that leads to the development of new business models, which may be new to the focal firm or industry”<sup>68</sup>, and it is a process that affects the entirety of the company and the ways in which it does business. Digital transformation goes beyond digitalization by changing simple organizational processes and tasks and rearranging the processes in order to change the business logic of the firm<sup>69</sup>.

Therefore it can be stated that financial technology has been evolving in a way that puts online banks and banking above traditional firms and has changed banking in an unreversible way. On the same note, another problem raised by the evolution of financial technology is the fact that digital money, which has the advantage of being cryptographically protected, could possibly lead paper money to become redundant in the future<sup>70</sup>.

One last feature that needs to be considered in this context is the evolving steps adopted by traditional financial firms with regards to the entrance in the market of new digital firms and that may be divided in three macro categories (competition, complementarity and co-evolution) and four subcategories, namely *defensive customer retention* (incumbents), *aggressive customer acquisition* (challenger banks), *banking as a service* (new entrants), and *payments strategy* (social media platforms)<sup>71</sup>. Particularly in the first case, the three macro categories refer to traditional firms being, at the same time, in competition with new entrants, being complementary to and co-evolving with FinTechs.

The first subcategory of strategies adopted is related to the *retention of customers* as a defence mechanism of incumbents due to greater competition in the market; this type of strategy requires innovation, which has been moving at an incredibly fast pace. Until a few years ago,

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<sup>66</sup> Verhoef, P. C., et al. (2021), pp. 3.

<sup>67</sup> Verhoef, P. C., et al. (2021), pp. 3.

<sup>68</sup> Verhoef, P. C., et al. (2021), pp. 3.

<sup>69</sup> Verhoef, P. C., et al. (2021), pp. 3.

<sup>70</sup> Broby, D.. (2021), pp. 4.

<sup>71</sup> Broby, D.. (2021), pp. 11.

banks had been hesitant in adopting technology inside their business models, but more recently there have been many mergers and acquisitions due to the need to have more insights on the real or possible weaknesses of FinTech firms<sup>72</sup>. The second strategy is linked to *customer acquisition* from challenger banks, which act as intermediaries and is a designed digital outset, therefore having the advantage of being less costly and more efficient. Customer acquisition is generally done through the provision of superior services and the function of challenger bank accounts often appears to be superior to incumbents bank accounts, largely because the latter are based on existing databases which have the disadvantage of having interoperability issues<sup>73</sup>. A popular customer acquisition strategy is using an open service platform, while also offering an unlimited number of third-party products rather than a limited range of products.

The third strategy involves the adoption of “*banking as a service*” products; banking services are negotiated, primarily by new entrants, to individuals in the form of subscription or billable services in exchange for fees. There are several “banking as a service” solutions, including prepaid and credit cards, loans and leasing; “banking as a Service” brokers are essentially aggregators of third-party services using open banking to turn banking into a service. The evolution of banking as a service must be understood to the extent that they are in direct competition with traditional banks<sup>74</sup>.

The last strategy involves *social media platforms*, which have the ability to shift the payment relationship from transactional to customer experience and the use of consumer needs combined with financial data can create a number of new revenue opportunities. Social media in this context will have an impact on different factors, such as the money supply, the market share of traditional banks, and the services offered by payment providers, while also representing direct competition for banks in the future<sup>75</sup>.

#### 1.4.2 Regulatory Framework

The financial business is not the only one impacted by the rapid development of FinTech startups and, more specifically, InsurTech companies; the functioning of the relevant regulatory bodies is also severely disrupted. The regulatory authorities face increased complexity in the exercise of their supervisory powers and competences due to the wide range of new FinTech applications, each with distinct meanings and functions, new forms of cooperation among

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<sup>72</sup> Broby, D.. (2021), pp. 12.

<sup>73</sup> Broby, D.. (2021), pp. 14.

<sup>74</sup> Broby, D.. (2021), pp. 14.

<sup>75</sup> Broby, D.. (2021), pp. 15.

industry players, and even the entry of non-financial institutions into the financial markets in a globalized digital environment<sup>76</sup>. In this context, there is the need to identify who will have the tasks of controlling and overseeing these companies and the activities and entities that will be regulated in this framework.

The regulator needs to have access to all relevant data on the market's operations and participants in order for market supervision to be successful. Under the applicable Solvency II regime, insurance regulators primarily obtain this information from reports disclosed by insurance undertakings<sup>77</sup>. The struggle that regulators face is connected to the problem of balancing traditional activities (protecting financial stability and consumers) with the evolving demands of the market and consumers while enhancing free competition in the market. The work of regulators is influenced by FinTech at national, EU, and international levels. “The Financial Stability Board (FSB), the Organization for Economic Co-operation and Development (OECD), and the International Association of Insurance Supervisors (IAIS)”<sup>78</sup> are among the international authorities that produced papers on the matter of FinTech. Meanwhile, working groups and initiatives have been formed by EIOPA and the other European Supervisory Authorities (ESAs) to investigate and decide on a regulatory response to this phenomenon.

In addition to recommending certain measures, the FSB has identified several concerns for national regulators, including three areas which are considered priorities for international collaboration: (a) managing operational risks from third-party service providers and evaluating how well-established the current regulatory frameworks are; (b) mitigating cyber-risks; and (c) keeping an eye on macro financial risks<sup>79</sup>. The OECD has also given particular attention to analyzing how technology is affecting and penetrating the insurance industry. Examining the influence of InsurTech on the insurance industry from an insurance perspective, the IAIS has identified key themes and supervisory aspects that must be addressed.

Within the European Union, the European Commission conducted an assessment of the FinTech impact and subsequently released an Action Plan<sup>80</sup>. Additionally, the EU Blockchain Observatory and Forum were established. Actions are being taken by the European Supervisory Authorities to decide how they will handle the FinTech phenomena moving ahead. To address

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<sup>76</sup> Chatzara, V. (2019) “FinTech, InsurTech, and the Regulators.”, pp. 1.

<sup>77</sup> Chatzara, V. (2019), pp. 2.

<sup>78</sup> Chatzara, V. (2019), pp. 3.

<sup>79</sup> Chatzara, V. (2019), pp. 5.

<sup>80</sup> Chatzara, V. (2019), pp. 11.

the difficulties arising from the development of InsurTech, EIOPA developed a multidisciplinary InsurTech Task Force (ITF) with a focus solely on insurance<sup>81</sup>. To improve communication between regulators and market participants, several national regulatory bodies, including those in the UK, Hong Kong, and Sweden, have taken specific actions; among them are the creation of innovation promoters and specialized working groups.

### *1.5 Technology Applications in the Financial Sector*

Some of the most important technologies that will change the future of the financial sector are “e-commerce, blockchain, cloud computing, virtual and augmented reality, Internet of Things (IoT), and artificial intelligence (AI)”<sup>82</sup>. Well-established data gathering and analysis processes are automated more quickly thanks to technological advancements. However, issues with data security and privacy rise from the use of automation, putting in danger the coexistence of technology growth and regulation. All different types of technology applications will be described in the following paragraphs.

#### *1.5.1 Artificial Intelligence (AI) and Machine Learning (ML)*

Artificial intelligence (AI) applications are being frequently used in the finance industry in several areas, among which are “credit underwriting, blockchain-based finance, investment portfolio and asset management, and smart contracts”<sup>83</sup>; these applications are possible because of the large amount of Big Data and readily available computing power. The concept of Machine Learning is strictly related to AI because it can be considered as a branch of AI that applies algorithms to automatically identify patterns and gain new insights from data in order to make increasingly better decisions. AI and machine learning can be used to protect customer data while also boosting productivity in many ways, among which are using machine learning to identify and stop fraud and cybersecurity attacks, combining biometrics and computer vision to quickly authenticate user identities and process documents, and implementing smart technologies like chatbots and voice assistants to automate routine customer service tasks<sup>84</sup>.

There is the expectation that artificial intelligence is going to improve the competitive advantages of financial by means of increasing efficiency through cost savings and productivity

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<sup>81</sup> Chatzara, V. (2019), pp. 14.

<sup>82</sup> Varma, P., et al. (2022), “Thematic Analysis of Financial Technology (Fintech) Influence on the Banking Industry.”, pp. 1.

<sup>83</sup> Aures Benlala, M. (2022) *Artificial Intelligence in the Modern Banking and Financial Industry (Applications, Risks, Policies and Regulations)*, pp. 1.

<sup>84</sup> Aures Benlala, M. (2022), pp. 2.

gains, as well as by enhancing the quality of their goods and services<sup>85</sup>. Due to the fact that these advantages offer high-quality, personalized items, consumers may also benefit from them. Furthermore, AI has the potential to improve financial inclusion through the ability to extract large amounts of data and enable the assessment of clients with limited credit history. Investing based on ESG (Environmental, Social, and Corporate Governance) indicators, which are used to assess the sustainable performance of companies, can be done with AI and Big Data by evaluating company data and non-company data and by assessing the consistency of the ratings to figure out the reasons behind the appointment of those ratings. Some of the benefits connected to AI are reported to be reduced cognitive biases, decreased ambiguity in ESG data, and the use of unstructured data, which could help with better-informed decision-making<sup>86</sup>.

On a general note, AI can be beneficial for the financial industry on a variety of levels, including reducing costs (automation of complex tasks and decrease of manual errors), helping to contrast fraud (through the ability of AI of analyzing large amounts of data in real-time, identifying patterns and detect anomalies that may result in fraudulent activities), improving regulatory compliance (through the automation of the processes), improving operations (from an efficiency point of view), reducing risks (mostly the one linked to investments, loans and similar financial activities) and speeding up the process of decision-making<sup>87</sup>.

On the other side of benefits, there are the challenges and risks connected to the use of AI in the financial sector; artificial intelligence (AI) can lead to a significant amount of non-financial risks and issues related to data privacy and confidentiality, electronic security, and non-discrimination and fairness considerations<sup>88</sup>. One of the risks involves prejudices, because the use of AI can either strengthen biases, unfair treatment and discrimination in financial services or help prevent discrimination based on human interactions, depending on how they are applied. One notion that may determine one of the two outcomes is the one of fairness that is set by the financial intermediary involved, so on the context and parameters used depends the degree of fairness of the Artificial Intelligence's system put in place<sup>89</sup>. There are some more obvious concerns which are connected to cyber-attacks and therefore digital security, mostly due to the nature of the system and because of the amount of data related to customers which is already

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<sup>85</sup> Aures Benlala, M. (2022), pp. 2.

<sup>86</sup> Aures Benlala, M. (2022), pp. 9.

<sup>87</sup> Aures Benlala, M. (2022), pp. 4-5.

<sup>88</sup> Aures Benlala, M. (2022), pp. 10.

<sup>89</sup> International Association of Insurance Supervisors (IAIS) (2022) *IAIS Report on FinTech Developments in the Insurance Sector*, pp. 17.

stored by banks; the particular topic of privacy is one of the most problematic obstacles to AI because if not clearly included in contractual arrangements, the use of clients' data for AI purposes may lead financial firms to breach privacy laws and face a series of consequences, from legal to reputational<sup>90</sup>. Another risk is the one of competition in the market which sparks from the use of ML models and Big Data and the possibility of concentration of data or tacit and silent collusion<sup>91</sup>. One last risk is related to the employment sphere, because the introduction of AI in the financial industry could lead to significant job losses due to the progressive involvement of this technology that implicate automation<sup>92</sup>.

### *1.5.2 Blockchain Technology (BT) and Distributed Ledger Technology (DLT)*

The term blockchain technology (BT) was originally introduced in relation to the definition of the Bitcoin protocol in 2008 by Satoshi Nakamoto, which defined the principles of this technology. The basic idea is that transaction data is stored in blocks that are tightly chained together, resulting in distributed ledger technology (DLT) in many copies between network nodes. In 2015, precisely in September, “nine of the world’s largest banks (namely Barclays, Goldman Sachs, JPMorgan, State Street, UBS, Royal Bank of Scotland, Credit Suisse, BBVA, and Commonwealth Bank of Australia)”<sup>93</sup> worked with the FinTech firm R3, which is based in New York, in order to develop a framework in which blockchain technology could be freely used in the financial market.

Data is duplicated over a large number of independent individuals, and a consensus mechanism (of which Proof of Work is the most popular) guarantees the data's robustness and integrity. The security of the system is determined by the quality of the protocol that each participant uses, not by a central organization that is considered reliable. Blockchains can be private or public: in the case of a public blockchain, the participants can read, transmit, and receive transactions as well as take part as a node in the consensus process; in a private blockchain, the operator sets limits on who can participate and what kind of transactions are permitted, and, in this case, it is called DLT<sup>94</sup>.

The financial industry will be significantly disrupted by BT and without a doubt, this technology has the potential to reduce problems, disruptions, and setbacks in a lot of financial

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<sup>90</sup> Aures Benlala, M. (2022), pp. 10.

<sup>91</sup> Aures Benlala, M. (2022), pp. 10.

<sup>92</sup> Aures Benlala, M. (2022), pp. 12.

<sup>93</sup> Iacoviello, G., and E. Bruno (2023) “Exploring a New Business Model for Lending Processes in the Banking Sector Using Blockchain Technology: An Italian Case Study.”, pp. 5.

<sup>94</sup> Iacoviello, G., and E. Bruno (2023), pp. 5.

technology areas: some of these problems include identity theft, money laundering, fraud, operational inefficiencies, lack of innovation in bank products and services and less transparent and outdated auditing and accounting processes<sup>95</sup>. With its wide range of applications, decentralized ledger technology (DLT) can tackle a number of fundamental banking process areas, such as “payment services (intra- and interbank transfers, peer-to-peer payments, cryptocurrency value-added services, etc.); finance (trading, post-trading, collateral management, etc.); credit (finalized credit, escrow, trade finance, loyalty programs, etc.); and Know-Your-Customer (KYC) roles in anti-money laundering (AML)”<sup>96</sup>.

Banks can benefit from blockchain technology from an operational, managerial, strategic, and infrastructure standpoint: some of the benefits are a better identity management, more trust, increased efficiency of financial services, less fraud, improved privacy, increased transparency, and improved recordkeeping accuracy, while also requiring less physical infrastructure for the transfer of goods and services<sup>97</sup>. One last benefit of blockchain technology is that it can provide better security, protecting the central database from malicious attacks. Despite the advantages, blockchain technology is at its core a DLT, security is still an issue and the main vulnerabilities are found at endpoints where users and companies access blockchain-based services and are not included in the blockchain itself. Since access to data requires both public and private keys, there is a significant risk that hackers will take advantage of this<sup>98</sup>. This problem presents itself particularly if companies have security measures that aren't up to standard or have a code that hasn't been tested or is defective, concurrently with the possibility of blockchain credentials being made public by other parties, which increases the danger.

### 1.5.3 *Cloud Computing (CC)*

A popular business strategy for providing IT resources is represented by cloud computing, which can be considered as a development of information technology; CC offers several IT resources both to individuals and companies through a network and among them are storage, applications and servers. Cloud computing aims at providing services to users through a simple interface, which would not entail substantial costs for maintenance and that does not include

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<sup>95</sup> Kumari, A. , and N. C. Devi (2022), “The Impact of FinTech and Blockchain Technologies on Banking and Financial Services.”, pp. 4.

<sup>96</sup> Iacoviello, G., and E. Bruno (2023), pp. 5.

<sup>97</sup> Kumari, A. , and N. C. Devi (2022), pp. 8.

<sup>98</sup> Iacoviello, G., and E. Bruno (2023), pp. 7.



complex internal technological processes<sup>99</sup>. The most well-known services are, without a doubt, e-mail and storage services, such as the ones provided by Google, Apple and Dropbox. Cloud computing can be adopted in the financial sector through different applications, which are mobile retail stock trading, widget-based internet banking apps, self-service apps for commercial customers and open-access commercial online banking platforms<sup>100</sup>.

Cloud Computing entails a series of benefits: this instrument has the advantage of working at high speed and enabling the testing and design processes of new programs or applications, while also automatically integrating and updating softwares; other benefits are that CC that does require big money expenditures so it results to be cost effective, that data is more secure because of the process of encrypting data inside the system<sup>101</sup>, that it has the ability to meet well the technological needs of companies and to allow them to expand and that it has complete control on the data, from the point of view of backup and recovery, of the unlimited storage capacity, of the data loss prevention and of the way in which data can be accessed that includes mobile phones<sup>102</sup>.

On the other side of benefits there are also some criticalities that concern Cloud Computing, one being the possibility of service outage that for large companies represents a big problem; other difficulties may be the chance of security breaches (which weakens the trust in this type of system), the low flexibility of the IT infrastructure (which does not allow clients to have control over computing resources) and the problem of vendor lock-in, due to the fact that switching from a cloud service provider (CSP) to another is difficult if not impossible<sup>103</sup>.

#### *1.5.4 Robo-Advisor and Digital Twin (DT)*

Robo-Advisors may be defines as “digital platforms that employ artificial intelligence (AI) to automatically generate and maintain users’ portfolios”<sup>104</sup>, they are created as a low-cost alternative to human advisors and are present both in the FinTech sphere and in the traditional financial sector. The aim of this technology is to guide customers in their investment strategies for several purposes that range from retirement to generating an income for living expenses;

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<sup>99</sup> Luqman Abdulnabi, N., and R. Asaad. (2022), “Challenges and Benefits of Cloud Computing: Comparison Study.”, pp. 1.

<sup>100</sup> Vinoth, S., et al. (2021), “Application of Cloud Computing in Banking and E-Commerce and Related Security Threats.”, pp. 3.

<sup>101</sup> Luqman Abdulnabi, N., and R. Asaad. (2022), “Challenges and Benefits of Cloud Computing: Comparison Study.”, pp. 4.

<sup>102</sup> Luqman Abdulnabi, N., and R. Asaad. (2022), pp. 4.

<sup>103</sup> Luqman Abdulnabi, N., and R. Asaad. (2022), pp. 1.

<sup>104</sup> Anshari, M., et al. (2022) “Digital Twin: Financial Technology’s next Frontier of Robo-Advisor.”, pp. 3.

the process through which a Robo-Advisor helps clients proceeds in the following way: it starts by determining the investment strategy based on the objectives and risk tolerance (resulting from a series of objective and subjective questions that states if and how much risk a person can accept) of an individual, including the aim of the investment and the time horizon of that specific person<sup>105</sup>. After establishing these factors, Robo-Advisors use automated algorithms to propose a distribution strategy for the funds across different assets.

A factor that needs to be considered in this context is that, at the moment, human advisors are still chosen over the digitalized ones, mostly because with human interaction is easier to establish trust and understanding in the client/advisor relationship, while also resulting more useful in times of financial struggle; furthermore, robo-advisors have still to be tested in the context of poor market conditions characterized by assets losing value, which would determine how this type of technology would react to those circumstances<sup>106</sup>.

Another concept accompanying Robo-Advisors is the one of Digital Twin (DT), which can be described as “a digital representation of an individual that has the capability of integrating any digital data with virtually real-time data and generating advanced analytics for feedback, recommendation, and alternative solutions for users”<sup>107</sup>. The use of DT can be extremely advantageous for the financial sector because it allows organizations and firms to optimize, model and predict changes deriving from several different causes, which include transformation initiatives, risk management, climate risk exposure and management of the types of channels used<sup>108</sup>.

### *1.5.5 Application Programming Interfaces (APIs) and Open Finance*

Open banking and open finance are based on the ability for customers to share their financial data with companies other than the bank that stores it, in order to access other services or products. The bank is thus called upon to "open" its systems to other external entities, through APIs, Application Programming Interfaces<sup>109</sup>. APIs allow users to authorize access to their financial information to third parties, such as FinTechs startups or other financial institutions, which can then offer innovative and personalized services, such as aggregate account management, financial risk calculation, and investment recommendations.

