

Innovation in the Financial Sector (FinTech): Paradigms, Causes, Effects and Perspectives

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Abstract

The changes and evolution of the international and domestic financial-banking system, in the context of globalization, after the financial crisis of 2008, determined the emergence of global, virtual banks, megabanks, financial groups that use disruptive technologies and technological innovations. The first FinTech Action Plan (technology-based innovation in the field of financial services or financial technological innovations) of the European Union mark, as well, the first step circumscribed to the EU Digital Finance Strategy, in order to allow the expansion of innovative business models, but without forgetting to strengthen cyber security and to increase the degree of integrity of the financial system. In this context, however, it is important to take into account the variety of the institutions and the technologies in the countries participating in the Single Supervisory Mechanism (SSM), because the FinTech banks capture the different activities of the credit institutions in different jurisdictions to be closer to the customers and the investors and, in the same time, to expand the area of supervision of the problems related to the emergence of FinTech, because they exceed a sector of the economy or a geographical area and involves multiple financial-banking supervisory and regulatory institutions, belonging to various sectors.

Index terms: cyber security, Digital Operational Resilience, disruptive technologies and technological innovations, innovative business models, systemic risks

1. Introduction

The changes and evolution of the international and domestic financial-banking system, in the context of globalization [1], after the financial crisis of 2008, determined the emergence of global, virtual banks, megabanks, financial groups that use *disruptive technologies and technological innovations*.

According to the experts' opinion [2], the trends of that period were "*decentralization*"¹ and "*integration*"² (The **World Economic Forum**, 2018). To these is added, more recently, the "*digitalization*" trend, accelerated during the pandemic, so that "*digital finance*" (*FinTech*) offered new solutions, based on technology and adapted to the needs of the market and the requirements of the final consumer. Thus, **the dynamics of technological revolutions and the international and national regulatory framework**, quite vast and only for the traditional system, *laid new foundations for the functioning of the financial-banking system* and allowed *the development of companies with a new type of approach* to the financial sector, in parallel, which, first of all, *changed the perspective* on how financial-banking institutions interact with the consumer and *facilitated the automation of processes, increasing the speed of transaction processing* etc.

¹ Decentralized Finance (DeFi)

² Financial, banking and capital markets integration

2. Innovation in the financial sector – paradigms and general context

In March 2018, the European Commission presented the first FinTech Action Plan [3] (*technology-based innovation in the field of financial services or financial technological innovations* [4]) of the EU, accepted by the Chamber of Deputies of the Romanian Parliament through Decision no. 33/30.05.2018³ for the adoption of the *Opinion on the Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions - Action Plan on FinTech: for a more competitive and innovative European financial sector - COM(2018) 109* [5].

The objective of this *Plan* was to enable the EU financial sector to benefit from the new technologies that have transformed the industry, according to the measures listed below [6], aimed at:

- **allowing the expansion of innovative business models;**
- **strengthening cyber security and increasing the degree of integrity of the financial system.**

Supporting the assimilation of technological innovation in the financial sector	
Technology neutrality adequacy review	The Commission will set up an expert group to assess whether there are unjustified regulatory obstacles to financial innovation in the financial services regulatory framework.
Removing barriers to using the cloud services	The COM invites the European Supervisory Authorities to explore the need for guidelines on outsourcing to cloud service providers.
	In the context of the Communication on Building the European Data Economy, the Commission invites cloud stakeholders to develop cross-sectoral self-regulatory codes of conduct to facilitate switching between cloud service providers. The Commission will also invite representatives from the financial sector to enable easier data porting for financial institutions.
	In this context, the Commission shall encourage and facilitate the development of standard contractual clauses for cloud outsourcing by financial institutions, building on the cross-sectoral cloud stakeholder efforts already facilitated by the Commission, and ensuring the involvement of the financial sector in this process. This work should be undertaken by a balanced mix of companies from the financial sector and cloud service providers, and should address in particular audit requirements, reporting requirements or the determination of materiality of the activities to be outsourced.
EU public initiative on blockchain	The Commission will consult publicly on further digitisation of regulated information about companies listed on EU regulated markets, including the possible implementation of a European Financial Transparency Gateway based on distributed ledger technology.
	The Commission will continue to work on a comprehensive strategy, considering all relevant legal implications, on distributed ledger technology and blockchain addressing all sectors of the economy, including enabling FinTech and RegTech applications in the EU.
	The Commission launched an EU Blockchain Observatory and Forum in February 2018, as well as a study on the feasibility of an EU public blockchain infrastructure to develop cross-border services. It will be assessed whether blockchain can be deployed as a digital services infrastructure under the Connecting Europe Facility. With the support of the EU Observatory and Forum and the European Standardisation Organisations, the Commission will continue to appraise legal, governance and scalability issues and support interoperability and standardisation efforts, including further evaluating cases of blockchain use and its applications in the context of the Next Generation Internet.
Building capacity and knowledge in an EU FinTech lab	The Commission will host an EU FinTech Lab where European and national authorities will be invited to engage with technology solution providers in a neutral, non-commercial space during targeted sessions on specific innovations.