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<sup>105</sup> Anshari, M., et al. (2022), pp. 3.

<sup>106</sup> OECD (2017), *Technology and Innovation in the Insurance Sector*, pp. 25.

<sup>107</sup> Anshari, M., et al. (2022), pp. 2.

<sup>108</sup> Anshari, M., et al. (2022), pp. 7.

<sup>109</sup> International Association of Insurance Supervisors (IAIS) (2022), pp. 5.

APIs need to have specific characteristics: they need to be secure because users' information is sensitive and it is imperative to protect it for example through protocols and data encryption, they should be easy to integrate between systems and platforms, they should comply with regulations and they need to be constantly adapted both technically and on a regulatory level<sup>110</sup>. There are possible risks connected to APIs, which are data breaches and improper use of social, racial or ethnic information that could lead to prejudicial biases and consumer problems, financial exclusion due to large amount of data shared that could cause an individual to be disqualified on traditional standards and the problem of inconsistency in consumer attitudes towards risk<sup>111</sup>.

### *1.6 Final Remarks*

In conclusion, the FinTech market is not entirely a new phenomenon but has made its presence stronger after the obstacles posed by the COVID-19 pandemic, leading the technological evolution with a much faster pace and in a favorable direction for the firms focused on offering services on a digital level. Traditional financial companies have been adapting to the new challenges in their field and are currently collaborating or acquiring these types of digital firms in their structure. FinTech startups adopt different business models depending on the market on which they want to focus, but even with this enormous amount of technological advancement, there are still threats in the market, either from the point of view of competition because of large firms entering this market, or from a regulatory point of view because of the uncertain framework that still surrounds this segment of the market. Besides the possible obstacles, FinTech have brought a lot of different novelties concerning technological applications, among which the most frequently used are Artificial Intelligence and Blockchain Technology. This disruption of the market has opened a lot of different courses of action for regulatory authorities, traditional firms, customers, but also for the EU as a whole. In the next chapter, a market analysis related to FinTech will be carried out and the main trends will be highlighted.

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<sup>110</sup> International Association of Insurance Supervisors (IAIS) (2022), pp. 6.

<sup>111</sup> International Association of Insurance Supervisors (IAIS) (2022), pp. 8.

## ***2. FINTECH MARKET ANALYSIS***

In the first part of this chapter, the analysis of the FinTech market will be carried out, drawing data from the surveys conducted by Banca D'Italia in order to better understand the Italian context and to assess the types of investments and the impact that the adoption of FinTech technologies and collaborations had on the business models of Italian banks and non-financial intermediaries, while also taking into consideration the regulatory framework. In the second part of the chapter, by means of the digital database *Crunchbase*, a current representation of the main trends of the FinTech market in Italy will be presented.

### *2.1 Bank of Italy – “FinTech Survey”*

Italy's central bank takes the name of Bank of Italy (Banca d'Italia) and it is an institution which is regulated by national and European legislation. The Bank of Italy is an essential component of the Eurosystem, which consists of the central banks of each nation belonging to the euro area and the European Central Bank (ECB). With a workforce of around 6,800 professionals, the Bank of Italy leverages its financial and technological resources to provide high-quality services in an unbiased, responsible, and efficient manner. The Bank of Italy outlines its vision, medium-term objectives, and corresponding action plans as part of its strategic planning in order to perform its tasks as effectively as possible in an environment that is becoming more complicated and characterized by significant changes<sup>112</sup>.

The Bank of Italy is responsible for several banking and financial supervision tasks with reference to banking and also non-banking intermediaries registered in specific registers. The Department of Supervision is based in Rome, in particular at the Institute's central administration and is organized into a network of branches. Besides activities such as remote and on-site inspections aimed at checking the compliance with regulations, the Department also adopts a series of administrative measures in order to carry out its supervisory task. The most important measures concerning banks include authorizations, sanctions and measures, in particular with relation to resolving problematic situations. The Institute handles information requests in this field, reviews reports of anomalies and shares data about individuals considered unsuitable to conduct banking and financial operations in Italy; another important field of action

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<sup>112</sup> <https://www.bancaditalia.it/chi-siamo/index.html>

for the Bank of Italy is the protection of customers related to financial entities, both in the term of rights and of informing them of current financial issues<sup>113</sup>.

The elaboration of the decisions made by the Bank of Italy as part of its institutional activities is largely supported by research and analysis in the fields of economics and statistics. Along with producing statistics in its areas of competence (such as banking, finance, and balance of payments), the Bank also uses a considerable pool of data both from other organizations and from its own that reinforces empirical analysis and cross-national comparisons. In addition to essays and articles published, its official publications and scientific series also serve as channels for the circulation of research, analysis, and statistical findings. The Economics and Statistics Department of the Bank of Italy is mainly responsible for conducting economic and statistical research<sup>114</sup>.

In order to determine the level of adoption of technological innovations applied to financial services, the Bank of Italy carries out a cognitive survey every two years on a sample of intermediaries chosen based on their representativeness in the Italian financial system<sup>115</sup>. The next paragraphs will include the strategies adopted by intermediaries, the types of investments carried out and the effects that the projects put in place had on the business models of the companies involved. Furthermore, the period of reference of the surveys concerns the years between 2017 and 2022.

In the next paragraphs, the data reported will be referring to the way in which intermediaries interacted with FinTech firms, the different types of FinTech projects (divided by business areas and technology adopted), the several ways in which projects have been implemented, the progress made during the period of time analyzed and finally the effect that these projects had on the business models of the various intermediaries involved in the surveys.

## *2.2 How intermediaries interacted with FinTech firms*

From the first survey that relates to the period between 2017 and 2019 going into 2020, the data report that FinTech investments have grown up to 624 million euros, split into 233 million euros between 2017 and 2018 and 391 million euros between 2019 and 2020<sup>116</sup>, while further growing with reference to the data of the second survey that report 530 million euros of investment just

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<sup>113</sup> <https://www.bancaditalia.it/compiti/index.html?com.dotmarketing.htmlpage.language=1>

<sup>114</sup> <https://www.bancaditalia.it/compiti/ricerca-economica/index.html>

<sup>115</sup> <https://www.bancaditalia.it/pubblicazioni/indagine-fintech/index.html>

<sup>116</sup> Banca D'Italia (2019), *INDAGINE FINTECH NEL SISTEMA FINANZIARIO ITALIANO*, pp. 8.

between 2021 and 2022<sup>117</sup>. Additional increasing data have been the number of intermediaries involved and the number of projects; in the first survey the number of intermediaries amounted to 77 total units detected while the number of projects was 267<sup>118</sup>, while in the second survey the number of intermediaries was 96 and the number of projects rose to 329<sup>119</sup>.

Among the possible strategies adopted to implement investment projects should be included the various forms of collaboration with FinTech companies, which are divided in acquisition of shareholdings, partnership contracts and participation in incubators, accelerators and clusters<sup>120</sup>. Furthermore, as stated in the second survey carried out by Banca D'Italia, a number of intermediaries, precisely 28 out of 77, developed an investment strategy that envisages the direct participation in FinTech firms. The majority of projects are developed either through collaboration with third-party companies and institutions or by entrusting them with the whole implementation process of the projects. Intermediaries choose to engage in collaborations mainly to secure advanced technologies otherwise unavailable in-house and to speed up the time necessary to complete a project<sup>121</sup>. Up to the 2021-2022 data collection, there are 330 partnership agreements reported, and they relate to 199 companies, the majority of which are based in Italy<sup>122</sup>. In the following table, drawn from the 2019 survey, there are represented the main modes of collaboration, in some cases even adopted simultaneously as can be observed; the total quantity invested in forms of collaboration with FinTech companies amounted to approximately 93 million euros, about 14 percent of investments<sup>123</sup>.

**Table 3. Types of collaborations between intermediaries and Fintech firms**

MODALITIES OF INTERACTION BETWEEN INTERMEDIARIES AND FINTECH FIRMS (units and thousands of euros)					
Acquisition	Partnership	Incubators, accelerators and clusters	Other	Investment	Number of intermediaries
•	•	•	•	42.567	3
•	•			6.228	7
•		•		-	1
•				20.910	4
	•	•		5.561	11
	•			17.476	42
		•		552	5
			•	58	7

Banca D'Italia (2019), pp. 10.

<sup>117</sup> Banca D'Italia (2021), *INDAGINE FINTECH NEL SISTEMA FINANZIARIO ITALIANO*, pp. 10.  
<sup>118</sup> Banca D'Italia (2019), pp. 11.  
<sup>119</sup> Banca D'Italia (2021), pp. 16.  
<sup>120</sup> Banca D'Italia (2019), pp. 9.  
<sup>121</sup> Banca D'Italia (2021), pp. 7.  
<sup>122</sup> Banca D'Italia (2021), pp. 8.  
<sup>123</sup> Banca D'Italia (2019), pp. 9.

The first data collection reported that the banking sector represented 80,5% of investments, decreasing slightly in the 2021 survey to 76,5% of total expenditures; following this sector, there are Electronic Money Institutions and Payment Institutions (9,9% and 5,3%) which decreased to 14,7% together, and Asset Management Companies and Brokerage Firms, that initially were less than 1% combined while the first increased to 3,2% in the period concerning 2020-2021<sup>124</sup>. The extent of investment may require organizational rethinking, which may take the form, in simple cases, of the establishment of cross-disciplinary and multidisciplinary teams or divisions dedicated to innovation or, in more complex cases, the establishment of Chief Innovation Officers or a dedicated business line<sup>125</sup>. The first survey, which was consistent with the second one about this topic, indicated that slightly more than one-fifth of intermediaries had created a business unit with functions to coordinate FinTech issues, while the remaining intermediaries merely delegated authority to the organization or IT function and, more rarely, to the General and Commercial Departments<sup>126</sup>.

### *2.3 Types of FinTech projects*

Each project was categorized on the basis of the area of interest, which are "Loans, Deposits and Capital Raising," "Payment, Clearing and Settlement Services," and "Investment Services", followed by "Governance" and "Operations". The "Governance" area collects projects that affect risk management and compliance, while the "Operations" area is a cross-cutting area, whose processes are preliminary to the performance of "core" activities. Some projects embedded in one specific area tend to spill over to other areas. These spillover phenomena, which is especially apparent for large projects and arise mainly between the credit intermediation and payments functions but are also very common between Operations and core functions<sup>127</sup>. On a general note, the projects are addressed, for the most part, to households, which represent 56,5 percent of cases, while a quarter of the projects are destined to firms and 16 percent involve financial intermediaries; the data resonate in both surveys, exhibiting minimal change throughout the period of time of interest and including as main focus and possibility of improvement households and both financial and non-financial companies<sup>128</sup>.

In the following table (Table 4), the projects will be divided by the main technologies used and, as it can be observed, the ones that increased the most between the two surveys are related to

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<sup>124</sup> Banca D'Italia (2019), pp. 8 & Banca D'Italia (2021), pp. 10.

<sup>125</sup> Banca D'Italia (2019), pp. 10.

<sup>126</sup> Banca D'Italia (2021), pp. 11.

<sup>127</sup> Banca D'Italia (2019), pp. 11.

<sup>128</sup> Banca D'Italia (2021), pp. 20.

Application Programming Interfaces (which relate the most to the concept of Open Finance), Cloud Computing and Biometrics. On the other hand there was one technology in particular of which the number projects decreased substantially which is Big Data<sup>129</sup>.

*Table 4. Projects divided by main technology adopted*

FINTECH PROJECTS DIVIDED BY DOMINANT TECHNOLOGY				
Technologies	2019 Survey		2021 Survey	
	units	euros	units	euros
API	56	324.800.000	95	734.237.848
Biometrics	9	9.854.000	29	276.041.121
Cloud Computing	14	30.081.000	41	60.458.442
AI (2)	44	18.762.800	38	54.892.197
of which: <i>ML</i>	-	-	26	29.863.105
<i>NLP</i>	-	-	12	25.029.092
Big data	45	101.144.000	26	13.524.486
RPA	31	21.679.100	30	27.483.824
Web apps - mobile, signatures	32	95.123.000	27	29.575.752
DLT - Smart contracts	9	6.600.000	17	5.947.130
DLT - Blockchain	12	4.331.000	3	616.623
IOT	3	1.869.000	4	99.732
Other	11	10.276.300	19	65.423.163
<b>Total</b>	<b>266</b>	<b>624.520.200</b>	<b>329</b>	<b>1.268.300.318</b>

*Banca D'Italia (2021), pp. 17.*

In addition, projects are implemented starting from a technology which functions as the core and that is sometimes combined with other technologies. Projects based on at least two technologies recur in 38.3 percent of the cases and most frequently involve APIs, big data, ML and NLP: the first two represent converging technologies, which are often found in combination, depending on the project, with almost all other technologies; the other two, on the other hand, tend to occur simultaneously and form homogeneous clusters<sup>130</sup>.

In the next table (Table 4), with reference to the 2019 survey, for each main technology is reported the number of times a secondary technology also appears; an example is big data which is the dominant technology in 45 projects; in 13 of these projects big data are combined with

<sup>129</sup> Banca D'Italia (2021), pp. 17.

<sup>130</sup> Banca D'Italia (2021), pp. 18.



AI and in 7 with cloud computing. As it can be observed the most frequent combinations are the ones between Big data and AI (13) and between APIs and Big data (12)<sup>131</sup>.

Table 5. Combinations of Technologies in 2019 Survey

		COMBINATIONS OF TECHNOLOGIES											
		(units)											
		Secondary technology											
		Big data	Robot	AI	IOT	Cloud	Biometric	Smart contracts	DLT	API	Integration technologies	Other	
Dominant technology	Big data	45	5	13	1	7	1	2	0	4	0	0	
	Robot	6	31	3	0	4	0	0	0	2	0	0	
	AI	16	8	44	0	1	0	1	0	0	0	0	
	IOT	0	0	0	3	0	0	0	0	0	0	0	
	Cloud	3	0	0	0	14	0	0	0	1	0	0	
	Biometric	0	0	1	0	0	9	0	0	1	0	0	
	Smart contracts	0	0	0	0	0	1	9	0	3	0	0	
	DLT	0	0	0	0	3	0	3	12	1	0	0	
	API	12	2	6	2	4	5	6	0	56	0	0	
	Integration technologies	0	2	1	0	0	1	0	0	3	32	0	
	Other	0	0	0	0	0	0	0	0	1	0	12	

Banca D'Italia (2019), pp. 12.

In the next table (Table 6), there are the combinations previously assessed but with different numbers that relate to the years following the 2019 survey. Compared with the previous survey, the spending and number of projects based on biometrics and cloud computing strengthened and projects based on AI technologies, including Machine Learning (ML) and Non-Performing Loans (NPL), while decreasing in terms of numbers grow in terms of spending<sup>132</sup>. Finally, projects and resources devoted to big data are contracting: it cannot be ruled out that some investments in the acquisition and development of unstructured data repositories have been directed toward the cloud, which enables not only storage but also data processing. The prevalence of investments in APIs is a trait that was already present in the previous survey and

<sup>131</sup> Banca D'Italia (2019), pp. 12.  
<sup>132</sup> Banca D'Italia (2021), pp. 18.

depends mainly on contextual drivers such as compliance with regard to the requirements of the PSD2 Directive<sup>133</sup> and the growing popularity of the open banking model.

*Table 6. Combinations of Technologies in 2021 Survey*

<b>COMBINATIONS OF TECHNOLOGIES</b>															
<b>Main Technologies</b>	<b>Secondary Technologies</b>														
	API	Web Mobile applications	Biometrics	Signatures	Big data	ML	NLP	Private Cloud	Public Cloud	Hybrid cloud	RPA	IOT	DLT smart contract	Other DLT	Other
API	59	0	2	0	15	10	0	11	1	2	6	2	3	1	0
Web Mobile applications	1	17	1	0	0	0	0	2	0	0	0	0	0	0	0
Biometrics	5	0	19	0	1	2	0	1	1	0	1	0	2	0	0
Signatures	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Big data	5	0	1	0	7	6	2	4	2	0	8	0	0	0	0
ML	5	0	0	0	7	12	2	2	2	0	3	0	0	0	0
NLP	1	0	1	0	2	8	1	0	1	1	0	1	0	0	0
Private Cloud	2	0	0	0	5	0	0	20	0	0	2	0	0	0	0
Public Cloud	1	0	0	0	0	0	0	0	8	0	1	0	0	0	0
Hybrid cloud	0	0	0	0	1	1	0	0	0	3	0	0	0	0	0
RPA	4	0	0	0	6	5	0	0	0	0	19	0	0	0	0
IOT	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0
DLT smart contract	3	0	0	0	0	0	0	1	2	0	0	0	9	2	0
Other DLT	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19

*Banca D'Italia (2021), pp. 18.*

## *2.4 Methods of implementation and progress status of the projects*

In the next paragraphs, the different methods of implementation of FinTech technology will be presented alongside the progress that projects made before and after COVID-19 pandemic, since the two surveys take place in periods prior and after this important event that brought a lot of change in everyday reality in every aspect of life and work.

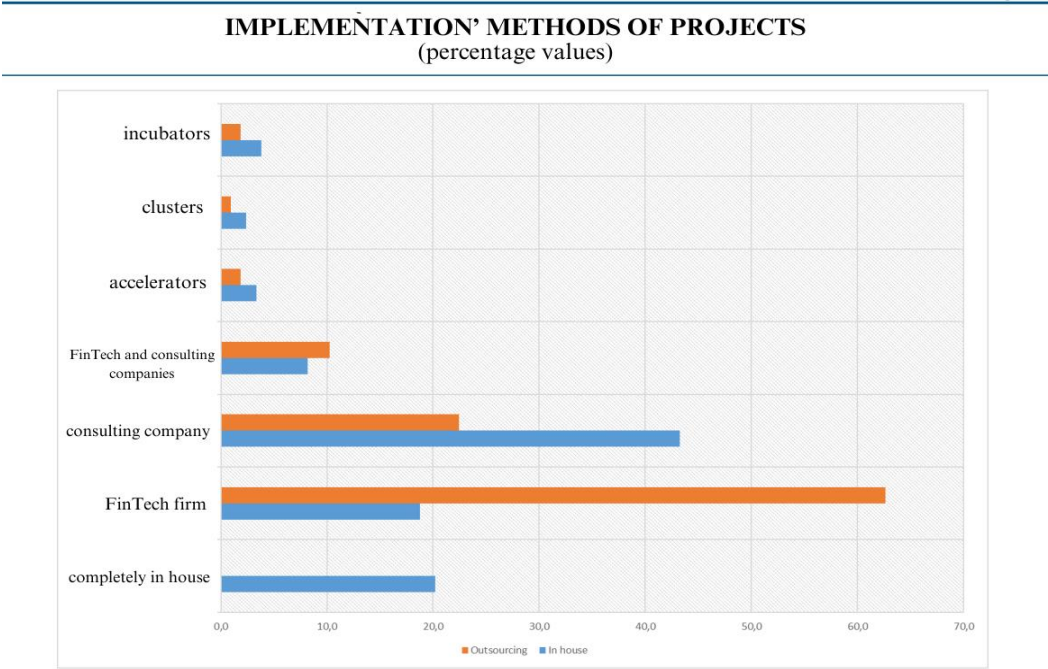
### *2.4.1 Implementation methods*

As reported by the first survey, intermediaries develop about two-thirds of projects in-house, making use of the input of external consulting companies (43.3 percent), FinTech companies (18.8 percent) or the contribution of both (8.2 percent), while the participation in consortia, accelerators, clusters and incubators is rarer (9.6 percent in total). Finally, one-fifth of in-house

<sup>133</sup> The Payment Systems Directive (PSD2) is a European directive that regulates payment services and payment service operators within the European Union. Specifically, the goal of PSD2 is for greater integration of payment systems in Europe to enable new services and increase user safety and security.

projects are developed entirely by the intermediary without any external collaboration<sup>134</sup>. On the other hand, the development of about one-third of the projects is carried out in outsourcing, turning (in 95 percent of cases) to FinTech companies and external consulting firms; furthermore, the implementation of projects by means of accelerators, clusters and incubators is marginal, amounting to 5 percent overall. These aspects are better represented in the following table (Table 7).

**Table 7. Different methods of projects' implementation (2019)**

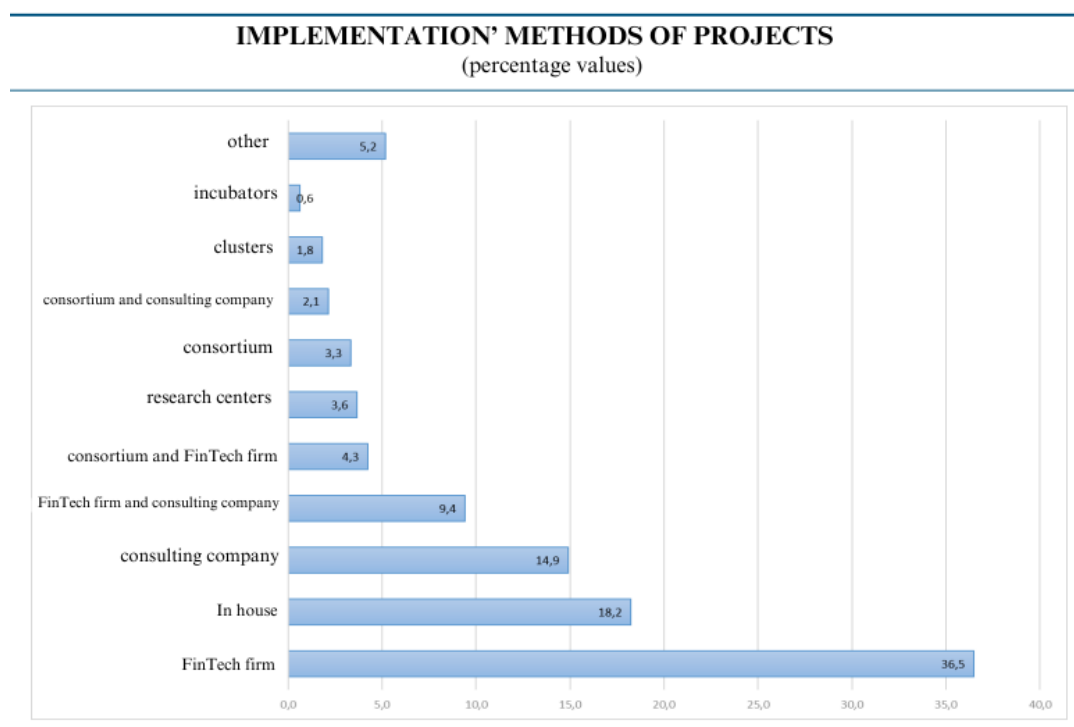


*Banca D'Italia (2019), pp. 14.*

Turning to the data collected in the second survey, it confirms that still slightly less than one-fifth of the projects are implemented by intermediaries completely in-house without any external contribution. For what concerns the remaining projects, some are developed with the cooperation of third-party companies and institutions (decreased to 33 percent from 43) and others are entrusted entirely to those external companies, which represent 48.6 percent of projects. The predominant organizational models involve companies and consulting firms, sometimes even jointly. Rarer, but still valuable, is the involvement of research centers and districts, while projects conceived within the framework of accelerators and incubators are less frequent<sup>135</sup> (Table 8).

<sup>134</sup> Banca D'Italia (2019), pp. 13.  
<sup>135</sup> Banca D'Italia (2021), pp. 20.

*Table 8. Different methods of projects' implementation (2021)*



*Banca D'Italia (2021), pp. 20.*

Collaborations respond to the need to employ advanced technologies otherwise not available in-house (47.7 percent of projects) and to speed up the time of implementation, reducing time to market (15.8 percent)<sup>136</sup>.

#### *2.4.2 Progress status of projects*

As reported by the 2019 survey and shown in the following table (Table 9), 18 percent of the projects were in a prototype stage, in which feasibility conditions, also known as Proof Of Concept (POC), still need to be verified, while 14 percent of the projects were in the design stage; furthermore, nearly a quarter were at an advanced stage of development and almost ready to be commercially exploited. Finally, nearly 42 percent of the projects were in production<sup>137</sup>.

<sup>136</sup> Banca D'Italia (2021), pp. 21.

<sup>137</sup> Banca D'Italia (2019), pp. 13.

*Table 9. Progress status of projects*

<b>PROGRESS STATUS OF PROJECTS</b>				
(percentage values)				
Technologies	Projects' progress			
	POC	Project	Development	Production
AI	43,2	9,1	25	22,7
API	8,9	17,9	30,4	42,9
IOT	.	.	66,7	33,3
Big data	17,8	15,6	20	46,7
Biometric	11,1		22,2	66,7
Cloud	7,1	14,3	28,6	50
DLT - Blockchain	41,7	16,7	41,7	.
Integration Technologies	6,3	9,4	12,5	71,9
Robot	9,7	16,1	38,7	35,5
Smart contracts	.	11,1	22,2	66,7
Other	33,3	33,3	8,3	25
<b>Total</b>	<b>18</b>	<b>14,2</b>	<b>25,8</b>	<b>41,9</b>

*Banca D'Italia (2019), pp. 13.*

The status of projects was uneven with respect to technologies; especially those related to AI development stood predominantly in the POC stage. Projects related to the development of Integration Technologies, Smart contracts and biometric technologies resulted much more mature. Finally, projects in which Big Data and APIs are the predominant technology also showed a relatively advanced state<sup>138</sup>.

For what concerns the data collected in the 2021 survey, 15 percent of the projects resulted to be in the prototype stage, while about a quarter was in advanced stages of implementation and 58 percent were already being exploited commercially. The projects that stood in a more advanced stage involved biometrics, electronic signatures, apps for websites and mobile devices, APIs, and Big Data; for the most part, these are technologies related to remote distribution of financial products and services as well as open banking<sup>139</sup>. The Covid-19 outbreak did not affect the progress of projects, resulting in the rescheduling of investments in only 39 cases, accounting for only 11 percent of the total. Specifically, 29 projects have been accelerated, constituting either functional initiatives for digital customer acquisition or tools to strengthen business continuity<sup>140</sup>.

<sup>138</sup> Banca D'Italia (2019), pp. 13.

<sup>139</sup> Banca D'Italia (2021), pp. 19.

<sup>140</sup> Banca D'Italia (2021), pp. 19.

### *2.5 In-depth business areas' analysis and impact on business models*

Investment projects can be classified both according to the impact they have on the business models of the firms involved and to the main business areas to which they refer to and on which they have the most influence. For what concerns the first division, there are four distinctive levels of impact: the first level includes projects that leaves the business model intact and that does not bring important innovations and relates to 6 percent of projects, the second level refers to a minimal degree of change that involves the development of new products, services, distribution channels and others, while entailing the achievement of one objective and concerns 54 percent of projects; the third level includes 34 percent of projects and the achievement of two goals, while the fourth and last level brings maximum change and involves just 5 percent of projects<sup>141</sup>. Projects related to APIs and integration technologies tend most frequently to be oriented toward two or even three goals; these technologies, developed to create a new banking paradigm, engage processes, products, and distribution circuits at the same time. In a middle rank are projects that rely on Big data, while other technologies such as AI and Robots tend to be focused on one goal<sup>142</sup>.

The second type of division relies on the business areas on which projects are intended to have the greatest effect and the areas specifically are credit, deposits and capital raising, payments, investment services, insurance services, governance and business operations. In particular the area of governance involves risk management and compliance, while the business operations area includes those processes that are required for carrying out institutional activities<sup>143</sup>. Some projects embedded in a specific area tend to invest in other areas as well: there are some spillovers which often occur between the areas of loans and payments, as in the case of mobile banking; governance and business operations are also recurrent among the areas of loans, because they both support this activity; overall, projects insisting on two areas account for 45 percent of the total<sup>144</sup>. In the following tables the total number of projects and the expenditures related to the projects will be laid out, the first table refers to the data gathered in the 2019 survey, while the second table refers to the data of the 2021 survey. The underlying trend is upward, both in terms of the quantity of projects and the amount of spending required, as it can be observed by comparing the two tables (Table 10 & Table 11).

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<sup>141</sup> Banca D'Italia (2019), pp. 15.

<sup>142</sup> Banca D'Italia (2019), pp. 15.

<sup>143</sup> Banca D'Italia (2021), pp. 22.

<sup>144</sup> Banca D'Italia (2021), pp. 22.

**Table 10. FinTech projects divided by business area (2019)**

<b>FINTECH PROJECTS DIVIDED BY BUSINESS AREAS OF INTEREST</b>							
(units and thousands of euros)							
<b>Business areas</b>	<b>Number of projects</b>	<b>Invested amount</b>					
		<b>2017 - 2018</b>	<b>2019 - 2020</b>	<b>Total</b>	<b>Average</b>	<b>Mean</b>	<b>Max</b>
Credit, deposits and capital raising	72	109.374	225.550	334.925	4.652	253	201.626
Payment services, clearing and settlement	45	40.568	70.815	111.383	2.475	291	53.000
Investment services	25	20.291	14.752	35.043	1.402	410	10.436
Governance	60	32.097	39.372	71.468	1.191	222	9.900
Business operations	57	30.547	39.598	70.144	1.231	230	6.295
Other	8	744	954	1.699	212	146	800
<b>Total</b>	<b>267</b>	<b>233.621</b>	<b>391.042</b>	<b>624.662</b>	<b>2.340</b>	<b>250</b>	<b>201.626</b>

*Banca D'Italia (2019), pp. 17.*

**Table 21. FinTech projects divided by business area (2021)**

<b>FINTECH PROJECTS DIVIDED BY BUSINESS AREA OF INTEREST</b>				
(units of euros)				
<b>Business area</b>	<b>Number of projects</b>	<b>Total Investment</b>	<b>Average Investment</b>	<b>Median Investment</b>
Credit, deposits, capital raising	118	403.404.661	3.994.106	480.000
Payments	59	711.219.625	14.817.076	227.000
Investment services	19	32.597.227	2.037.327	596.126
Insurance services	6	26.282.103	4.380.351	313.500
Governance	43	36.094.294	925.495	300.000
Business operations	84	58.702.408	793.276	137.000
<b>Total</b>	<b>329</b>	<b>1.268.300.318</b>	<b>4.465.846</b>	<b>246.000</b>

*Banca D'Italia (2021), pp. 23.*

In the next paragraphs, there will be a more detailed presentation of the data collected by the two surveys on which this analysis is based.

### *2.5.1 Credit, deposits and capital raising*

The data collected in the first survey reports that projects dedicated to the innovation of the intermediation function (loans and deposits) and capital raising represent the largest component both in terms of the amount of expenditure which corresponds to 110 million euros and the

number of projects that amounted to 72<sup>145</sup>. Whereas in the second survey the number of projects increased to 118 or 36 and the expenditure amounted to 403 million euros<sup>146</sup>.

Credit, deposits and capital raising	72	109.374	4.652	253	201.626
Credit, deposits, capital raising	118	403.404.661	3.994.106		480.000

Banca D'Italia (2019) pp. 17 & Banca D'Italia (2021), pp. 23

The technologies most frequently used in projects belonging to this area are APIs, thanks to which open models are realized, based on collaboration between banks, FinTech companies and other players for the development of new innovative products and services<sup>147</sup>. Projects based on APIs are first in terms of number of projects and expenditures, and are followed by Big Data, RPA and ML used in models that concern credit scoring. The objectives results to be heterogeneous, but the most relevant ones are directed towards innovating the way of distributing the products and services and increasing customer satisfaction<sup>148</sup>.

Among the various projects involved in this area, some are most significant such as the one based on mobile banking and digital lending. For what concerns mobile banking, it represents 45 percent of the projects in this domain and it is aimed at the provision of financial and payment services and controlling the information flow; furthermore, among the most widespread services are instant transfers, online deposits and apps that allow customers to handle bank accounts which are held in banks other than the primary bank. On the other hand, projects dealing with digital lending represent 28 percent of projects and may concern the digitalization of the credit supply chain, supply chain finance and new solutions that help guarantee safety and robustness to the actions carried out by customers and by intermediaries<sup>149</sup>. Some projects implement PFM or financial coaching services, which assist customers in managing their savings through expense reporting services. This service integrates with traditional banking products and aims to build customer loyalty by increasing customer engagement and propensity to interact through digital channels<sup>150</sup>.

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<sup>145</sup> Banca D'Italia (2019), pp. 17.  
<sup>146</sup> Banca D'Italia (2021), pp. 23.  
<sup>147</sup> Banca D'Italia (2019), pp. 17.  
<sup>148</sup> Banca D'Italia (2021), pp. 23.  
<sup>149</sup> Banca D'Italia (2021), pp. 24.  
<sup>150</sup> Banca D'Italia (2021), pp. 25.



### 2.5.2 Payment services

Payment services represent the second area of interest in terms of investment. In this area, the PSD2 directive has provided the most intense incentive for innovation, given both the obligations introduced by the directive, encouraging the development of APIs in order to enable third parties to access customer accounts, and the new profit opportunities it opens, based on new payment initiation and account information services. The combination of regulatory constraints and market opportunities helps to explain the technologies used in these projects, mainly referring to the development of APIs and Integration Technologies<sup>151</sup>. As it can be observed in the abovementioned tables, there was an increase for what concerns the number of projects, which went from 45 to 59, and the amount of expenditures had a significant increase from about 40 million euros to 711.

Payment services, clearing and settlement	45	40.568	2.475	291	53.000
Payments	59	711.219.625	14.817.076		227.000

*Banca D'Italia (2019), pp. 17 & Banca D'Italia (2021), pp. 23*

The main technological factor is APIs, on which about half of the projects are based and whose development has been facilitated by open banking. APIs enable smooth and essentially invisible to the user integrations between different processes that combine to offer new products and services; they are followed by biometric technologies, present in about 20 percent of the projects, which are needed to make digital payments via smartphones or other devices, like smartwatches<sup>152</sup>.

Projects in this sector aim at broadening the range of products and services and increasing customer engagement and loyalty. Specifically, the projects can be grouped into five clusters: Payment solutions to digitalize transactions (which include PIS), payment deferrals for purchases at physical and online stores (of which an example is the solution *buy now pay later*), acceptance and management of payments for enterprises (facilitated by contactless POS payments), monitoring of the financial status (involving Personal Financial Management and Business Financial Management solutions), physical process automation (related to cash management)<sup>153</sup>.

<sup>151</sup> Banca D'Italia (2019), pp. 18.

<sup>152</sup> Banca D'Italia (2021), pp. 26.

<sup>153</sup> Banca D'Italia (2021), pp. 26.

### 2.5.3 Investment services

Projects in this area are mainly aimed at supporting consulting activities, distributing new products and developing new distribution channels<sup>154</sup>. As gathered by the 2021 survey, 80 percent of projects are developed through partnerships, mainly used to access advanced technologies otherwise unavailable to the intermediary. This type of projects help in two different domains: the first is customer support (for which Robo-advisors, ML, API, NLP and Cloud Computing are used), while the second is the implementation of new products, services or distribution channels (including advanced trading platforms and DLT technologies for capital raising in different EU states)<sup>155</sup>. As reported by the two surveys, the number of projects related to investments has decreased a little, while the amount of expenditures has undergone a big increase from 20 million euros to 32.

Investment services	25	20.291	1.402	410	10.436
Investment services	19	32.597.227	2.037.327		596.126

*Banca D'Italia (2019), pp. 17 & Banca D'Italia (2021), pp. 23*

Intermediaries develop these projects through partnerships with companies, intra-group consortia, research centers, and fintech districts. The collaborations mainly respond to the need to employ technologies not available internally and to reduce time to market, as is common for the other types of projects; the technologies that are predominantly adopted are APIs, Big Data and DLT<sup>156</sup>. Lastly, the main recipients of these projects are consumer households, but there are also projects designed to meet the needs of the banks themselves or other professional customers, and they represent one-third of projects in this area<sup>157</sup>.

### 2.5.4 Governance

In this area, technologies are primarily adopted, as already mentioned, for the purpose of automating operations, decreasing the probability of manual errors, identifying otherwise undetectable routines, and redirecting personnel to non-standardizable activities; they strive to make internal control systems more effective and efficient, particularly banking and financial services compliance, internal audit, and anti-money laundering<sup>158</sup>. As reported by the first

<sup>154</sup> Banca D'Italia (2021), pp. 27.

<sup>155</sup> Banca D'Italia (2021), pp. 27.

<sup>156</sup> Banca D'Italia (2021), pp. 28.

<sup>157</sup> Banca D'Italia (2019), pp. 20.

<sup>158</sup> Banca D'Italia (2019), pp. 20.

survey, the number of projects related to Governance was 60 and the expenditures amounted to 32 million euros for the two-year period between 2017 and 2019, representing the third area by invested amount; this data changed in the second survey, presenting a decreased number of projects (43 to be exact) but an increased investment of about 36 million euros.

Governance	60	32.097	1.191	222	9.900
Governance	43	36.094.294	925.495		300.000

Banca D'Italia (2019), pp. 17 & Banca D'Italia (2021), pp. 23

For what concerns compliance, the projects aim at digitalizing and integrating compliance processes through the implementation of RPA (Robotic Process Automation) technologies and ML algorithms in order to automatically align newly enacted legislation with those already transposed, identifying new regulatory obligations and the processes involved<sup>159</sup>. With regard to anti-money laundering, projects in this area are embedded along the entire chain of controls, from customer due diligence to the monitoring of transactions, including the assignment of a priority level to detections of potentially anomalous movements<sup>160</sup>.

Alongside projects focused on automated processes for evaluating the creditworthiness of customers, numerous initiatives involving the process of selling impaired loans emerge, including those based on DLT technologies for authenticating documents concerning transfers performed; also in the area of impaired loans are projects aimed at improving their evaluation, monitoring and management<sup>161</sup>.

2.5.5 Business Operations

The projects for the modernization of the Business Operations area can be traced to three macro groupings: back office, customer service (customer support), and support for internal functions of the intermediary (business support)<sup>162</sup>. In the first survey, the number of projects amounted to 57 and the expenditures to 30.5 million euros, whilst in the second survey, the number increased to 84 and the amount invested got up to 58.7 million euros, which can be considered

<sup>159</sup> Banca D'Italia (2021), pp. 28.  
<sup>160</sup> Banca D'Italia (2021), pp. 29.  
<sup>161</sup> Banca D'Italia (2021), pp. 29.  
<sup>162</sup> Banca D'Italia (2019), pp. 21.

a significant increase. The pandemic affected 19 projects, almost always accelerating their progress: the need to ensure business continuity and protect customer relationships, even at a distance, required many projects to be implemented more quickly than expected<sup>163</sup>.