³ Transposed into Romanian legislation by *Decision of the Parliament of Romania no. 33 of May 30, 2018 regarding the adoption of the opinion regarding the Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions - Action Plan on FinTech: for a sector more competitive and innovative European finance - COM(2018) 109*

Improving the security and resilience of the financial sector	
Strengthening the cyber resilience of the EU financial sector	The Commission will organise a public-private workshop in Q2 2018 to explore and assess barriers limiting information sharing on cyber threats between financial market participants and to identify potential solutions while ensuring data protection standards are met.
	The Commission invites the European Supervisory Authorities to map, by Q1 2019, the existing supervisory practices across financial sectors around ICT security and governance requirements, and where appropriate: <ul style="list-style-type: none"> a) to consider issuing guidelines aimed at supervisory convergence and enforcement of ICT risk management and mitigation requirements in the EU financial sector and, b) if necessary, provide the Commission with technical advice on the need for legislative improvements.
	The Commission invites the European Supervisory Authorities to evaluate, by Q4 2018, the costs and benefits of developing a coherent cyber resilience testing framework for significant market participants and infrastructures within the whole EU financial sector.

At the same time, *the European supervisory authorities* were to carry out, by the first quarter of 2019, a review of the current **authorization and licensing approaches for innovative FinTech business models**, analyzing in particular **the national legislation in the field of financial services**, from the perspective of proportionality and flexibility, on the basis of which guidelines must be issued **regarding the approaches and procedures implemented** by the European supervisory authorities or **recommendations presented to the Commission regarding the need to adapt the EU legislation** in that matter. Further, on **24 September 2020**, the Commission adopted a **new digital finance package** [7]⁴, which includes:

- **EU Digital Finance Strategy** [8], with a focus on **fostering responsible innovation in the European Union's financial sector**, especially for **highly innovative digital start-ups (FinTech)**, with a view *to developing safer and more user-friendly rules*, from an IT point of view, by consumers, but also *the reduction*, at the same time, *of possible risks related to investor protection, money laundering and IT crime*;
- *The EU Strategy on retail payments* [9], adopted by the European Council on 22.03.2021;
- legislative proposals on **crypto-assets** [10] and **digital operational resilience**.

The draft of the **Regulation on markets for crypto-assets (MiCA)** for which, on **October 5, 2022**, the Committee of Permanent Representatives (Coreper) approved the provisional agreement, thus, starting the formal adoption process:

- will apply to *the persons involved in the issuance of crypto-assets*, as well as in *the services related to the provision of crypto-assets in the European Union (EU)*, which are not regulated by other European legislation, but *will not apply in the situations where it is already applicable, as well as, to the current EU financial legislation on financial instruments and structured deposits (MiFID), electronic money (EMD), bank deposits (D.49/2014), securitized products (R.2402/2017)*;
- establishes rules on transparency and publication requirements for the issuance and admission to trading of crypto-assets, the authorization and supervision of crypto-assets service providers and of their own issuers, for the operation, the organization and the governance of asset-backed token issuers – asset-referenced tokens (ART) and for the issuers of tokens assimilated to electronic currencies [electronic money tokens (EMT)] and for the crypto-asset service providers, the consumer protection rules, as well as the measures to prevent market abuse and to ensure the integrity of markets in crypto-assets.

⁴ This package covers:

- the stimulation of European **competitiveness and innovation** in the financial sector;
- offering consumers and businesses **more choices in financial services** and modern payment solutions;
- ways to ensure **consumer protection** and **financial stability**.