Business operations	57	30.547	1.231	230	6.295
Business operations	84	58.702.408	793.276		137.000

Banca D'Italia (2019), pp. 17 & Banca D'Italia (2021), pp. 23

The first category is the one related to back office and it presents projects based on RPA and OCR (Optical Character Recognition) technologies, the former are inserted in business processes that are considered repetitive, while the latter are used for the analysis of documents transmitted to customers; in both cases, the goal is to reduce time and costs linked to internal activities<sup>164</sup>. Another technology used is DLT, on which the “Spunta Banca” project is based, that consists in the application of a private and permissioned DLT to interbank reconciliation process (called ‘Spunta’), which involves the whole Italian banking sector<sup>165</sup>, and reconciles the set of activities related to the matching and balancing of transactions between two or more banks, such as those between accounts opened on separate intermediaries<sup>166</sup>.

The second category refers to customer support, which involves projects that aim at transforming the service model to the customer through cloud computing, APIs, artificial intelligence<sup>167</sup>. In the 2019 survey, these projects were mostly focused on improving the user experience and the Customer Relationship Management (CRM) to better understand the needs of clients and their requests for assistance; one of the most common examples have been Chatbots<sup>168</sup>. On the other hand, the 2021 survey presents some progress of the already existing platforms, through the implementation of services such as voice-activated navigation or video banking, which enables clients and intermediaries to meet online directly on the company’s platforms without having to install specific softwares<sup>169</sup>.

The third and last category concerns business support, that includes projects that develop analytical tools and services to support the business function of intermediaries<sup>170</sup>. As reported

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<sup>163</sup> Banca D'Italia (2021), pp. 29.  
<sup>164</sup> Banca D'Italia (2021), pp. 29.  
<sup>165</sup> Cucari, N., et al. (2021), “The Impact of Blockchain in Banking Processes: The Interbank Spunta Case Study.”, pp. 4.  
<sup>166</sup> Banca D'Italia (2019), pp. 21.  
<sup>167</sup> Banca D'Italia (2021), pp. 30.  
<sup>168</sup> Banca D'Italia (2019), pp. 21.  
<sup>169</sup> Banca D'Italia (2021), pp. 30.  
<sup>170</sup> Banca D'Italia (2019), pp. 22.

by the 2019 survey, these projects mainly adopt AI and data analysis in order to both improve marketing campaigns based on customer purchasing trends and processes more related to the business itself; in this area are also included projects that deal with smart lending among individuals and all-inclusive services for asset management<sup>171</sup>. With regard to the second survey, projects have appeared to be heterogeneous, mostly linked to partnerships with FinTech firms, and are directed towards the improvement of internet banking and the development of new advisory platforms<sup>172</sup>. In the following paragraphs, projects related to open finance will be presented.

### *2.5.6 Open Finance*

As reported by the 2021 survey, about 27 percent of the projects entail the development of activities that fall within the scope of open banking and this type of projects rely mainly on APIs, which enable intermediaries to create their own apps and services. In this domain projects can be divided into two categories, the ones that involve Payment Initiation and Account Information Services (PIS and AIS) and the ones that do not include them.

#### *2.5.6.1 Projects involving PIS and AIS*

Projects using PIS and AIS services enable each intermediary to compete with competitors for customers by offering either the same payments at lower prices or different and innovative services. Among these projects, 44 percent include the provision of both services while 29 percent provide only AIS services and 23 percent only PIS services<sup>173</sup>. AIS and PIS services are used as the basis on which intermediaries can build additional services, including Personal Financial Management (PFM), Business Financial Management (BFM), and Credit scoring.

BFM deals with corporate treasury management applications directed at simplifying the monitoring of corporate finances and facilitating the reconciliation of payments, while PFM involves information tools to support customers in managing their finances<sup>174</sup>. On the other hand, with regards to credit scoring, it entail the reprocessing of transactional data accessed through the account information service by intermediaries or Third Party Providers (TPP) to refine credit scoring models<sup>175</sup>.

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<sup>171</sup> Banca D'Italia (2019), pp. 22.

<sup>172</sup> Banca D'Italia (2021), pp. 30.

<sup>173</sup> Banca D'Italia (2021), pp. 32.

<sup>174</sup> Banca D'Italia (2021), pp. 32.

<sup>175</sup> Banca D'Italia (2021), pp. 32.

### *2.5.6.2 Projects that do not involve PIS and AIS services*

Approximately one-fifth of the projects, although referable to the open banking context, do not involve the provision of AIS and PIS services, even if there is the use of APIs as main technology. Some projects aim to develop new distribution channels or customer contact through collaboration with third parties, of which an example could be the integration of financial or non-financial products referable to third parties inside distribution platform of intermediaries<sup>176</sup>. For corporate customers, on the other hand, these initiatives aim to simplify the ways of using services through a single access channel thanks to which the company has diversified functionalities to optimize its activities management<sup>177</sup>.

In the next section of this chapter, a more current perspective of the FinTech market will be laid out, based on data drawn from the website of the online database Crunchbase.

## *2.6 Current landscape of the FinTech market*

As already mentioned, this part of the chapter will present the current level at which the FinTech market finds itself, specifically in the Italian territory and the data is drawn from the platform Crunchbase, that is a platform aimed at finding and engaging with private-company data, insights and analysis<sup>178</sup>. The firms will be divided by main industry of expertise, by location in Italy and by funds raised by each enterprise. In addition, an outlook on the number of acquisitions conducted between 2020 and the current year will also be introduced.

### *2.6.1 FinTech firms in Italy at the moment*

The dataset involves a pool of 239 different firms, based and operating in Italy, and focused on different industries; out of the total number of firms researched, only 102 are relevant for this analysis because the data available for the other 137 firms do not provide the necessary information to include them in this assessment. Firms have been divided into 6 main categories on the basis of the main industry that they target: Banking, Investments, Support, Crowdfunding, Insurance and Asset management and Trading (Fig. 3). In the following paragraphs, the division in groups will be presented in detail.

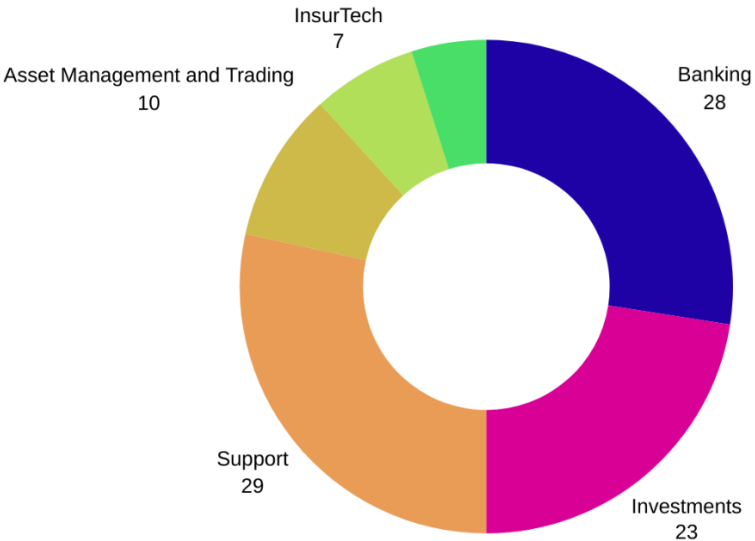
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<sup>176</sup> Banca D'Italia (2021), pp. 33.

<sup>177</sup> Banca D'Italia (2021), pp. 33.

<sup>178</sup> Crunchbase website, [www.crunchbase.com](http://www.crunchbase.com)

*Figure 3. Firms division based on Crunchbase data*

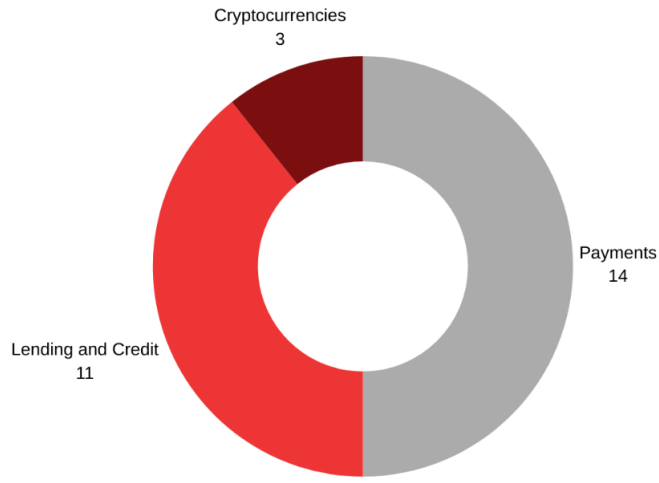


*Author's elaboration based on Crunchbase data*

*2.6.1.1 Banking*

Included in the banking category are 4 specific financial areas, specifically dealing with lending, credit, cryptocurrency and payments (mostly mobile or online payments), the number of firms that belong to this category amounts to 28, of which 14 are payment-oriented, 11 are lending-oriented and 3 deal with cryptocurrencies (Fig. 4).

*Figure 4. Firms division in the Banking Sector*



*Author's elaboration based on Crunchbase data*

As already mentioned, the FinTech firms that focus on payments are 14, but among them, they have an additional specificity that differentiates them: there are firms that provide their own mobile payments platform without involving a specific market area such as Satispay, while

other include payments options but are related to a certain sector like rental properties, of which an example is the firm Leasy that provides banking and a payment solution for property operators. Another market area that involves payment firms is the one of retail, which may be centered around the concept of being able to pay without standing in line, like the firm Sinba, or may use different types of solutions such as IoT-enabling technology, APIs, multi-card payments, virtual coins alternatives and payments through social media posts; among these solution, two options that have been increasingly used in the last four years are “buy now, pay later” and payment in installments even for retail items or on platforms such as Amazon. The main technology that stands at the basis of these firms are APIs and open banking, which are among the most used instruments in the FinTech market.

With regards to the firms focused on credit and lending, they amount to 12 and they concentrate on mainly two types of products: providing a platform solely for the purpose of lending or providing an entire online banking platform, which enables customers, mostly professionals and SMEs but also individuals, to have a range of different tools at their disposal. The first category includes a few examples like the firms Credimi (focused on digital lending) and Lendit (credit-sharing platform on which firms and professionals can lend and request liquidity easily). The second category includes firms like illimity and Hype, which are entire banking platforms that provide different options that go beyond the mere sphere of credit and lending.

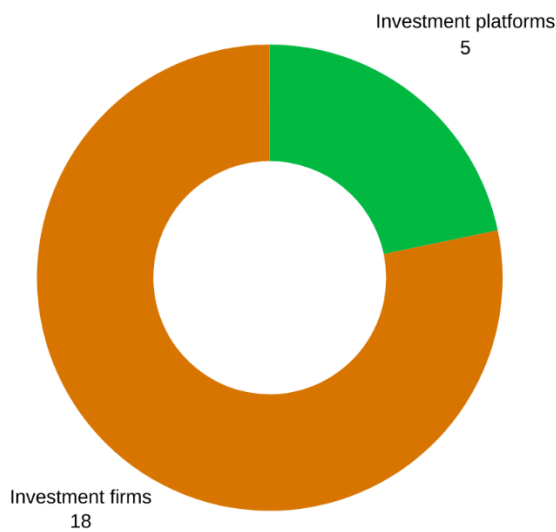
The third type of banking firms involve cryptocurrencies and there are in total 3 firms; the number of firms in this sector is very limited, mostly because of the stricter regulation that surrounds this market area. However, the firms based in Italy that deal with cryptocurrencies within those boundaries act as a helping hand to investors, both experienced and young, to make better investments in this domain. The three firms included in this category are Young Platform (cryptocurrency exchange designed for the next generation of investors), Hercle (digital assets market maker and broker dealer) and Vertigo (professional investment platform that helps automate and optimize cryptocurrency investments).

#### *2.6.1.2 Investments*

For the purpose of this analysis, this category includes 23 firms and has been divided into two main groups: the first one includes firms that focus on investments but that are only platforms created to invest in a certain type of product, while the second involves firms which are investment firms at their core, like venture capitals or angel investors, which aim at supporting different kinds of businesses (Fig. 5).



*Figure 5. Firms division in the Investments Sector*



*Author's elaboration based on Crunchbase data*

With regard to the first category, it includes 5 firms that can be considered and provides investments platforms, both for more traditional ones and for investments in a specific field. Some examples drawn from this research are the firm Liquinvex, which is a wine investment mobile app, the firm Gooldie, which is an investment platform focused on gold and the firm Doorway, which provides a platform for venture capital firms that helps them find the right investment opportunities. It can be therefore assessed that the types of investment that these firms provides are varied and cover a broad range of demands from participants in the market.

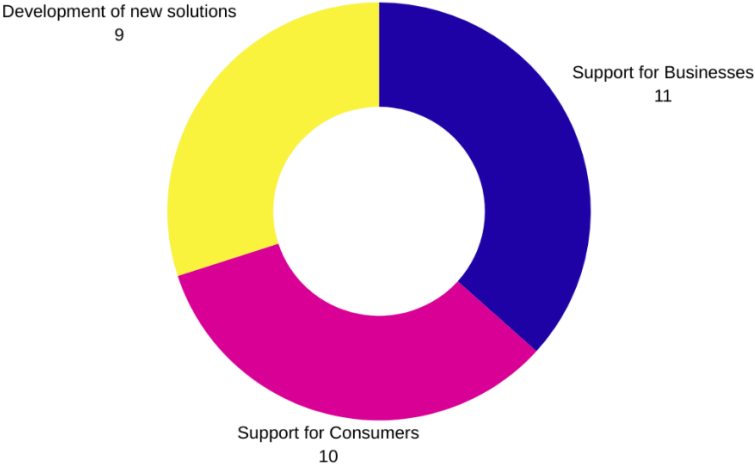
The second category, in addition to being the largest, is also the most productive one in terms of the amount of funds raised. This type of firms focuses on different goals to achieve through investments: some firms concentrate on supporting entrepreneurs and businesses in reinventing industries through the adoption of technology and in attaining sustainability, while other firms focus on investing either in accelerator programs for early stage or pre-seed stage companies or in later stage and pre-IPO venture opportunities. Other types of goals focus on expansion and buy-out transactions, retail equity investments and investments in shareholder's funds in acquisition processes.

### *2.6.1.3 Support for Businesses and Consumers*

This category focuses on supporting companies, professionals and consumers, through educational initiatives, developing new products and solutions and helping in developing businesses on different levels that will put them in the right place within the market. Firms are

divided into three main groups: the first one involves firms which function as support for businesses and professionals, the second one includes firms that support consumers and the third group refers to firms that gives support through the development of new solutions and products (Fig. 6). The division is mostly homogeneous, presenting 11 firms in the first group, 10 firms in the second and 9 firms in the third group.

*Figure 6. Firms division in the Support sector*



*Author's elaboration based on Crunchbase data*

The first group presents a diverse range of goals, which may include: platforms aimed at helping entrepreneurs launch initiatives, support digitalization and getting in contact with investors (a few examples are the firms Two Hundred and H-FARM), advisory companies that help businesses find innovative solutions and to answer firms various questions and doubts (such as the firm CrescItalia), ESG Rating Agencies, educational tools for financial institutions, FinTech companies and banks (like the firm FunniFin) and cyber security companies that guarantee data and content integrity (like the firm Cleafy).

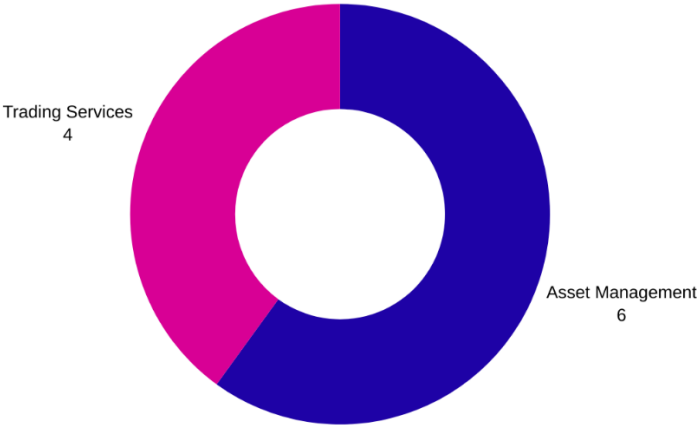
The second group involves firms that aim at supporting consumers through different instruments such as platforms to help them manage expenses that could be daily (such as the firm fees) or recurrent like bills (an example is the firm Switcho), platforms that help property owners transform their properties into passive income (such as the firm Zappyrent), personal finance apps powered by AI, online pension funds platforms and financial research, learning and tools aimed at consumers.

The last group concentrates on firms that support these categories by developing new solutions and products, among which there may be the development of technologies that facilitates investing in digital assets (like the firm Colossus), solutions to transforms the digital banking world, technologies to transform normal objects into smart ones (such as the firm MatiPay that turns vending machines into smart ones) and tools to help businesses achieve their sustainability goals (of which an example is the firm Tundr).

*2.6.1.4 Asset Management and Trading*

This category includes the firms that explicates some kind of management function that can entail asset, wealth, credit and risk management and firms that provides mainly trading services. The firms involved in this group are 10, of which 6 include management services, while 4 refer to trading services (Fig 7).

*Figure 7. Firms division in the Asset Management and Trading Sector*



*Author's elaboration based on Crunchbase data*

Some of the services that are provided by the asset management firms include: corporate liquidity management (like the firm Sibill), wealth and investment management, credit risk management and risk analysis through the adoption of ML and Big Data (like the firm modefinance Srl) and online financial risk management for businesses (such as the firm eKuota). On the other hand, the firms that provide mainly trading services involve solution such as platforms to trade different types of digital products, marketplace for illiquid and alternative assets, P2P trading technologies and invoice trading; a few examples are the firms

WhiteExchange, which is used for trading digital art, and the firm CashMe SpA, that is the leading invoice trading Italian tech company.

#### *2.6.1.5 InsurTech*

This category involves those FinTech firms that provides insurance services to consumers through online channels and focusing on fulfilling clients' demands and needs in the best way possible. The firms included in this category are 7, therefore representing a small share of the FinTech market in Italy. The main services provided by these firms include: instant insurance that may refer to home, travel, life and mortgage insurance, consumer insight and profiling platforms and price comparison in order to ensure that consumers choose and buy the best insurance for their needs. A few examples of these companies are the firm MioAssicuratore, which is an insurance brokerage company that offers mortgage, life, home and travel insurance, the firm 6sicuro, that provides online insurance services and helps people compare policies of different providers to find the best one, and the firm ViteSicure, which is a digital InsurTech broker that provides financial products with a high premium level digital customer experience.

#### *2.6.1.6 Crowdfunding*

This category includes FinTech firms that are mainly crowdfunding companies and amounts to 5 firms. Each one of those firms has a different job inside this specific area of the FinTech market; the firm Walliance is the leading property investment platform which breaks down the entry barriers of real estate, the firm CrowdFundMe is one of Italy's leading equity crowdfunding platforms, the firm 200 Crowd is a crowdfunding platform that connects entrepreneurs and investors, the firm Politically is the first online fundraising platform for political campaigns and is based on blockchain, and last but not least, the firm Biooncrowd is a crowdfunding company aimed at scientific research.

#### *2.6.1.7 Firms divided by location in Italy*

In this paragraph, the firms that have just been presented will be divided by geographical location on the Italian territory. In the following figure, there will be a representation of Italy with colors that indicate the provinces in each region in which these firms operate (Fig, 8).

**Figure 8. Firms location in Italy**



Website Mapchart: <https://www.mapchart.net/italy.html>

As it can be observed, the most part of firms is located in the northern and central part of Italy; to be more precise, 79 firms are located in the North of Italy, 19 are in the Central part of Italy and 4 are in the South of Italy. For what concerns the North of Italy, the majority of firms is based in the Lombardy region, specifically in Milan or around it (57 firms are located in that area, while 6 are in other parts of the region); the other firms are located in Piedmont (6 in Turin and 1 in the province of Cuneo) Emilia-Romagna (2 in Bologna and 1 in Modena), Veneto (1 in Venice, 1 in Treviso and 1 in Vicenza), Friuli-Venezia-Giulia (1 in Trieste) and Trentino (1 in Trento). With regard to the central part of Italy, firms are concentrated in the area of Roma

(19 firms), while the other are in Tuscany, specifically in the provinces of Florence, Arezzo and Siena (5 firms). Last but not least, there are 4 firms that are located in the South of Italy: 2 firms are located in the province of Bari, one is in the province of Catania in Sicily and the last one is based in the southern part of Sardinia.

*2.6.1.8 Firms divided by money raised*

The last division that will be made is the one that groups firms on the basis of the amount of money they raised, but before doing that, there is an additional division to be made that deals with the way in which those funds have been raised; in fact, even if the most part of firms has raised funds by means of investors or from core funding, in terms of amount, the most part of funds has been raised through investments in other firms or projects and in products created and commercialized, specifically 19 firms holds the most part of the funds due to their choices of investments, as shown in Table 12. In the next table, firms will be divided into 6 categories: the first one involves firms that raised more than 100 million euros, the second group includes firms that raised between 100 million euros and 20 million euros, the third one consists of firms that raised between 20 million euros and 10 million euros, the fourth group raised between 10 million euros and 1 million euros and the last group hold the firms that raised less than 1 million euros (Tab. 12).

*Table 12. Funds raised through investments and not*

Funds through Investments	4	7	4	4	1
Funds without Investments	1	4	0	38	40

*Author's elaboration based on Crunchbase data*

*Table 13. Firms divided by funds raised*

<b>AMOUNT OF FUNDS RAISED</b>	<b>N°</b>
More than 100M	5
Between 100M and 20M	11
Between 20M and 10M	4
Between 10M and 1M	42
Less than 1 M	41

*Author's elaboration based on Crunchbase data*

In the first category, there are 5 firms in total, 4 of which have raised funds through investments, in particular the four companies in question are United Ventures (Venture Capital firm that raised 416.1 million euros with 59 investments and 4 different funds), The Techshop (venture capital and private equity firm that raised 175.4 million euros through 9 investments), illimity (digital bank that raised 305.5 million euros through 3 investment, among which is the well-known firm Hype) and Korify Capital (firm that invests in late stage/pre IPO venture opportunities and smaller firms), which raised most funds, about 1.1 billion euros through 22 different investments and 2 funds. The other company that raised more than 100 million euros is Satispay, but the amount raised of 779.8 million euros does not derive from investments; in fact, this company is a FinTech firm that operates through a payment system that allows people to send money to friends and pay in stores from your smartphone<sup>179</sup>.

The second category includes 11 firms that raised between 100 million and 20 million euros; seven of them raised funds through investments while the other four through other means. Among the ones that involved investments, there are some honorable mentions: the firm Gruppo Bertoldi (specialized in operational management of group companies, development and research of new businesses) raised 84.1 million euros through 21 investments among which there are some notable names such as Satispay and Oval Money, and the firm Fabrik (financial services company owned by UBI Banca) raised 40 million euros through 15 investments and also presents 2 acquisitions of other firms. The other firms that raised funds through investments are all venture capital firms that engaged in 27 investments in total.

The third category involves companies that raised between 20 million and 10 million euros; only four firms fall into this category and none of their funds were raised through investments. The firms in question are Cleafy (cyber security firm, raised 10 million), Yolo Tech Insurance (InsurTech firm that raised 12.5 million), Ventis (FinTech firm that provides a marketplace solution and raised 19 million) and Objectway (firm that is in the wealth and management software industry and raised 10 million).

The fourth category involves firms that raised between 10 million and 1 million euros and includes the most part of the firms researched, 42 firms. The most part of these firms (38 firms) raised money without the aid of investments and the variety of companies is mainly focused on banking, support, investment and asset management firms. The other four remaining companies

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<sup>179</sup> <https://support.satispay.com/en/articles/what-is-satispay>

raised funds through investments and the majority of them venture capital firms or firms focused on accelerating stages in businesses.































The last category involves firms that raised less than 1 million euros and includes 41 firms; the larger part of them fall into the category of firms that raised funds without the aid of investments. These firms are mostly focused in the sectors of support, banking and investments; the only firm that relied on investments is the company Doorway, which is a platform for venture capital firms that helps them find the right investment opportunities and it raised 10 thousand euros.

On a general note, it can also be observed that only 39 firms out of the 102 involved have been founded in the last four/five years, going from 2019 up to now. In the following paragraphs, the current acquisition landscape in Italy will be presented, in order to further deepen this analysis.









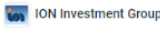














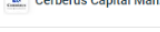


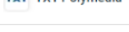

















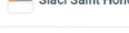


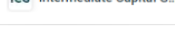


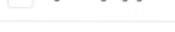




















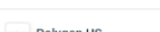





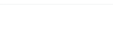
2.6.1.9 FinTech acquisitions in Italy

The timeframe taken into consideration in the analysis of FinTech acquisition in Italy is of three/four year, namely from 2020 up to 2024. The total number of acquisition found amounts to 36 and the type of acquisition that has been made involves mostly Italian FinTech firms acquired by other Italian or foreign companies. The main categories in which these acquisitions have been made involve banking and financial services, insurance services and other sectors such as food and beverage, machine manufactory and consulting. In the following figures, the list of all acquisition will be reported, in order to better understand the market taken into consideration (Fig. 9).

Figure 9. FinTech acquisitions in Italy between 2020 and 2024

<input type="checkbox"/> Transaction Name	Acquiree Industries	Acquiree Headquart...	Acquiree Name	Acquirer Name	Announced Date
<input type="checkbox"/>  Finwave acquired by Apax Par...	Banking, Finance, Financial ...	Cinisello Balsamo, Lombard...	 Finwave	 Apax Partners	Dec 12, 2023
<input type="checkbox"/>  CIMA acquired by Loomis	Banking, Finance, Financial ...	Modena, Emilia-Romagna, I...	 CIMA	 Loomis	Jul 18, 2023
<input type="checkbox"/>  DEPObank S.p.A acquired by ...	Banking, Financial Services,...	Milan, Lombardia, Italy	 DEPObank S.p.A	 Banca Farmafactoring	May 14, 2020
<input type="checkbox"/>  TUA Assicurazioni acquired b...	Finance, Financial Services,...	Milano, Lombardia, Italy	 TUA Assicurazioni	 Allianz	Oct 12, 2023
<input type="checkbox"/>  Reperform acquired by Guber	Banking, Machinery Manufa...	Milano, Lombardia, Italy	 Reperform	 Guber	Jul 4, 2023
<input type="checkbox"/>  Assicurofacile acquired by Cl...	Auto Insurance, Commercia...	Velletri, Lazio, Italy	 Assicurofacile	 Cloud Care	Mar 24, 2023
<input type="checkbox"/>  Capanna Group acquired by B...	Health insurance, Insurance	Livorno, Toscana, Italy	 Capanna Group	 BEA Group	Apr 5, 2023
<input type="checkbox"/>  Area Brokers Industria acquir...	Auto Insurance, Insurance, ...	Milan, Lombardia, Italy	 Area Brokers Industria	 PIB Group	Feb 6, 2023
<input type="checkbox"/>  Elba Assicurazioni acquired b...	Insurance, Professional Ser...	Milano, Lombardia, Italy	 Elba Assicurazioni	 REVO	Dec 2, 2021
<input type="checkbox"/>  Intesa Sanpaolo acquired by ...	Banking, Finance, Financial ...	Turin, Piemonte, Italy	 Intesa Sanpaolo	 Delphina	Jul 12, 2021



<input type="checkbox"/>	 Auriga acquired by Lookwise	Banking, Finance, FinTech, I...	Bari, Puglia, Italy	 Auriga	 Lookwise	Apr 16, 2020
<input type="checkbox"/>	 Doc Generici acquired by TPG	Banking, Health Care, Manu...	Milano, Lombardia, Italy	 Doc Generici	 TPG	Jun 30, 2022
<input type="checkbox"/>	 Cedacri Group acquired by IO...	Banking, Cyber Security, Do...	Parma, Emilia-Romagna, Italy	 Cedacri Group	 ION Investment Group	Jun 7, 2021
<input type="checkbox"/>	 SIA acquired by CDP Equity	Banking, Financial Services,...	Milano, Lombardia, Italy	 SIA	 CDP Equity	Nov 7, 2019
<input type="checkbox"/>	 GRUPPO TCS acquired by Fac...	Consulting, Insurance, Servi...	Rome, Lazio, Italy	 GRUPPO TCS	 Facile.it	Oct 19, 2021
<input type="checkbox"/>	 UBI Banca acquired by Intesa ...	Banking, Financial Services,...	Bergamo, Lombardia, Italy	 UBI Banca	 Intesa Sanpaolo	Jun 8, 2020
<input type="checkbox"/>	 Amissima acquired by Athora	Financial Services, Insurance	Milano, Lombardia, Italy	 Amissima	 Athora	Sep 23, 2021
<input type="checkbox"/>	 Officine CST SpA acquired by ...	Banking, Financial Services,...	Rome, Lazio, Italy	 Officine CST SpA	 Cerberus Capital Man...	Jul 6, 2018
<input type="checkbox"/>	 Cheleo Srl acquired by TXT P...	Banking, Consulting, Inform...	Brescia, Lombardia, Italy	 Cheleo Srl	 TXT Polymedia	Jun 23, 2018
<input type="checkbox"/>	 Facile.it acquired by Silver Lake	Auto Insurance, Automotive...	Milano, Lombardia, Italy	 Facile.it	 Silver Lake	Jun 22, 2022
<input type="checkbox"/>	 Facile.it acquired by EQT	Auto Insurance, Automotive...	Milano, Lombardia, Italy	 Facile.it	 EQT	May 23, 2018
<input type="checkbox"/>	 Moneymour acquired by Klarna	Banking, E-Commerce, Fina...	Milano, Lombardia, Italy	 Moneymour	 Klarna	Feb 12, 2020
<input type="checkbox"/>	 SIA acquired by Nexi	Banking, Financial Services,...	Milano, Lombardia, Italy	 SIA	 Nexi	Oct 5, 2020
<input type="checkbox"/>	 Mapfre Asistencia acquired b...	Financial Services, Insurance	Verrone, Piemonte, Italy	 Mapfre Asistencia	 Hellas Direct	Jul 26, 2021
<input type="checkbox"/>	 Cambiaso Riso acquired by ...	Insurance	Genova, Liguria, Italy	 Cambiaso Riso	 Siaci Saint Honoré	Jul 12, 2019
<input type="checkbox"/>	 Doc Generici acquired by Inter...	Banking, Health Care, Manu...	Milano, Lombardia, Italy	 Doc Generici	 ICG Intermediate Capital G...	Apr 8, 2019
<input type="checkbox"/>	 Infogroup acquired by Engine...	Banking, Financial Services,...	Florence, Toscana, Italy	 Infogroup	 Engineering Ingegneri...	Jul 27, 2017
<input type="checkbox"/>	 Bartolozzi Assicurazioni acqu...	Insurance	Lamporecchio, Toscana, Italy	 Bartolozzi Assicurazio...	 Yolo Tech Insurance	Apr 6, 2022
<input type="checkbox"/>	 Eurovita Assicurazioni acquir...	Insurance, Life Insurance	Rome, Lazio, Italy	 Eurovita Assicurazioni	 Cinven	Apr 12, 2017
<input type="checkbox"/>	 Equinvest acquired by Backto...	Banking, Financial Services,...	Roma, Lazio, Italy	 Equinvest	 BacktoWork	Feb 19, 2018
<input type="checkbox"/>	 6sicuro acquired by Assiteca	Finance, Financial Services,...	Milano, Lombardia, Italy	 6sicuro	 Assiteca	Feb 14, 2020
<input type="checkbox"/>	 Marintec acquired by +Simple	Insurance, Service Industry	Genova, Liguria, Italy	 Marintec	 +Simple	Mar 11, 2022
<input type="checkbox"/>	 Ariscom acquired by Argo Gro...	Food and Beverage, Insuran...	Rome, Lazio, Italy	 Ariscom	 Argo Group	Mar 13, 2018
<input type="checkbox"/>	 Mooney acquired by CVC Cap...	Banking, Financial Services,...	Milano, Lombardia, Italy	 Mooney	 CVC Capital Partners	Oct 11, 2021
<input type="checkbox"/>	 Recotech acquired by Polygo...	Insurance	Campi Bisenzio, Toscana, IT...	 Recotech	 Polygon US	Jul 1, 2020
<input type="checkbox"/>	 G-Evolution acquired by FairC...	Artificial Intelligence (AI), BI...	Roma, Lazio, Italy	 G-Evolution	 FairConnect	Aug 11, 2021

Online database "Crunchbase", [www.crunchbase.com](http://www.crunchbase.com)

## 2.7 Final Remarks

In conclusion, the main characteristics of the FinTech market have been analyzed by comparing the surveys carried out by the Bank Italy every two years, specifically the ones of 2019 and 2021. The ways in which intermediaries interact with FinTech firms, such as acquisitions or partnerships, alongside the main technologies and the combination of them used in this context, have been addressed. Other important topics included in the surveys are the methods in which

the projects analyzed have been implemented, the progress status of projects within the timeframe analyzed and a detailed analysis of the main business areas interested by the projects. In the second part of the chapter, an analysis of the current landscape of the FinTech market has been conducted, dividing the number of firms researched by the type of industry involved, their location on the Italian territory and the amount of funds raised. Furthermore, the analysis also included a current overview of the recent acquisition made in this market area. In the next chapter, a literature review will be carried out, analyzing a series of research questions covering different aspects of the FinTech market and context.

### 3. LITERATURE REVIEW ON THE SUBJECT OF FINTECH

#### 3.1 Introduction

As already mentioned in the previous chapters, FinTech firms and the FinTech market have become a very important part of the current market all around the world, showing an incredible increase in terms of investments, which results also in increased research on the topic, mainly from 2015 onwards. The current study will take into consideration a pool of 20 studies that deal with different topics related to FinTech, among which are the digitalization that concerned the financial sector and the progress made by the European Union, the role of FinTech in the current market, the regulatory framework linked to this sector, the role of BigTech in comparison to the one of FinTech, and the benefits and obstacles that this market area experienced due to the COVID-19 pandemic. In the next paragraphs, the text will explore five different research questions that have been drawn from the abovementioned studies and these questions are:

- 1) Could FinTech potentially replace traditional financial firms in the future?
- 2) Is it possible to find a regulatory framework that does not stifle innovation brought by FinTech?
- 3) Could BigTech dominate the FinTech sector, thus failing to support competitiveness in the market?
- 4) What are the main causes of the digital disparity among European countries and how can it be mitigated?
- 5) Is the substantial progress of FinTech only related to the COVID-19 pandemic or would it still have happened?

For the purpose of this analysis, the studies picked refer to the period that goes from 2019 to the current year, in order to have a more recent point of view on the subject, even though literature on the topic goes back to 2010, if not earlier.

#### 3.1.1 *Could FinTech potentially replace traditional financial firms in the future?*

The first characteristic that needs to be presented, as stated by OECD (2020), is that the main intent of FinTech at the beginning was certainly to “replace traditional banks as leaders in the market<sup>180</sup>”, but this goal was made more difficult because of “difficulties in increasing scale

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<sup>180</sup> OECD (2020), *Digital Disruption in Banking and Its Impact on Competition*, p. 13.

and customer numbers<sup>181</sup>” that these firms faced. Furthermore, the study carried out by Bellardini L. et al. (2022) reinforced the idea that “FinTech can either substitute or complement traditional banking within specific product and client segments<sup>182</sup>” and the entry of these players in the market has led financial institutions to redefine business models and search different ways to acquire new skills, competencies, technologies and innovative solutions<sup>183</sup>. Nonetheless, as stated by Broby (2021), “Financial technology has the ability to disintermediate the banking sector<sup>184</sup>”, leading this sector in particular, but more widely the entire financial sector, to encompass several changes that follow the trend set by the new technologies introduced in the market.

Along the same lines of thinking, Murinde V. et al (2022) state that “it is not altogether clear whether the FinTech revolution will completely disrupt traditional banking or, on the contrary, strengthen the portfolio of existing banking products<sup>185</sup>”, leaving room for further development in the market and without considering these firms as a bigger threat than they are. The same author reinforces this idea by affirming that “FinTech firms cannot replace banks, but rather coexist with them, cooperate, or potentially become like banks<sup>186</sup>” and considering the spread of this type of companies as being still in early stages on a global point of view, but nonetheless competition for the traditional financial firms already in the market. At the same time, there is another concern for banks which is the “shifting preferences and demographics of consumers who are becoming more technologically affluent and have as their benchmark the experiences and offerings they enjoy from other high-tech companies such as UBER, Google, Spotify, Amazon, Apple, Alibaba, Tencent, Facebook, Airbnb, and others<sup>187</sup>”.

As already presented in previous chapters, the main strategies adopted by traditional banks have been partnerships or collaborations with FinTech firms, investments in or acquisition of FinTech companies or internal innovation. The study of Arnaudo D. et al. (2022) also reports that this process of digitalization of financial services gave FinTech firms access to several tasks and functions that were mainly reserved to banks, a few examples being payments, lending or investments<sup>188</sup>. This evolution has also interested the insurance industry, which saw the

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<sup>181</sup> OECD (2020), p. 13.

<sup>182</sup> Bellardini, L., et al. (2022), “How Do Banks Invest in Fintechs? Evidence from Advanced Economies.”, p. 2.

<sup>183</sup> Bellardini, L., et al. (2022), p. 2.

<sup>184</sup> Broby, D.. (2021), “Financial Technology and the Future of Banking.”, p. 4.

<sup>185</sup> Murinde, V., et al. (2022), “The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks.”, p. 1.

<sup>186</sup> Murinde, V., et al. (2022), p. 3.

<sup>187</sup> Murinde, V., et al. (2022), p. 12.

<sup>188</sup> Arnaudo, D., et al. (2022), “The Digital Transformation in the Italian Banking Sector.”, p. 7.

entrance of InsurTech start-ups, considered as “young companies that pursue technology-driven business models<sup>189</sup>”, that disrupted the insurance sector at a rapid pace. This type of firms shifted their interests from mere softwares to actual solutions that compete with the ones of traditional insurance companies and brokers, gaining a considerable market share in this specific market, as stated by Cappiello A. (2020).

Another very important fact that dismisses the idea of FinTech firms replacing the traditional ones is the fact that customers, as of right now, do not have that type of trust that is needed to outperform traditional firms in the financial market. As Zarifis A. and Cheng X. (2022) stated, “the loss of face-to-face interaction raised the perceived risk and the importance of trust<sup>190</sup>”; furthermore the trust of customers in a specific technology is very important from an organizational perspective, because without consumers’ trust, firms are not able to implement and successfully use new technologies such as Blockchain, Artificial Intelligence or virtual worlds<sup>191</sup>. The authors present a model that explains trust of consumers in FinTech firms based on four main factors, that are “ individuals psychological disposition to trust, sociological factors influencing trust, trust in either the financial organization or the insurer and trust in AI and related technologies<sup>192</sup>”.