In the same time, the complete package of **legislative proposals on Digital Operational Resilience** [11], adopted at the level of the European Union, is aimed at **preventing cyber attacks and improving the supervision of outsourced services**, which, in recent years, have been continuously growing⁵, disadvantaging their own staff to being specialized and to accumulate superior know-how or to dismantling their own specialized departments, on the one hand, respectively, to favoring or to maintaining risks and threats to the information and communication systems (SIC), by facilitating an uncontrolled access to their own equipment and data (such, the own databases), to third parties, on the other hand.

Thus, **the technology companies** are increasing their importance in finance, both as **IT services providers** for the financial firms and as **financial services providers** themselves. From this perspective, *the digital operational resilience legislation* [12] *aims to ensure that all the participants in the financial system have the necessary safeguards to mitigate the cyber-attacks and other risks.* Through the established measures, all businesses are required to:

- ensure that they *can cope with all types of disruptions and threats related to information and communication technology (ICT)*;
- introduce *a supervisory framework for the ICT providers*, in the cases of *cloud computing services providers*, for example.

As well, summarizing, the draft of the **Regulation on Digital Operational Resilience for the Financial Sector (DORA)** aims to be applied by a very wide range of entities, such as *credit institutions, payment institutions, electronic currency institutions, investment firms, crypto-asset service providers, central securities depositories, central counterparties, trading venues, trade repositories, alternative fund managers, management companies, data reporting service providers, insurance and reinsurance companies, insurance and reinsurance intermediaries, occupational pension institutions, credit rating agencies, audit and statutory audit firms, administrators of critical benchmarks, crowdfunding service providers, central securitization registries and third party information and communication technology (IT&C) service providers*, and:

- establishes **the applicable requirements to the financial entities** in terms of IT&C risk management, the contractual clauses between the financial entities and the external IT&C service providers, the supervisory framework for external critical services providers and the rules carried on to the cooperation between the competent authorities;
- it is incumbent upon financial entities to have in place **an extensive internal governance and control framework for IT&C risk management**, as well as a **robust, comprehensive and well-documented IT&C risk management framework**. In this regard, the financial entities will need to implement a **robust and comprehensive digital operational resilience testing program** which includes *the IT&C testing tools, systems and methodologies*;
- imposes upon the financial entities to establish and implement a **specific IT&C incident management process** to identify, track, classify and categorize IT&C incidents.

The draft of *the Regulation* includes a **separate set of provisions applicable to the critical third-party providers of IT&C services**, which will be designated by a committee of the European supervisory authorities, based on the criteria set out in the Regulation.

⁵ According to the latest Gartner analyst forecast, global IT spending is expected to reach \$4.6 trillion in 2023, up 5.1% year-over-year. In this context, the demand for IT in 2023 is expected to be consistent, as companies will continue to roll out their business digitization initiatives in response to economic developments, [Online]. Available: https://www.economica.net/consultanti-gartner-cheltuieile-it-vor-creste-cu-51-pana-la-46-trilioane-de-dolari-in-2023-la-nivel-mondial_621319.html

3. "Innovative technology" and "technological innovations" - causes and effects

In the last three years, the investments in the new technologies have increased substantially and *the pace of innovation is exponential*.

Currently, a significant percentage of the population interacts with the banks using the mobile technology. At the same time, using a variety of the new tools that didn't exist a few years ago, *the consumers are making payments, they are transferring money and they are making investments remotely*. The Artificial Intelligence, the social networks, the machine learning, the mobile applications, the distributed ledger technology, the cloud computing and the Big Data analysis have contributed to the development of *new services and business models* by the established financial institutions and by the new market entrants (Fintech).

As a result, the European Commission's proposal to create a **regulatory framework for crypto-assets**⁶ aims to enable *the innovation in a way that preserves the financial stability and that protects the investors*.

From this perspective, the Commission distinguishes between *the crypto-assets already regulated by the EU law and the other crypto-assets* and, additionally, on **30 May 2022**, the European Parliament and the European Council adopted *the Regulation (EU) 2022/858 of the European Parliament and of the Council regarding a pilot regime for market infrastructures based on distributed ledger technology, as well as amending the Regulations (EU) no. 600/2014 and (EU) no. 909/2014 and the Directive 2014/65/EU* [13] (hereinafter referred to as the **DLT Regulation**).

The DLT Regulation is limited to concerns for **improving the digital resilience** that can be achieved through *the creation of the pilot units and the experimentation spaces*, as the main objective of the European Union leaders established at October 1-2, 2020 who debated **the digital transformation** during *the Extraordinary Meeting of the European Council*⁷ and invited the European Commission to present, by March 2021, a **comprehensive Digital Compass** [14], the goal of which is mainly:

- to establish **the EU's concrete digital ambitions for 2030**, in which context it was agreed that **at least 20% of the funds from the Recovery and Resilience Mechanism**⁸ **should be made available for the digital transition**, including for SMEs;
- to strengthen the public-private partnerships and the joint digital capabilities to implement appropriate measures in **the fields of artificial intelligence, quantum computing and blockchain**, with a focus on developing the cutting-edge strategic capabilities *to design and deploy the digital solutions at scale*, with interoperability, in the digital infrastructures.

These funds should contribute to making progress towards **achieving objectives** such as:

- **promoting the European development of the next generation of digital technologies**, including the supercomputers, the quantum computing, the blockchain technology and the artificial intelligence centered by the human factor;
- **developing the capabilities within strategic digital value chains**, especially the microprocessors;

⁶ Crypto-assets are *digital representations of values or rights that are transferred and stored electronically*. They may serve as a key to access a service, to facilitate payments or to be designed as financial instruments.

⁷ Extraordinary European Council, October 1-2, 2020, [Online]. Available: <https://www.consilium.europa.eu/ro/meetings/european-council/2020/10/01-02/>

⁸ The German Presidency and the European Parliament negotiators, on **18 December 2020** reached a provisional agreement on *the Recovery and the Resilience Mechanism*. With a financial envelope of EUR 672.5 billion, the facility is the centerpiece of the *EU-next-generation* recovery tool. This instrument will support the investments and the public reforms in the Member States, helping them face the economic and the social impact of the COVID-19 pandemic, as well as the challenges of the green and the digital transition.

- **accelerating the implementation of the secure and very high-capacity network infrastructures**, including those of optical fiber and 5G, throughout the E.U.
- **increasing the EU's ability to protect itself against the cyber threats**;
- **harnessing the full potential of the digital technologies** in such a manner as to achieve the ambitious objectives of the EU **in the environmental and climate policies**;
- **modernizing the digital capabilities of the education system**.

Thus, *the DTL Regulation* sets up the framework for **the establishment of the pilot units for market infrastructures** that wish to attempt *to trade and to settle transactions with financial instruments in the form of crypto-assets*, in order:

- to allow the market participants and the regulatory authorities to gain experience in **the use of DLT exchanges** that would *trade or register shares or bonds in the dedicated digital ledger*;
- **to develop the secondary markets for tokenized financial instruments⁹** by promoting the adoption of the distributed ledger technology (DLT) in the sphere of the trading and the post-trade services.

On **August 23, 2022**, the Financial Supervisory Authority (ASF) in Romania announced that the *Law no. 244/20.07.2022 on establishing measures to implement the Regulation (EU) 2020/1.503¹⁰ of the European Parliament and of the Council of October 7, 2020 regarding European providers of crowdfunding services for businesses and amending the Regulation (EU) 2017/1.129 and Directive (EU) 2019/1.937* [15] was published in the Official Gazette Part I, no. 754 of 27.07.2022 [16] and provides express provisions regarding **the designation of the ASF as the competent authority responsible for the authorization and supervision of crowdfunding services providers**, as well as the fact that *the provision of crowdfunding services¹¹ does not fall into the category of the lending activities regulated by the legislation specific to non-banking financial institutions*, except for the situation in which they are granted by a non-banking financial institution.

Based on article 6 paragraphs (4)-(6) of the *Law no. 244/2022*, the Financial Supervisory Authority collaborates with the National Bank of Romania, according to the provisions of article 33 of the Regulation (EU) 2020/1.503, if:

- the requests for authorization come from *the entities that already hold a valid authorization issued by the National Bank of Romania* as a credit institution, an electronic money issuing institution or a payment institution or have been registered as specialized providers of information services regarding accounts, legal entities or non-banking financial institutions in accordance with the provisions of Government Emergency Ordinance no.99/2006, approved with amendments and additions by the Law no.227/2007, with its subsequent amendments and additions, of the Law no.