In conclusion, to answer the question posed at the beginning of the paragraph, for the time being, the general line of thought is that FinTech do not pose an important threat in completely replacing traditional financial firms, mostly because of the lack of funding and support from customers, even though their entry in the financial market brought a massive disruption in the sector, leading financial firms and institutions to change their strategies and to evolve from a technological point of view.

### *3.1.2 Is it possible to find a regulatory framework that does not stifle innovation brought by FinTech?*

In order to answer this particular question, some general notions about the current regulatory framework regarding FinTech need to be clarified. At the moment, in comparison to the regulations applied to the traditional financial sector, FinTech firms enjoy a more lenient regulatory scheme, mostly because, as stated by Chatzara V. (2019), “regulators are faced with

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<sup>189</sup> Cappiello, A. (2020), “The Digital (R)Evolution of Insurance Business Models.”, p. 2.

<sup>190</sup> Zarifis, A., and X. Cheng (2022), “A Model of Trust in Fintech and Trust in Insurtech: How Artificial Intelligence and the Context Influence It.”, p. 1.

<sup>191</sup> Zarifis, A., and X. Cheng (2022), p. 1.

<sup>192</sup> Zarifis, A., and X. Cheng (2022), p. 2.

a difficult balancing exercise between their traditional role to ensure the financial stability and consumer protection, on one hand, and, on the other hand, the need to not stifle innovation to follow the constantly changing needs of the consumers and the market, and to enhance the free competition within the relevant market<sup>193</sup>”; furthermore the involvement of regulators is present on national, international and EU level, and a few examples are the papers published by OECD or the Financial Stability Board (FSB) addressing FinTech topics and the initiatives enacted by EIOPA (European Insurance and Occupational Pensions Authority) and ESAs (European Supervisory Authorities) in order to better assess the FinTech environment and how to regulate it<sup>194</sup>.

That being said, there has been a number of different initiatives put into place in order to restrict the scope of action of these firms that have been able to act more freely in comparison to their traditional counterpart; the study carried out by CIPA (2023), *Convenzione Interbancaria per l’Automazione* (which could be translated as Interbank Agreement on Automation), presents a series of actions planned or already enacted in the context of the European Union, among which are projects like TARGET2 (Trans-European Automated Real-Time Gross Settlement Express Transfer System), T2S (TARGET2 – Securities), TIPS (TARGET Instant Payment Settlement) and ECMS (Eurosystem Collateral Management System)<sup>195</sup>. Another important intervention that has been enacted way earlier than the current technological landscape is the Directive 2015/2 also known as Payment Services Directive (PSD2), already mentioned in previous chapters, that introduced the concept of Open Banking in the EU<sup>196</sup>; the problem is that this directive, even if it has revolutionized the banking sector, is not applicable to every industry belonging to this specific market, for example it is only partially applicable to the insurance sector, as underlined by Lusardi G. (2023). Therefore it is necessary to evaluate in a proper manner the different industries and their needs both from an internal perspective and from a consumer’s perspective; an example could be the regulation that deals with data protection and data management, which should be differentiated whether it is applied to the banking sector or the insurance industry.

With regards to more generic regulations, policymakers and regulators have made an effort to be particularly attentive towards the different technologies used both by FinTech and traditional

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<sup>193</sup> Chatzara, V. (2019), “FinTech, InsurTech, and the Regulators.”, p. 5.

<sup>194</sup> Chatzara, V. (2019), p. 5.

<sup>195</sup> CIPA-Convenzione Interbancaria per l’Automazione (2023), *Iniziativa in Materia Di Automazione Interbancaria E Sistema Dei Pagamenti*, p. 7 – 8.

<sup>196</sup> Lusardi, G. (2023), *Open Insurance: Gli Scenari per Il 2023 E Le Principali Strategie Legali*, p. 5.

financial firms, which could also create disruption and endanger financial stability, market integrity and competition, on the basis of how these companies use them, and an example may be Artificial Intelligence. There have been several efforts to supervise and regulate the use of AI in the financial sector, among which are a set of principles for AI published by the OECD in 2019 with the aim of proposing “how governments can formulate a people-centered approach to a trustworthy AI, and aiming to promote the use of AI in a way that is innovative, trustworthy, and respectful of human rights<sup>197</sup>”, and a technical book released by the European Commission which contained “policy and regulatory options for an 'Artificial Intelligence Ecosystem of Excellence and Trust'<sup>198</sup>”.

In conclusion, to answer the main research question, studies report that regulators and policymakers are working on evaluating and building the regulatory framework that will be applicable in its entirety to the FinTech sector, but the task appears to be more problematic if it is to be considered the fast pace with which firms evolve and technology is implemented; it is therefore uncertain whether it will ever be a suitable regulatory scheme for FinTech firms and it will most probably depend on the level of digitalization of each European country and if regulatory bodies can keep up with the pace of digital evolution of firms.

### *3.1.3 Could BigTech dominate the FinTech sector, thus failing to support competitiveness in the market?*

To give a proper answer to this question, it is necessary to understand the role of these players in the FinTech market and their relation to FinTech firms. The concept of BigTech, as already mentioned in previous chapters, relates to firms that are considered Tech giants and that are entering the FinTech market in different sectors, among which are payments and lending. Bilotta N. and S. Romano (2019) reported that “even though this phenomenon is not yet as far-reaching in the US and Europe, due to tighter regulations and a tougher competition landscape, Tech giants – such as Google, Amazon, Apple and Facebook – are entering the banking market at various speeds and to varying degrees<sup>199</sup>”; the authors also highlight that the advantage that these firms have is not only related to being the main distributors of technological services but also to many collaborations with established companies to produce banking projects<sup>200</sup>.

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<sup>197</sup> Benlala, A. M. (2022), *Artificial Intelligence in the Modern Banking and Financial Industry (Applications, Risks, Policies and Regulations)*, p. 62.

<sup>198</sup> Benlala, A. M. (2022), p. 62.

<sup>199</sup> Bilotta, N., and S. Romano (2019) *Tech Giants in Banking:: The Implications of a New Market Power*, p. 3.

<sup>200</sup> Bilotta, N., and S. Romano (2019), p. 3.

The main difference between the two groups of firms is BigTech ones are driven by technology, while FinTech firms are driven by finance, even though the two types of firms provide almost the same services, such as payment services, credit, insurance, and investment or wealth management<sup>201</sup>. Considering the fact that BigTech firms are bigger in size, they rely heavily on data analytics, which gives them a competitive advantage against the rest of their competitors that operate in the market; having access to a large amount of consumers' information, BigTech firms create a "higher barrier to entry, increasing interest rates and firm's profits<sup>202</sup>". From another point of view, BigTech firms can also act as a marketplace or reseller: in the first case, they allow customers to engage with traditional financial firms through their channel, while in the second case, they are able to raise funds in order to provide lending to consumers<sup>203</sup>.

Some may consider BigTech firms providing financial services as a subset of FinTech, but they actually differ from other FinTech firms in many regards: first of all, BigTech firms usually have established networks and a very large customer base, while also being able to use proprietary customer data from their non-financial-service operations to provide financial services; last but not least, BigTech firms have ready access to the most recent technologies to process big data, among which are CC, AI and ML<sup>204</sup>. As stated by OECD (2020), "BigTech platforms have most of the advantages of FinTech firms with practically none of the drawbacks", including an established and loyal customer base, a strong reputation and lobbying capacity, being able to fund their activities with low cost of capital and many other<sup>205</sup>. Therefore it can be considered that BigTech firms could be potentially more disruptive to the traditional banking business in comparison to FinTech firms; however, both technological firms do not have the consolidated "experience and expertise in risk management that represent one of the strengths of large banks<sup>206</sup>".

So far, as reported by Bilotta N. and S. Romano (2019), BigTech firms have focused on entering the payment sector of the financial market and this has been possible because of the ease with which a payment or e-money license can be obtained, and because payment activities can be easily integrated in their business strategies<sup>207</sup>. At the moment, however, BigTech firms do not

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<sup>201</sup> Barroso, M., and J. Laborda (2022), "Digital Transformation and the Emergence of the Fintech Sector: Systematic Literature Review.", p. 3.

<sup>202</sup> Barroso, M., and J. Laborda (2022), p. 3.

<sup>203</sup> Barroso, M., and J. Laborda (2022), p. 3.

<sup>204</sup> Freddi, D., and M. Sassatelli (2019), *La Digitalizzazione Nel Settore Bancario: Sfide, Effetti E Prospettive*, p. 15.

<sup>205</sup> OECD (2020), p. 15.

<sup>206</sup> OECD (2020), p. 15.

<sup>207</sup> Bilotta, N., and S. Romano (2019), p. 5.



show interest in acquiring full banking licenses, mostly because of the tight and expensive framework that regulates financial institutions under which they would fall<sup>208</sup>. A likelier scenario seems to be “the increasing cross-consolidation of technological and banking markets, whereby Tech giants offer specific banking activities and provide established firms with new technologies<sup>209</sup>”. This is one of the reasons that may induce researchers to think that BigTech firms could become dominant in the FinTech market, entailing potential market concentration and additional market power given to Tech giants.

In conclusion, to answer the research question, BigTech firms have a lot of advantages in comparison to FinTech firms, therefore the possibility of them acquiring a dominant position in this industry is certainly a cause of concern; however, obtaining licenses and the ability to act in different sectors of the financial industry, will put them in a much more regulated environment and would translate in a higher cost for those types of companies. Furthermore, it is also in the interest of traditional financial firms to not increase excessively the power that BigTech firms have, in order to maintain balance and competition in the market.

### *3.1.4 What are the main causes of the digital disparity among European countries and how can it be mitigated?*

European countries have reached different levels of digitalization in these last few years, and the advancements that they achieved depend on different factors, among which are the use and availability of internet (including speed and size), the percentage of big and small firms in a country’s economy, the presence of non-digital firms, the funds that can be employed for investments in digital interventions and many other. The study carried out by the European Investment Bank (2023) underlines that, besides a few successful countries, many other are “still behind the cutting edge of digital technology dissemination and adoption<sup>210</sup>”; furthermore, another aspect to take into consideration is the size of the firms which makes a difference in the degree of adoption of technologies, indeed the same study reports that 80% of firms with more than 250 employees use advanced technologies, while 45% of firms with less than 10 employees show a much lower degree of technologies’ employment<sup>211</sup>.

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<sup>208</sup> Bilotta, N., and S. Romano (2019), p. 16.

<sup>209</sup> Bilotta, N., and S. Romano (2019), p. 16.

<sup>210</sup>European Investment Bank Group Survey on Investment and Investment Finance (2023), *Digitalisation in Europe 2022-2023: Evidence from the EIB Investment Survey*, p. 4.

<sup>211</sup>European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 4.

As already mentioned, there are many differences among EU countries with regards to the access to digital infrastructure; however, internet speed has more than doubled between 2019 and 2021, particularly in those EU regions that previously had poor internet access. On a more general note, as it is to be expected, countries that enjoy faster internet speed show a higher share of digital firms, of advanced technologies' adoption and of investments of firms in becoming more digital as a response to COVID-19<sup>212</sup>. Additionally, digital firms operating in EU countries with slow internet lament the lack of proper digital infrastructure as an obstacle to carry out investments on digitalization.<sup>213</sup> One final aspect to consider to evaluate the difference in digitalization among EU countries is the presence of population with “above-average digital skills<sup>214</sup>” which increases the likelihood of firms in those regions adopting advanced technologies.

What needs to be considered now are the different interventions and initiatives the policymakers, regulators, national governments and the EU as a whole can undertake in order to lessen the digital divide among EU countries. The study carried out by Iacoviello G. and E. Bruno (2023) reports “the EU has employed a set of digital principles and long-term digital targets for Europe's digital transformation<sup>215</sup>”, and these objectives need to be completed between 2020 and 2030; the EU proposed a project called ‘Digital Compass’ that includes four areas, which are government, infrastructures, skills, and business<sup>216</sup>. As one of digital targets imposed by the Digital Compass project, there is the objective of having “75% of EU enterprises using cloud computing technologies and Big Data analysis by 2030<sup>217</sup>”. Two other very important initiatives undertaken by the EU are Next-generation EU and the Multiannual Financial Framework, put into action as a backup maneuver to help EU countries recover from the damage done by the COVID-19 pandemic to the different economies<sup>218</sup>. The authors also highlight three main priorities that seem to be essential to support the process of digitalization: “(i) elimination of administrative barriers and creation of economic incentives for business digitalization; (ii) further development of ICT infrastructure; and (iii) investments in digital skills<sup>219</sup>”.

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<sup>212</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 16.

<sup>213</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 16.

<sup>214</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 26.

<sup>215</sup> Iacoviello, G., and E. Bruno (2023), “Exploring a New Business Model for Lending Processes in the Banking Sector Using Blockchain Technology: An Italian Case Study.”, p. 50.

<sup>216</sup> Iacoviello, G., and E. Bruno (2023), p. 50.

<sup>217</sup> Iacoviello, G., and E. Bruno (2023), p. 50.

<sup>218</sup> Iacoviello, G., and E. Bruno (2023), p. 52.

<sup>219</sup> Iacoviello, G., and E. Bruno (2023), p. 52.

Other proposals, made by the European Investment Bank (2023), to improve and decrease the digital divide are for the EU to create incentives for firms “to improve their track record on environmental, social and corporate governance metrics<sup>220</sup>” (which can be digitally monitored with more ease), for policymakers to help smaller firms become more digital and not fall victim of bigger firms (therefore enhancing competition and disposition for innovation)<sup>221</sup>, for policymakers to address both innovation measures and potential problems related to it (an example being the automation of tasks addressed by the initiative the ‘European Year of Skills’) and finally for the EU to position itself well in the global market and environment which could encompass better conditions for innovation while staying within the boundaries of the European economic model<sup>222</sup>.

One last technological tool that is stated to be beneficial for digitalization in the European Union is the Decentralized Finance (DeFi) circuit, as reported by Dekker B. et al. (2022), which, from a market perspective, can “sidestep issues such as gatekeeping, lock-in, de-platforming, disproportional rent-seeking and anticompetitive rulemaking<sup>223</sup>”, while also prompting open innovation as a consequence to the permissionless and open nature of this system. Additionally, DeFi services are global in their entirety because being decentralized allows for it to not be compulsorily bound to a particular geographical location<sup>224</sup>; however, “DeFi is still nascent and most projects have yet to prove that all these promises can be achieved without detrimental trade-offs<sup>225</sup>”.

In conclusion, to answer the research question, the majority of the causes at the basis of the digital disparity among EU countries are related to how internet is used and the availability of it in each region; nonetheless, it can be asserted that the disruption due to the COVID-19 pandemic did not have a positive effect on this difference. Both at the EU level and at national level, governments join regulators and policymakers to help EU countries evolve and keep up with the process of digitalization that has been carried forward over the past decade and in particular in the last four years.

*3.1.5 Is the substantial progress of FinTech only related to the COVID-19 pandemic or would it still have happened?*

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<sup>220</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 29.

<sup>221</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 32.

<sup>222</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 38.

<sup>223</sup> Dekker, B., et al. (2022), *The Geopolitics of Digital Financial Technologies: A Chance for Europe?*, p. 6.

<sup>224</sup> Dekker, B., et al. (2022), p. 6.

<sup>225</sup> Dekker, B., et al. (2022), p. 6.

One thing that appears to be evident is that, as stated by Benlala A. M. (2022), “the COVID-19 crisis has put the digitization trend on high speed compared to the observed period before the pandemic<sup>226</sup>”. The study carried out by Cambridge Center for Alternative Finance (CCAF), World Bank and World Economic Forum (2020) reports that overall, despite the pandemic, FinTech continued to grow around the world with increases in transaction volumes and numbers every year. However, “the impact of Covid-19 on market performance is not uniform across FinTech business verticals or geographic jurisdictions<sup>227</sup>”. It is certain that the FinTech industry grew from 2020 onwards, but Covid-19 also had a negative impact on this sector, due to lockdown measures and regulatory actions that limited in some way their growth<sup>228</sup>, having a negative impact also on FinTech firms’ financial position. Furthermore, there have been different impacts on the basis of the degree of stringency of lockdown restrictions in EU countries, leading to the conclusion that “the higher the Covid-19 stringency, the higher the transaction volume, leading to increased adoption of FinTech services in these jurisdictions<sup>229</sup>”. Nonetheless, even if the study shows that FinTech firms in high stringency markets tend to experience higher growth, they still suffered from the operational drawbacks due to Covid-19 lockdown measures<sup>230</sup>.

Other studies reported that the FinTech market evolved more rapidly due to COVID-19: the first study was carried out by Moşteanu N. R. et al. (2020) which states that “global quarantine measures adopted by several countries, have adjusted the economic activities of the entities, which made digitalization more than ever needed<sup>231</sup>”, also considering that “social restriction rules helped business and individuals to learn and implement new communication technologies<sup>232</sup>”; an additional consideration to the subject was given by the European Investment Bank (2023) which reported that, from a survey taken between April and July of 2022, “in the European Union, 53% of firms report taking action to become more digital — for example by providing services online<sup>233</sup>”, in addition European firms proceeded not only to carry out basic digitalization, but also to speed up the adoption of new and advanced

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<sup>226</sup> Benlala, A. M. (2022), *Artificial Intelligence in the Modern Banking and Financial Industry (Applications, Risks, Policies and Regulations)*, p. 63.

<sup>227</sup> CCAF, World Bank and World Economic Forum (2020), *The Global Covid-19 FinTech Market Rapid Assessment Report*, p. 16.

<sup>228</sup> CCAF, World Bank and World Economic Forum (2020), p. 28.

<sup>229</sup> CCAF, World Bank and World Economic Forum (2020), p. 36.

<sup>230</sup> CCAF, World Bank and World Economic Forum (2020), p. 37.

<sup>231</sup> Moşteanu, N. R., et al. (2020), “Digital Technologies’ Implementation within Financial and Banking System during Socio Distancing Restrictions - Back to the Future”, p. 310.

<sup>232</sup> Moşteanu, N. R., et al. (2020), p. 312.

<sup>233</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 1.

technologies, which had been put on hold in the first year of the pandemic<sup>234</sup>. Finally, Iacoviello G. and E. Bruno (2023) assessed that “the COVID-19 pandemic outbreak had a very strong influence on the [...] rapid development of the digital transformation market<sup>235</sup>”.

In conclusion, the COVID-19 pandemic certainly accelerated the diffusion of FinTech firms and the adoption of many technologies, however it did not have that much impact on the actual development of this sector of the market, especially because of the economic deficiencies caused by the pandemic and the related lockdowns. Nonetheless, the diffusion of FinTech firms would have been much slower if it weren't for the pandemic and all things related to it, so the answer to the main research question is that COVID-19 has enabled this particular industry to speed up their rise but the solidification of their position in the market would have happened anyway, since, in the last five to ten years, firms have been urged to fulfill environmental requirements that would have inevitably brought to a more digitalized system.

### *3.2 Final Remarks*

To wrap up this chapter, it can be concluded that the literature referring to the topic of FinTech are numerous and it has followed a rising trend ever since the COVID-19 pandemic, which sped up the adoption of technologies and a stronger appearance of FinTech firms in the global market. The main research questions presented have been answered referencing 20 different contributions carried out by authors all around the world, since this topic has interested from very developed countries to the developing ones. Drawing data from the several studies, it can be assessed that FinTech firms caused a critical disruption in the financial industry and brought to an acceleration of the process of digitalization in different spheres; their position in the market, but more precisely the lack of expertise, funding and trust, does not allow them to completely replace traditional financial firms, even though FinTech firms do have the impending threat of BigTech firms dominating the market in certain areas. This technological sector has been meticulously considered by regulators and policymakers due to the fact that they need to find a way to regulate their activities without stifling innovation, which is one of the most important benefits brought by this digital evolution. This revolution has concerned more those countries that were already digital in some degree, while the ones that were already struggling, lagged further behind, but the European Union and the member states are making an effort to try and lessen the digital divide that still does not allow for Europe to be at the same

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<sup>234</sup> European Investment Bank Group Survey on Investment and Investment Finance (2023), p. 2.

<sup>235</sup> Iacoviello, G., and E. Bruno (2023), p. 49.

level as other powerful countries in the market, such as China and the US; nonetheless, Europe is making progress and through different initiatives is trying to make a difference. Finally, it has been considered if the incredible speed with which the FinTech sector has evolved was mainly due to the COVID-19 pandemic or if it is a phenomenon that would have occurred anyway, leading to the conclusion that even if those firms have certainly been helped by the situation, they also encountered some drawbacks (mostly financial ones); therefore, the acceleration is to be ascribed to the pandemic, but the digital evolution has been sparked far earlier by other factors and it would have eventually brought benefits, even if at a slower pace, also for FinTech firms. In the next chapter, a few case studies will be presented, further underlining the notions drawn from the literature and the main characteristics of FinTech firms already presented in previous chapters.

## 4. CASE STUDIES RELATED TO THE RESEARCH QUESTIONS

Within this chapter, a number of case studies will be presented that relate to the research questions elaborated in the previous chapter. In particular, there will be a few examples of FinTech firms that have had a successful growth over the years and that involve the banking and insurance sector, one case will refer to a FinTech firm that does not directly act in the financial sector but is strictly related to it, and finally two cases will involve two well-established traditional financial firms and how they evolved and innovated. These cases refer to the research questions by involving both FinTech firms and traditional ones, comparing the different evolution of these market players, while also adhering to the specific regulatory framework; furthermore, a lot of innovation embraced by both parties was due to the COVID-19 pandemic, which accelerated the process of implementation of FinTech firms and technologies, while also helping European countries innovate to decrease the digital disparity.

### 4.1 *FinTech firms*

In this section, two cases will be presented, one dealing with a payment-oriented firm and one with an insurance-oriented firm; in particular, those firms are among the group of companies that had an outstanding growth after the COVID-19 pandemic, even if their establishment did not occur that long before that specific period of time. As illustrated in the first research question of the previous chapter, these firms do not have a chance of throwing traditional financial companies out of the market, but in their area of competence, they attract a whole share of consumers that rely more easily on online services, such as millennials and younger generations, leading to them having an advantage on less substantial services, such as payments and offering insurance, rather than on services like investments and any other that involve handling large sums of money and taking greater risks. In the following paragraphs, the FinTech firms Scalapay and YOLO insurance will be presented.

#### 4.1.1 *Scalapay*

Scalapay is an innovative payment system that enables customers to purchase an array of different options, from clothing to travels, from online stores and in physical stores, receiving products immediately, and paying the due amount in 3 or 4 (as of recently) convenient equal installments with a monthly rate<sup>236</sup>. The service has no additional cost to the customer if the

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<sup>236</sup> Scalapay website, <https://www.scalapay.com/it/come-funziona-scalapay>

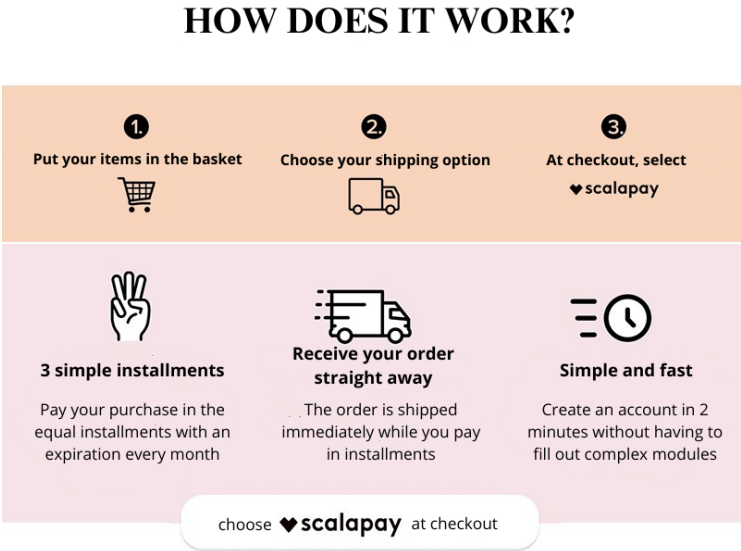
installments are paid by the due date, and at the time of purchase, the first installment, which is equal to one-third of the total of the purchase, will be charged immediately; in the case of the payment not occurring on the due date, Scalapay gives the customer an additional 24 hours to pay the installment, after that they can charge lay payment fees, which cannot amount to more than 15% of the loan<sup>237</sup>. Scalapay immediately pays the seller the full amount of the order and assumes all risks of fraud and non-payment; furthermore all payments made with Scalapay are handled by their partner Stripe, which is a world leader in payment processing and processes millions of payments every day on sites such as Amazon or Booking.com<sup>238</sup>. In the following figures (Fig. 10 and Fig. 11) there will be the firm logo and the summary of their mission, which can be found on their website.

Figure 30. Scalapay logo



Scalapay website

Figure 4. Payment process of Scalapay



Scalapay website

With regards to the evolution of this startup, it was initially launched in 2019 in Italy and it involved only online payments, it was then expanded to purchases in physical stores in 2020

<sup>237</sup> Scalapay website, <https://www.scalapay.com/it/come-funziona-scalapay>  
<sup>238</sup> Scalapay website, <https://www.scalapay.com/it/come-funziona-scalapay>



while also being introduced in France; in 2021 the first seed round investment was carried out, in which 40 million euros were raised and it was led by Fasanara Capital<sup>239</sup>, that is a FinTech investing pioneer. In the same year, the startup was launched first in Germany and then in the rest of Europe, while also raising 100 million euros through a series A investment round led by Tiger Global Management; another very important step for the company was to introduce the “Pay by Link” option, which allows customers to pay through a secure payment link created by the specific operator or seller<sup>240</sup>. In 2022, beside a series B investment round that raised 450 million euros, Scalapay achieved a very important milestone, the status of Unicorn with a market value of more than 1 billion euros. In the same year, the company released new financial products, raised 25 million euros through investments with Poste Italiane and started a very important partnership with Twig, “the next generation of banking and Web3 green payment infrastructure<sup>241</sup>” that revolves around sustainability. More recently, in 2023, the company acquired the Italian payment institution Cabel IP and managed to become the first “Buy Now, Pay Later” (BNPL) firm to obtain a license from the Bank of Italy, which is employed to help the diffusion of this particular startup in every European and non- EU countries.

In general terms, BNPL platforms allow consumers to split the payment of a purchase into a number of installments, to be repaid in the short to medium term. The deferred payment concept underlying BNPL is not new, but BNPL operators have simplified the process and increased its ease of use by conducting real-time credit assessments, often based on artificial intelligence algorithms<sup>242</sup>.

#### *4.1.2 YOLO Insurance*

Yolo, an acronym for You Only Live Once, is the first Italian InsurTech with an international vocation focused on digital insurance brokerage services, founded in late 2017 (logo in Fig. 12). It enables on-demand and pay-per-use underwriting of products from major insurance groups and, thanks to its proprietary platform, acts as a technological enabler for third parties interested in distributing digital insurance solutions<sup>243</sup>. The company offers an array of insurance products, both for enterprises and individuals, that include home and pet insurance,

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<sup>239</sup> Scalapay website, <https://universe.scalapay.com/>

<sup>240</sup> Scalapay website, <https://universe.scalapay.com/>

<sup>241</sup> Scalapay website, <https://universe.scalapay.com/>

<sup>242</sup> Gobbi, L. (2023), “Buy Now, Pay Later: Caratteristiche Del Mercato E Prospettive Di Sviluppo (Buy Now Pay Later: Market Overview and Outlook).”, p. 5.

<sup>243</sup> YOLO insurance website, <https://yolo-insurance.com/site/chi-siamo/>

travel insurance, health insurance, sport insurance and car and other vehicles insurance; the options that are available only for enterprises involve legal protection, assistance against cyber attacks and support on multi-risks situations<sup>244</sup>.

*Figure 12. YOLO Insurance logo*



*YOLO Insurance Website*

This platform offers support also to other firms to partner with them in order to offer their clients the right products for their needs and to intermediaries enrolled in the Single Register of Intermediaries (in Italian called “Registro Unico Intermediari” (RUI)), specifically in the categories “A” and “E”, in order to enable them to innovate their portfolio of offerings with digital insurance solutions developed by Yolo in partnership with national and international insurance companies<sup>245</sup>. The specific platform at the disposal of intermediaries is called YOLO Insurance Network and it was launched more recently, specifically in April 2022; from the data gathered in October 2023, the number of intermediaries reached with this service amounts to 450. The intermediaries in this network, usually SMEs, are 57% partnerships and 43% corporations and are evenly distributed throughout the country (32% in the north, 37% in the center and 31% in the south)<sup>246</sup>. Among the most appreciated features of the platform are the ability to sign all policy documentation digitally and the ability to engage end customers with digital communication tools thus intensifying the frequency of interaction<sup>247</sup>.

This InsurTech firm has been successful in improving their growth, both in terms of profit and in technological advancement; both of these factors have been made clear through two different achievements: in 2023, YOLO Insurance has been awarded by the Italian InsurTech Association in the Insurtech Awards e IIA Sustainability Awards, with which the association wanted to highlight the best companies that in 2022/2023 have distinguished themselves for innovative capacity and excellence in 24 categories that best represent the concept of InsurTech. YOLO Insurance received the award for two different categories, the Insurance

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<sup>244</sup> YOLO insurance website, <https://yolo-insurance.com/site/prodotti-aziende/>

<sup>245</sup> YOLO insurance website, <https://yolo-insurance.com/site/intermediari/>

<sup>246</sup> YOLO insurance blog, <https://yolo-insurance.com/site/blog/a-quota-450-gli-intermediari-assicurativi-di-yin-yolo-insurance-network-sono-agenti-e-broker-che-hanno-deciso-di-integrare-i-nostri-servizi-insurtech-nei-loro-modelli-operativi/>

<sup>247</sup> YOLO insurance blog

Digital Transformation Award in collaboration with TIM Group and the Insurance Digital Bank Award in collaboration with Banca Sella. The second important achievement for this firm was to be selected among the many applications to be included in the list “Leader of Growth 2024” carried out by Sole24Ore and Statista, which includes the top 500 Italian companies with the best revenue growth rate between 2019 and 2022, and YOLO Insurance ranked 391, with approximately a 30% growth rate<sup>248</sup> (Fig. 13).

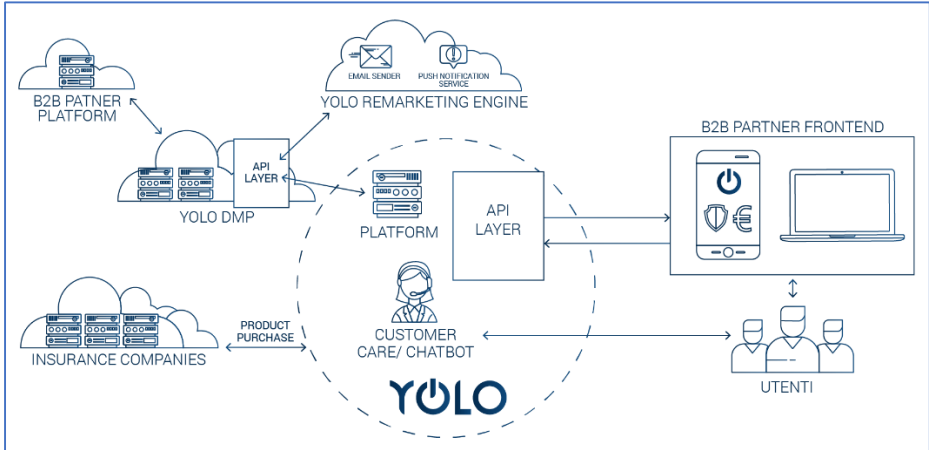
Figure 15. YOLO insurance ranking in the list "Leader of Growth 2024"

RANK	FIRM	GROWTH RATE	2019	2022	SECTOR	LOCATION
391	Yolo Group S.p.A.	29,51%	1.752	3.805	FinTech, financial and insurance services	Milan

Lab24 website, ranking performed by Sole24Ore and Statista

Therefore, this company has been able to not only resist the numerous obstacles the pandemic posed for every aspect of life and market, but it actually managed to grow and establish itself as one of the main players in the Italian InsurTech market. In the following figure (Fig. 14), the firm’s architecture will be represented, involving also the underlying technologies used (APIs, White-Label Insurance Platforms and Data Management Platforms).

Figure 16. YOLO Insurance's system architecture



YOLO Insurance website

### 4.1.3 Moneyfarm

Moneyfarm (logo in Fig. 15) is an independent financial advisory service that, through a procedure to be completed online, creates an investment profile based on the user's goals,

<sup>248</sup> <https://lab24.ilsole24ore.com/leader-crescita/>

wealth situation, and risk appetite, enabling investment in diversified ETF-based portfolios<sup>249</sup>. The platform's algorithm assigns investors a portfolio following completion of a profiling questionnaire created in collaboration with Bocconi University, as well as a telephone interview with a dedicated advisor. An important difference between Moneyfarm and other operators is that this platform allows users to identify an investment strategy that suits their needs without having to resort to onerous advice, but by assigning users an investment expert who will accompany them on their journey<sup>250</sup>.

*Figure 15. Moneyfarm logo*



*Moneyfarm website*

Moneyfarm offers support through dedicated financial advisors, who can be reached by phone, chat or e-mail, and who follow investors in the creation and management of their portfolios, answering any requests for clarification. Moneyfarm takes also care of the investment process, proceeding to purchase securities and making periodic rebalances to adjust investments to market developments<sup>251</sup>.

Moneyfarm portfolios consist of up to 8 ETFs (Exchange-Traded Funds) in the case of investments of less than €50,000 and up to 14 for larger investments. There are four asset classes on which the platform's portfolios are based: equity market ETFs of developed countries, equity market ETFs of developing countries, commodity ETFs, and bond ETFs (Fig. 16).

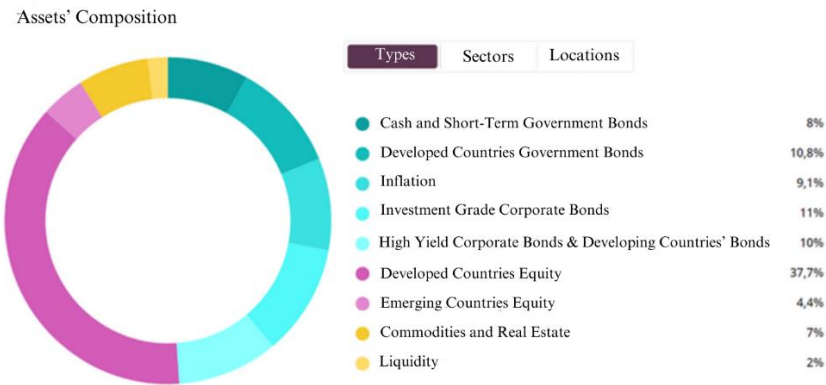
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<sup>249</sup> Moneyfarm website, <https://www.moneyfarm.com/it/contattaci/#domandeFrequenti>

<sup>250</sup> Moneyfarm website, <https://www.moneyfarm.com/it/contattaci/#domandeFrequenti>

<sup>251</sup> Moneyfarm website, <https://www.moneyfarm.com/it/contattaci/#domandeFrequenti>

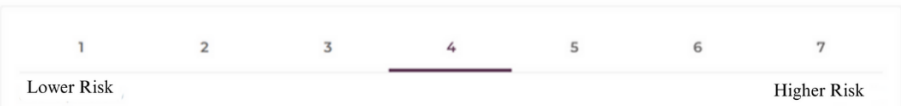
**Figure 16. Assets' composition of Moneyfarm assets**



Moneyfarm website, firms' performance section

Moneyfarm's portfolios fall into 7 different types and are differentiated by the level of risk versus return (Fig. 17). Level 1 and 2 portfolios are composed of about 98 percent and 80 percent bonds, respectively, and these are more suitable options for those who intend to invest within a very short time horizon and allow minimizing risk. Levels 3, 4, and 5 have a less conservative composition, where the equity component ranges from 32%, to 45% and about 55% of the portfolios, which are otherwise composed of bonds. In level 6 and 7 portfolios, the equity component reaches 70%-80% of investments, and these solutions are suitable for investment strategies based on a longer time horizon, closer to 10 years.

**Figure 17. Levels of risk of Moneyfarm investments**



Moneyfarm website, firm's performance section

Moneyfarm's costs consist of management fees, the Total Expense Ratio (TER) of funds (0.20 percent circa) and the bid-ask spread (0.08 percent), which is the difference between the buy and sell price of a financial instrument. Plans offered by Moneyfarm for asset management service have fees ranging from 0.40 percent to 1 percent per year on the countervalue, to which is added the cost of ETFs and the annual bid-ask spread<sup>252</sup>.

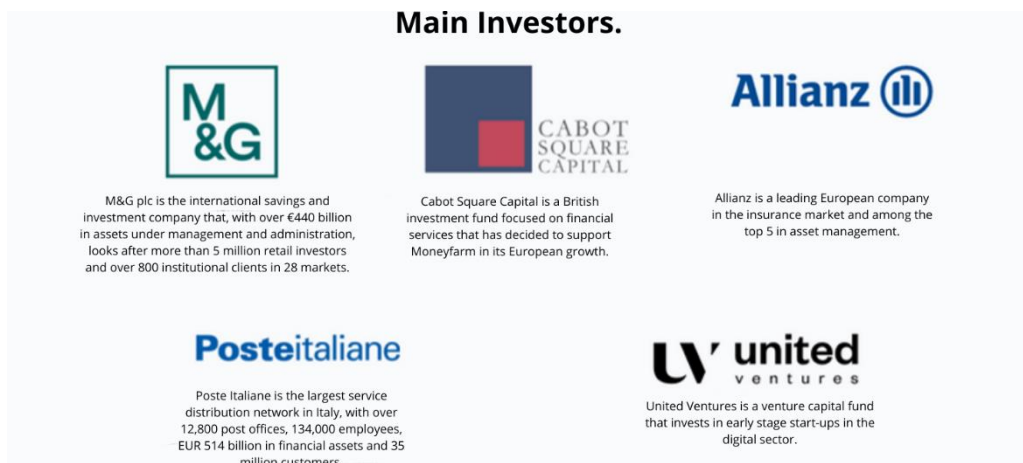
There are four main solutions dedicated to clients: Asset Management, Insurance Investments, Securities Account and Pension Plan. In particular, the Securities Account option has been introduced at the end of 2023, so it is a relatively new solution; furthermore this service allows clients to access the financial markets by selecting the preferred securities from those

<sup>252</sup> Moneyfarm website, <https://www.moneyfarm.com/it/costi/>

that are on the platform, so as to be able to expand investments with the tools provided by Moneyfarm<sup>253</sup>. In addition, Moneyfarm Pension Plan is a supplementary pension product dedicated to every person regardless of their working status; through a life insurance contract, it is possible to build a supplementary pension to be added to the public pension, to help one's lifestyle remain unchanged at the end of the working age<sup>254</sup>.