⁹ It is expected that the so-called "tokenization" of financial instruments (i.e. the digital representation of financial instruments on the distributed ledgers or the issuance of traditional asset classes in tokenized forms to enable their issuance, storage and transfer using a distributed ledger), to open the new possibilities for improving efficiency in the trading and the post-trading process, [Online]. Available: <https://www.ilegis.ro/eurolegis/ro/index/act/85145>

¹⁰ The main objective of the Regulation (EU) 2020/1.503 is to create a regulatory framework that allows crowdfunding platforms to access to the single market, through an authorization based on a single set of rules

¹¹ Crowdfunding:

- represents a type of activity in which a crowdfunding services provider, **without assuming any risk itself, manages a digital platform**, opened to the public, in order to connect or to facilitate the connection of the potential investors or of the potential business lenders seeking financing. Such financing could consist of *loans, the purchase of securities or other instruments admitted* for the purpose of crowdfunding;
- it provides **an alternative source of financing**, including *the venture capital*, but it can also provide other benefits for businesses: it can validate a business idea, it can give entrepreneurs access to a large number of people providing insights and information, while also being *a marketing tool*.

209/2019 regarding payment services and for the modification of some normative acts, and of the Law no. 210/2019 regarding the activity of issuing electronic money or of the Law no. 93/2009, with its subsequent amendments and additions;

- ***a credit institution authorized by the National Bank of Romania*** according to the provisions of the Government Emergency Ordinance no. 99/2006, approved with amendments and additions by the Law no. 227/2007, with its subsequent amendments and additions, intends to provide crowdfunding services and the request for authorization as a crowdfunding services provider is submitted to the Financial Supervisory Authority only after obtaining prior approval from the National Bank of Romania regarding the filling out of the activity object, according to the national regulatory framework applicable to credit institutions;
- ***the credit institutions authorized by the National Bank of Romania*** according to the provisions of the Government Emergency Ordinance no. 99/2006, approved with amendments and additions by the Law no. 227/2007, with its subsequent amendments and additions, can provide crowdfunding services only if they have obtained authorization from the ASF.

As for **the FinTech** banks (the banks that have "***a business model in which the production and the delivery of banking products and the services is based on innovative technology***"), thus, their scope of activity being delineated from **the concept of the FinTech** defined in **June 2017**, by the Financial Stability Board (FSB)¹² which categorized it as "***the innovative technology used in financial services that could lead to new business models, applications, processes or products with an associated material effect on the provision of financial services***" [17]) the act that is applicable to them is *the Guide for evaluating the license applications for FinTech credit institutions* [18], from **March 2018**, developed by the European Central Bank (ECB), such as the entities that fall within the definition of "***a credit institution***" provided for by *the Capital Requirements Regulation (CRR)*¹³.

In this context, however, **it is important to take into account the variety of the institutions and the technologies in the countries participating in the Single Supervisory Mechanism (SSM)**, because **the FinTech banks** capture the different activities of the credit institutions in different jurisdictions and **include**:

- ***new FinTech branches*** of existing authorized banks¹⁴;
- ***new market entrants*** that adopt technological innovation to compete with established traditional banks along the value chain, as well as the existing financial services providers (e.g. the payment institutions, the investment firms, the electronic money institutions, etc.) that are expanding their scope to include banking activities and therefore may be considered new market entrants that **require a banking license from the central bank**.

¹² **The Financial Stability Board (FSB)** is an international body that monitors and makes recommendations on the global financial system, established after the G20 Summit in London, in April 2009, as a successor to the Financial Stability Forum (FSF). It was established to coordinate the work of the national financial authorities and the global standards bodies at international level with the aim to develop an effective regulatory policy and a policy on supervisory legislation in the financial markets and to promote its implementation. The Council includes all major G20 Economies, FSF members and the European Commission. It is hosted and funded by the Bank for International Settlements (BIS) and the Board members are based in Basel, Switzerland.

¹³ Article 4 paragraph (1) point (1) of the CRR defines a credit institution as "***an enterprise whose activity consists in attracting deposits or other repayable funds from the public and granting loans on its own account***", [Online]. Available: <https://www.eba.europa.eu/regulation-and-policy/single-rulebook/interactive-single-rulebook/504>

¹⁴ For example, a licensed institution might decide to establish a new legal entity to apply fintech solutions that were previously developed in-house.