To conclude, Moneyfarm has three main locations, two in Italy (Milan and Cagliari) and one in the UK, in London. Their history is not recent, in fact the firm was founded in 2011, but it is in the last four/five years that the company has grown and expended their financial products; this fact is best stated through the inclusion of Moneyfarm in the Financial Times annual ranking “1000 Europe’s Fastest Growing Companies 2024”, which awards enterprises that achieved the highest turnover growth rate in the period between 2019 and 2022, and ranking 386 with an astounding 74,6% growth rate, which is an incredible result<sup>255</sup>. Finally, Moneyfarm has five main investors, illustrated in the following figure (Fig. 18).

*Figure 18. Moneyfarm's main investors*



*Moneyfarm website, team section*

#### 4.2 Traditional Financial Firms strategies

In this section, a comparison of the actions adopted by two big traditional banks will be presented (specifically Intesa San Paolo and Unicredit) alongside the innovations undertaken by a more insurance-focused company, alias Generali Group.

<sup>253</sup> Moneyfarm website, <https://www.moneyfarm.com/it/conto-titoli/>

<sup>254</sup> Moneyfarm website, <https://www.moneyfarm.com/it/pianificazione-pensionistica/>

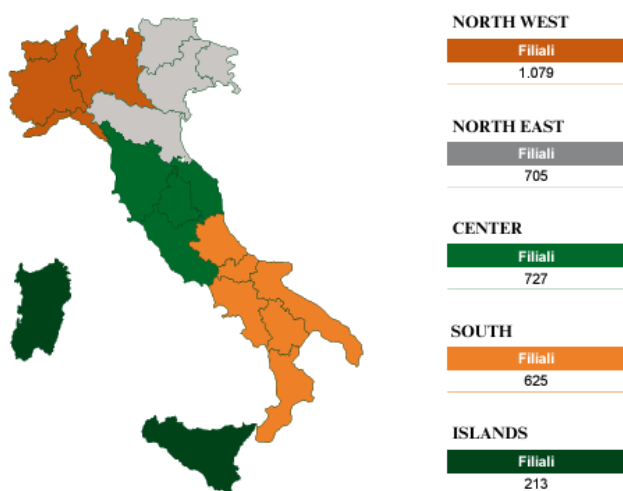
<sup>255</sup> Money farm blog, <https://blog.moneyfarm.com/it/moneyfarm-culture/moneyfarm-tra-le-1000-imprese-europee-a-piu-rapida-crescita-secondo-il-financial-times/>

#### 4.2.1 Intesa San Paolo

Intesa Sanpaolo S.p.A. is an Italian banking institution that has been active since January 1, 2007, formed through the merger of Banca Intesa S.p.A. and Sanpaolo IMI S.p.A. It has its registered and administrative headquarters in the city of Turin and a branch office in the city of Milan. Its origins date back to 1563 with the founding of Istituto Bancario San Paolo di Torino. Throughout the years, the bank has performed a number of acquisitions, from Cassa di Risparmio di Firenze in 2008 up to Veneto Banca and Banca Popolare di Vicenza in 2017 and UBI Banca in 2020/2021<sup>256</sup>.

Intesa Sanpaolo is the largest banking group in Italy, with 13.6 million customers and about 3,500 branches (Fig. 19), and one of the largest in the euro area, where it appears among the top 20. The Group is also present on international territories with more than 950 branches and 7.1 million customers, ranking among the leading banking groups in several countries in Central and Eastern Europe, the Middle East and North Africa, as stated in their 2023 financial report.

Figure 19. Intesa Sanpaolo distribution in Italy



Data as of 30 September 2023

Intesa Sanpaolo Report of September 2023, Intesa Sanpaolo website, p. 8.

The Intesa Sanpaolo Group operates through an organizational structure divided into Business Units (Fig. 20). In addition to these, there is the Governance Centre, which has policy, coordination and control functions for the entire Group.

<sup>256</sup> Intesa Sanpaolo website, <https://group.intesasanpaolo.com/en/about-us/history>

Figure 20. Intesa Sanpaolo Business Division



*Intesa Sanpaolo Report of September 2023, Intesa Sanpaolo website, p. 79.*

The firm has based its strategy for the foreseeable future on technological innovation, and it is particularly evident in the Business Plan presented for the period between 2022 and 2025. In the Business Plan, they envisaged to launch a new digital bank, to grow digital payments through collaboration by 50%, to launch 800 projects focused on innovation, to support promising startups and invest through NEVA SGR<sup>257</sup>, to develop international innovation ecosystems, to strengthen cybersecurity and finally to hire and train more technology-specialized staff<sup>258</sup>. In order to better assess the actions taken by the Group as a response both to COVID-19 and to the entrance of FinTech in the financial market, two different parts of the firm needs to be presented, the Intesa Sanpaolo Innovation Center and the new digital bank Isybank.

#### *4.2.1.1 Intesa Sanpaolo Innovation Center*

Intesa Sanpaolo Innovation Center is the Intesa Sanpaolo Group company dedicated to frontier innovation. It explores scenarios and future trends, develops multidisciplinary applied research projects, supports start-ups, accelerates the business transformation of companies according to the criteria of Open Innovation and Circular Economy, promotes the development of innovative ecosystems and spreads the culture of innovation, to make Intesa Sanpaolo the driving force behind a more aware, inclusive and sustainable economy. The Innovation Center operates in 7 business areas: Frontier Trends and Scenarios, Applied

<sup>257</sup> Neva SGR, an Intesa Sanpaolo Group company wholly owned by Intesa Sanpaolo Innovation Center, was established with the mission of supporting investors in the opportunity-rich world of Venture Capital.

<sup>258</sup> Intesa Sanpaolo Business Plan 2022-2025, Intesa Sanpaolo website, <https://group.intesasanpaolo.com/en/editorial-section/the-strength-of-the-group/our-strategy>



Research, Startup Development, Innovation Support for Companies, Circular Economy for Companies, Development of Innovative Ecosystems and Innovation Culture Dissemination<sup>259</sup>.

Even if this company has taken its first steps already in 2014, it has become influential from 2018 onwards and was among the ones that better reacted to the COVID-19 pandemic, for which a specific observatory was launched, and helped the Intesa Sanpaolo Group as a whole to continue its technological development and maintain, while also improving, its activities. In the last few years, many startup accelerators were enabled to operate, among which are Italian Lifestyle in Florence in November 2021, Techstars in Turin in January 2022, TerraNext in Naples in February 2022 and Argo in January 2023.

#### *4.2.1.2 Isybank*

Isybank (Fig. 21) is Intesa Sanpaolo's digital bank and is a fully online bank, which has no branches in the territory and can only be used via the mobile app. Designed for retail customers, it is mainly aimed at young people interested in using banking services exclusively online and on their smartphones. It offers a current account available in different plans and rates, debit cards and also instant loans.

*Figure 21. Isybank logo*



*Isybank website*

The digital bank was the product of a strategic investment of the Group with Thought Machine, that is a cloud and next-generation technology services company for the banking sector and helped in designing the new bank platform<sup>260</sup>. Isybank offers clients three different options for their banking accounts: isyLight plan, isySmart plan and isyPrime plan<sup>261</sup> (Fig. 22).

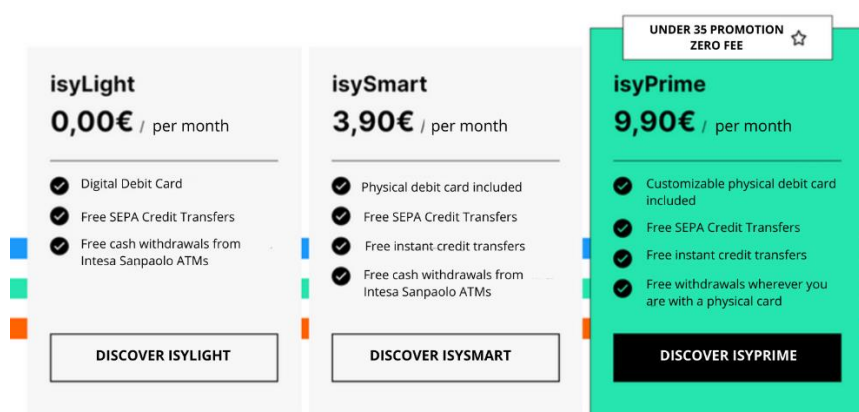
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<sup>259</sup> Intesa Sanpaolo Innovation Center website, <https://www.intesasanpaoloinnovationcenter.com/en/about-us/>

<sup>260</sup> Intesa Sanpaolo website, <https://group.intesasanpaolo.com/it/sezione-editoriale/eventi-progetti/tutti-i-progetti/innovazione/fintech-definizione-ed-esempi-in-italia>

<sup>261</sup> Isybank website, <https://www.isybank.com/it/conti/confronta-piani.html>

Figure 22. Isybank pricing plans



Isybank website, pricing plans section

This digital bank represents one of the strategies adopted by traditional banks to keep up with the competition put forward by FinTech firms in the financial market, namely collaborating with this type of firms, benefitting both companies by financing FinTech firms and getting in return digital products to be implemented in the traditional bank pool of services. Besides the project of Isybank, Intesa Sanpaolo is also very active in funding startups, in the payments segment through a FinTech firm named Mooney, in the insurance industry through the collaboration with YOLO insurance, and in the crowdfunding sector by collaborating with BackToWork24 (equity crowdfunding online platform).

#### 4.2.2 Unicredit

The Unicredit Group was born in 1998 from the merger of Credito Italiano and Unicredito. The origins, however, are older and go back to 1870, a few years after the Unification of Italy, when the Banca di Genova was founded, which was transformed into Credito Italiano in 1895<sup>262</sup>. In 1999, the UniCredito Italiano Group is formed by uniting the seven Italian banks: Credito Italiano, Rolo Banca, CariVerona, Banca CRT, Cassamarca, Cassa di Risparmio di Trento e Rovereto, Cassa di Risparmio di Trieste; furthermore the Group also starts its international growth by acquiring Bank Pekao SA in Poland, to which will follow other acquisitions throughout Europe (Germany, Turkey, Ukraine and other countries in Eastern Europe)<sup>263</sup>. On January 1<sup>st</sup> 2003, The Group was transformed into Unicredit, creating three branches in which the bank operates: one focused on retail customers and small enterprises (UniCredit Banca); one reserved for higher-ranking customers (UniCredit Private Banking);

<sup>262</sup> Unicredit website, <https://www.unicreditgroup.eu/en/unicredit-at-a-glance/our-history.html>

<sup>263</sup> Unicredit website, <https://www.unicreditgroup.eu/en/unicredit-at-a-glance/our-history.html>

and one dedicated to businesses (UniCredit Banca d'Impresa)<sup>264</sup>. The presence of the Group is widespread and concerns different European countries, as illustrated in the following figure (Fig. 23).

Figure 23. Unicredit locations in Europe



Unicredit website, press releases section

As of more recently, the Group hasn't acquired any new firm or startup, but it has built up quite a large patrimony and envisages to acquire and invest more in the years to come; meanwhile, in November 2023, the company invested specifically in the German FinTech Banxware, which enables 30 different platforms in Germany and the Netherlands to offer financial solutions to their business customers. The strategy adopted by Unicredit is, therefore, different from the one of Intesa Sanpaolo, even if just as influential. Other actions undertaken by the Unicredit Group are the evolution of the digital bank that was already under their direct control (buddybank R-Evolution) and the launch of more projects dedicated specifically to innovation through their platform Unicredit Start Lab.

4.2.2.1 buddybank R-Evolution

In the first quarter of 2024, Unicredit will launch the buddybank R-Evolution project, which will provide customers with On Demand banking enabling them to choose when, where and how they want to be served, either through a chat with an operator, an online consult or in-home visits, in order to maintain a continuous relationship between bank and clients. This project is an evolution of the already existing platform, buddybank (Fig. 24), which is an

<sup>264</sup> Unicredit website, <https://www.unicreditgroup.eu/en/unicredit-at-a-glance/our-history.html>

online account with Italian IBAN and Mastercard debit card included, which can be used for payments, also via Apple Pay and Google Pay, and for withdrawals<sup>265</sup>.

Figure 24. buddybank logo



buddybank website

Furthermore, this online platform is completely controlled by the main bank and does not have an independent type of governance. It offers two different solutions to clients (Fig 25), one cost free and one at a cost of 9,90 € per month (called Love form)<sup>266</sup>.

Figure 27. buddybank options

	buddybank account 0€/per month	Love Form 9,90€/per month
Mastercard Debit Card	✓	✓
Zero fees for withdrawals from Unicredit ATMs	✓	✓
Free SEPA transfers	✓	✓
Free cash deposits	✓	✓
Banking assistance 24/7	✓	✓
Zero fees for withdrawals from ATMs all around the world	✗	✓
Lifestyle Concierge by Quintessentially	✗	✓
Card Issue cost World Elite New Metal	10 €	✓
Annual Card Fee World Elite New Metal	120 €	✓
Annual Card Fee buddybank credit	29,90 €	29,90 €
Instant SEPA transfers	2,50 €	✓

buddybank website

This particular new project, differs from the one presented for Intesa Sanpaolo on many levels: for starters, bubbybank R-Evolution, as already mentioned, is not an independent platform and it works as a function of the Unicredit Group, and because of that it has at its disposal the entire array of products and services of the main bank. Furthermore, the approach of proposal of the service to clients had been laid in the hands of the clients, letting them

<sup>265</sup> buddybank website, FAQ section <https://www.buddybank.com/faq/>

<sup>266</sup> buddybank website, FAQ section <https://www.buddybank.com/costi/>

decide whether to adopt it or not and as reported by the bank itself, they managed to convince a quite large number of clients to adopt the solution<sup>267</sup>.

#### 4.2.2.2 Unicredit Start Lab

Start Lab (Fig. 26) is the business platform belonging to Unicredit that is dedicated to supporting Italian startups and innovative small and medium enterprises operating in an extensive spectrum of sectors; UniCredit Start Lab is the evolution of the project "Il Talento delle Idee", which was the acceleration program launched in 2009, and was designed to actively support innovative business ideas and young entrepreneurs<sup>268</sup>. The initiative was divided in several activities and services, that focused on assisting Italian startups and innovative SMEs in their growth process and their development of possible strategic partnerships with outstanding stakeholders inside the industry.

*Figure 28. Unicredit Start Lab logo*



*Unicredit Start Lab website*

Every year each startup can present their application to the several business projects made available by Start Lab, and the ones that manage to successfully be selected receive support in expanding their network and finding investors and Corporate counterparts, while also having the possibility of benefitting of mentoring initiatives, advanced management training activities and tailored banking services<sup>269</sup>. The platform can be stated to be quite successful as shown in the following figure (Fig. 27) that presents the results achieved: more than 7400 business projects that have been reviewed, more than 560 startups that were selected, 200 partners involved and, furthermore, 75 open innovation days that help to spread their projects and make themselves more known by possible players in the industry, both startups and already established firms<sup>270</sup>.

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<sup>267</sup> buddybank website, <https://www.buddybank.com/> and isybank website, <https://www.isybank.com/it/>

<sup>268</sup> Unicredit Start Lab website, <https://www.unicreditstartlab.eu/en/startlab.html>

<sup>269</sup> Unicredit Start Lab website

<sup>270</sup> Unicredit Start Lab website

Figure 29. Results of Unicredit Start Lab interventions



Unicredit Start Lab website

Additional actions innovation-enabling undertaken by the Unicredit Group are the launch in 2022 of the Unicredit University Digital which focuses on re-skilling and upskilling participants, the launch of Living Digital Days in 2022 that represented the first digital expo of Unicredit that allows Unicredit professionals to engage and learn and the Group itself to present their digital progress, and finally the UniCredit Customer Experience (UCX) Consumer Finance that serves as a digital transformation program which offers customers with digital experience across all channels<sup>271</sup>.

#### 4.3 Final Remarks

The FinTech market in Italy has been quickly spreading in all sectors, putting traditional firms under pressure to adopt new strategies and keep up with the digital innovation and technological developments in order to not be set aside by the new participants in the industry. As to reconnect with the previously mentioned research questions, this chapter presents a series of firms that are well-established in their segment of the market, even if their market power is not extended enough to enable FinTech firms to push aside traditional financial firms. The FinTech firms presented belong to a few of the categories illustrated in the first chapter of this dissertation, namely payments, insurance and investments, which are the most prolific inside this part of the market. These firms embody well the current state of FinTech firms in Italy and show that they can be successful in area usually dominated by big traditional firms, such as the payments segment and the insurance industry, and that is the case of Scalapay and YOLO insurance; furthermore FinTech firms that provide guidance for better investments and helps in allocating funds at best, such as Moneyfarm, are making themselves known and achieve collaboration with big players in the market, becoming therefore a leader in this sphere also through the use of technology. With regards to traditional financial firms, the strategies to be adopted are several, such as in the case of Intesa Sanpaolo and Unicredit,

<sup>271</sup> Unicredit Group annual financial report 2022, p. 101, <https://www.unicreditgroup.eu/en/unicredit-at-a-glance/organizational-structure/controlled-companies.html>

which adopted two similar but at the same time very different schemes: besides the innovation labs, which have the aim of supporting startups and new entrepreneurs, they both deepened their digital presence by establishing a new digital independent firm in the case of Intesa Sanpaolo with Isybank and by renovating the already present digital option that relies completely on the main bank as in the case of Unicredit with buddybank R-Evolution. These strategies underline the progress made by traditional banks in keeping up with the new technologies and business models introduced by FinTech firms and demonstrate that the ways to digital are different but equally functional, and that Italian banks are accelerating their efforts to become as digital as possible and offer their clients the best options to meet their needs, which has been made extremely necessary by the COVID-19 pandemic.

## CONCLUSION

In the present work, the FinTech phenomenon has been illustrated through the description of the main characteristics that relates to it, among which are the different business models on which FinTech firms are based and the main technologies that they deploy, such as Artificial Intelligence, Blockchain, Cloud Computing, APIs and Robo-Advisors, which are also present in the strategies adopted by traditional financial firms due to the need of keeping up with these digital firms. Furthermore, it can be stated that FinTech firms are not entirely a new presence in the market (with its first appearance being after the 2008 crisis) but has made its impact stronger after the COVID-19 pandemic, leading the technological evolution at a faster pace and more in favor of the firms focused on offering digital services. From the point of view of traditional financial companies, many changes have been made to face the new challenges in the field and they are currently either collaborating or acquiring these types of digital firms in their structure. This disruption of the market has lead to many different courses of action for regulatory authorities, traditional firms, customers, and also for the European Union as a whole.

Through the analysis of the data drawn from the surveys of Banca D'Italia and the results elaborated by the online database Crunchbase, the FinTech sector in Italy has appeared to be quite present, even if mostly on the northern part of the country, both in terms of them being independent entities and in relation to their relationship with other traditional firms. In particular, through the results of the surveys, it is possible to have a more general view of the performance of these firms in Italy that relates to the last five years, which showcase the increase through the years of projects related to FinTech and undertaken by major financial institutions on the Italian territory, despite the obstacles posed by the pandemic. Furthermore, an interesting point of view has been given by the literature review, which portrayed the position of FinTech firms in the market as not posing an important threat to traditional firms, but at the same time being threatened by BigTech firms which could dominate some of the segments of the FinTech market because of the amount of customers' data and financial stability they have. Finally, there are more than a few examples of Italian FinTech firms with a successful performance, such as in the case of Scalapay, YOLO insurance and Moneyfarm, but it is indeed the synergy between the work of these digital firms and their collaboration with traditional banks and insurance companies that is enabling the Italian market to accelerate in an innovative and technological direction, which is an effort that has been present also in other EU countries and is helping to overcome the technological advantage that countries like the US and China have over Europe as a whole.



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