From this perspective, the FSB and the ECB considered it useful to classify the FinTech developments according to the main existing economic functions they provide, **highlighting their double impact on the financial-banking system, meaning that the common concerns aim at:**

- *identifying the implications of the FinTech on the financial stability, compared to the existing financial market;*
- *analyzing the activities and the results of the FinTech banks, as well as that of the FinTech services providers or the underlying technologies.*

However, **the area of the direct taxation** should not be neglected either. In certain Member States (Bulgaria, Denmark, Finland, France, Latvia, Lithuania, Poland, Slovakia, Slovenia) and in the United Kingdom, the activities related to ***the virtual currencies are subject to tax legislation.***

In Romania, in **December 2018**, the Law no. 30 of January 10, 2019¹⁵ which subjects to income tax the gain from the transfer of virtual currency, the Ministry of Public Finances (MFP) specifying that, with regard to the specific case of operations regarding the virtual currency *Bitcoin*, from the point of view of the VAT regime, it must be taken into account to see the Decision of the Court of Justice of the European Union (CJEU) in case C-264/14 - Hedqvist, in which the CJEU ruled on the application of the VAT exemption provided for in article 135 paragraph (1) letter (e) from the Directive 2006/112/EC regarding the common system of VAT, transposed into national legislation at article 292 paragraph (2) letter (a) point 4 of the Law no. 227/2015 on the Fiscal Code, with its subsequent amendments and additions. Thus, the provision of services consisting of the exchange of traditional currencies with units of the virtual currency "Bitcoin" and vice versa, performed against the payment of an amount corresponding to the margin constituted by the difference between the purchase price of the coins and their sale price, are exempt operations of VAT, within the meaning of this provision.

4. The FinTech - perspectives

The rapid progress registered by **the FinTechs** (whose map, at the European level, was made in 2019 by WallStreet.ro [19]), **determines structural changes in the financial sector, generating, equally, systemic risks**, among which we list:

- *overly prescriptive and hasty regulation risks leading to undesirable results, from a business point of view;*
- *by avoiding the updating policies and the regulatory frameworks, the financial services providers in the EU may be put at a disadvantage, in the context of an increasingly globalized market;*
- *in the case of cyber security, the main risks remain unresolved.*

The first map of the Romanian FinTechs (Figure 1), displayed during *the Future Banking FinTech Edition event*¹⁶ (held on October 1st, 2019, in Bucharest), contained the profiles of over 40 businesses in this industry, based in Romania or with Romanian founders.

Thus, forced by the technology, the regulations and the customer expectations, **the banks will have to introduce the sharing economy** (collaborative/shared economy) **and to be prepared for partnerships** to offer the customer a truly unique service.

¹⁵ By the Law no. 30 of January 10, 2019 for the approval of the Government Emergency Ordinance no. 25/2018 regarding the modification and completion of some normative acts, as well as for the approval of some fiscal-budgetary measures, in article 116 paragraph (2) of **the new Fiscal Code**, after letter (b), a new letter was introduced, letter (c), with the following content: "(c) the gain from the transfer of virtual currency in the case of the income provided for in article 114 paragraph (2) letter (m), determined as the positive difference between the sale price and the purchase price, including the direct costs related to the transaction. Earnings below the level of 200 lei/transaction are not taxed, provided that the total earnings in a fiscal year do not exceed the level of 600 lei."

¹⁶ [Online]. Available: <https://www.wall-street.ro/articol/Finante-Banci/270851/fintech-map-by-future-banking-primeste-un-update-ce-jucatori-intra-pe-harta.html#gref>

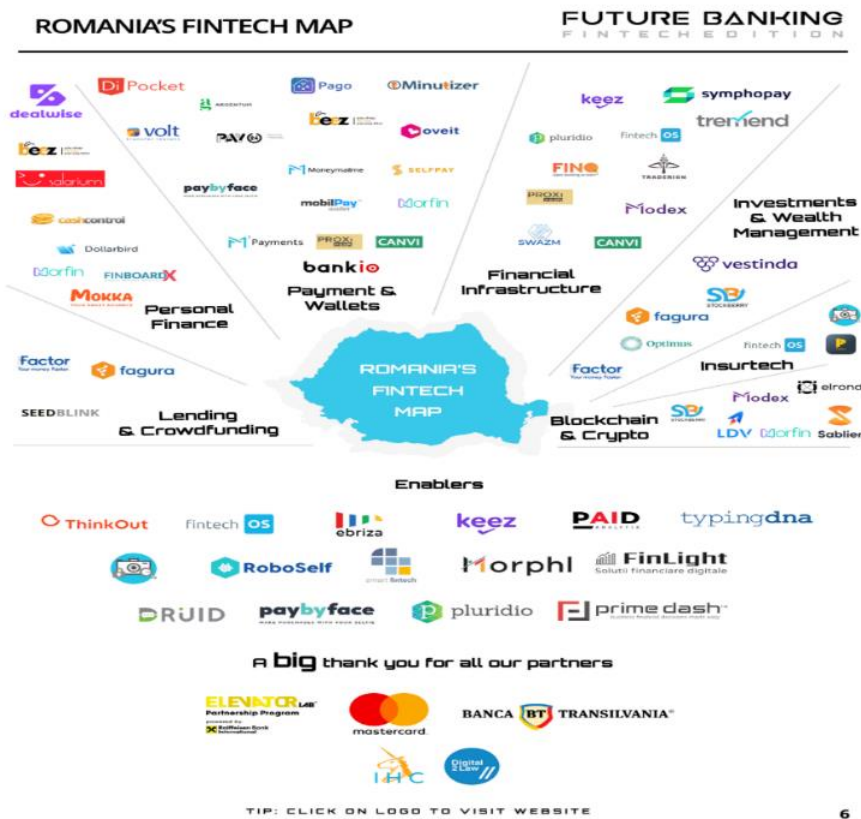


Fig. 1. Map of the Romanian FinTechs in 2019

This is also the conclusion expressed in the report of **October 10, 2022**, developed by BNY Mellon in collaboration with Aite-Novarica Group and entitled *The Forces Disrupting Payments* [20], according to which the financial institutions (FIs) serving the business customers are being disintermediated by FinTech payment providers, while the banks are bucking the trend by *partnering with larger banks that have already built connections with the FinTechs*.

Moreover, some specialists in the field, since the beginning of 2019, based on some *scenarios related to the evolution of the banking industry under the influence of the FinTech* [21] have assessed that it is necessary to expand the area of supervision of the problems related to the emergence of FinTech, because they exceed a sector of the economy or a geographical area and involves multiple financial-banking supervisory and regulatory institutions, belonging to various sectors.

Table 1. Scenarios [20] related to the evolution of the banking industry under the influence of the FinTech

Scenario	Content
The better bank	<i>The modernization and the digitization of the existing players on the market.</i> In this scenario, the existing banks are digitizing and modernizing to preserve their relationship with the customers and the main services offered to them, by using the new technologies and by changing their current business models.
The new bank	<i>Replacing the existing players with the new ones.</i> In the future, the existing players cannot survive the wave of destruction produced by the technology and they will be replaced by the new "technological" banks, constituted, for example, by large technology companies, such as Amazon, Apple (hereinafter referred to as BigTech), which will, in time, fully digitize banking platforms. These new players will provide lower cost banking services. The new banks can obtain banking licenses from the supervisory authorities.
The distributed bank	<i>The division of the financial services between the specialized FinTech companies and the traditional banks.</i> In this scenario, the financial services can be provided by anyone, old or new players, who can connect to the digital customer interface.

Scenario	Content
The downgraded bank	<p><i>The traditional banks will become commoditized services providers and will yield the direct relationship with the client to other financial services providers, such as The FinTechs and the BigTechs.</i></p> <p>Those will use platforms of direct communication with the customers in order to offer a lot of basic financial services, such as lending, saving, etc. The risk of the assets thus created can be transferred to the old bank or even to the owner of the platform, depending on the contract concluded between the two parties.</p>
The disintermediated bank	<p><i>The banks will become irrelevant, the customers interacting directly between themselves with the help of individual financial services providers.</i></p> <p>The need for intermediation through a trusted third party disappears, the banks being replaced by more agile platforms and technologies, which will ensure the direct relationship between the customers, depending on their financial needs (a loan, making a payment, attracting capital etc.). The customers will choose their services and providers, but will assume more direct some responsibilities within the transactions, thus increasing the risks to which they are exposed.</p>

Additionally, there is a need for the banking supervision authorities to work with the public authorities, which are responsible for *data protection, the consumer protection, the competition and the national security*, to ensure that the banks that use innovative technologies comply with the laws and the regulations in force.

On the other hand, the continuous training of personnel is necessary to face new challenges and to be able to exploit the potential of new technologies in order to improve their own methods and processes, and the regulatory framework requires periodic review and improvement, to be adapted according to the emergence of the new risks generated by the technological progress.

From this perspective, in the European Union, 13 (thirteen) Member States have created the so-called "*the FinTech facilitators*"¹⁷ (also called "*innovation centers*" or "*regulatory testing grounds*" [22]) to provide the companies general guidelines during the process of authorization. This allows such businesses to gain faster access to the market and better understand of the rules and more expectations regarding supervision.

"*The facilitators*" can also provide guidance to established financial institutions. From the perspective of the supervisors, *such approaches are an important source of information*, helping them to gain a better understanding of the innovative business models and of the market developments at an early stage. "*The regulatory testing grounds*" takes away the idea of "*the innovation hubs*", further by creating an environment where the supervision is tailored to the innovative businesses or services.

The competent national authorities must apply the relevant EU legislation in the field of the financial services. However, the relevant rules include a margin of appreciation in applying the principles of proportionality and flexibility that are integrated in these rules. This issue can be particularly useful in the context of the technological innovation.

In order to create a picture of these new types of financial institutions, depending on their main field of activity, in correlation with the products and the services of traditional financial institutions, a classification of them, as it was made and published [23], in July 2018, by Sorin Mititelu, President-General Manager of Optimus, would integrate:

1. *Platforms for money transfers*
2. *Platforms intended for online brokerage operations on the capital market*
3. *Robo-advisors*
4. *Platforms for financial planning services (personal finance management)*

¹⁷ "Innovation Hub" means an institutional mechanism where the regulated or the unregulated entities (i.e. unauthorized undertakings) collaborate with the competent authority to discuss the FinTech matters (exchange of information and views etc.) and to request clarification on the compliance of business models with the regulatory framework or on the regulatory requirements/licensing requirements (e.g. individual guidance provided to a business on the interpretation of the applicable rules)

5. Aggregation platforms for financial product offers for retail customers (current accounts, deposits, loans, insurances, etc.)
6. Alternative financing platforms for retail customers - peer-to-peer lending
7. Alternative financing platforms for companies - equity crowdfunding
8. Platforms intended for trading operations for institutional clients
9. Alternative insurance platforms - peer-to-peer insurance; mixed (traditional + P2P)
10. Big data management and analytics services, including through the use of IoT (Internet of Things)
11. Distributed ledger technologies (blockchains)
12. Platforms for market research and networking
13. Fraud and security risk management solutions
14. Solutions for smart cities
15. Trading platforms with mixed products and services (marketplaces).

5. Instead of conclusions

The European Systemic Risk Committee's warning of **September 22, 2022** regarding the vulnerabilities of the Union's financial system (CERS/2022/7), sent against *the backdrop of the increased systemic risks to financial stability*, urges "(...) *that the private sector institutions, the market participants and the relevant authorities to continue to prepare for **the materialization of the extreme risk scenarios**. Maintaining or increasing the resilience of the Union's financial sector remains essential so that **the financial system can continue to support the real economy if and when the risks to the financial stability should materialize.***" [24]

In other words, the recommendations addressed to the European Commission regarding the digital finance sector are kept up to date, as **regulatory and supervisory challenges in the field of the financial services, institutions and markets**, so that the measures adopted at the European level [24]¹⁸ guarantee that the market participants, from the small to the large ones, have ***the necessary regulatory space in which to innovate***, and the legislation, new or updated, and the supervision in the field to be based on the following principles:

- the identical activities and services and related similar risks should be subject to the same rules;
- proportionality and technological neutrality;
- an approach based on risk, transparency and responsibility;
- respect for the fundamental rights, in particular to the protection of private life and personal data, guaranteed by the articles 7 and 8 of the Charter of Fundamental Rights of the European Union;
- high level of consumer and investor protection;
- fair competition;
- a friendly approach to innovation.

Circumstance of the above-mentioned approaches, we appreciate that ***the academic training in the financial field*** with the latest trends in the area of sustainable development, ***with an emphasis on digitization, innovation, new technologies and standards associated with the concept of sustainability*** on all its specific levels - environmental, social and governance (ESG), constitutes a **major objective** that is the basis for obtaining concrete and sustainable results.

¹⁸ The European Parliament Resolution of **8 October 2020** containing recommendations to the Commission on the digital finance sector: emerging risks in cryptoassets - regulatory and supervisory challenges in the field of services, institutions and financial markets

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