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ORIGINAL PAPER

Considerations regarding FinTech and its multidimensional implications on financial systems

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Abstract:
The main objective of this research paper is to provide an accessible framework for understanding blockchain technology, banking bitcoin and other cryptocurrencies. The global financial services sector is undergoing significant transformations due to the impact of FinTech revolution. FinTech industry includes a series of innovative technologies based on powerful analytical tools, advanced algorithms, software applications, big data analytics processing, high resolution e - trading softwares, powerfull charting tools, data - driven trading platforms, portfolio tracking on real - time data. Sustainable development of FinTech industry is necessary for the maintenance of functional financial system, especially in the context of globalization. Moreover, this research paper provides a relevant overview on FinTech. The financial system is an essential component of economic growth and macroeconomic stability, especially in the context of globalization. FinTech innovations provide potential advantages for all financial services users.

Keywords: *Blockchain Technology; Cryptocurrencies; Financial Cybercrimes; Cybersecurity; Banking Bitcoin; Technological Innovation; Shadow Banks.*

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1. Introduction

A robust and dynamic economy needs a financial system capable of channeling financial sources to business entrepreneurs who have the capacity to make productive investments. Understanding the way in which financial structures work is essential when it comes to reforming them. Restricting access to the financial market is one of the reasons why financial systems differ, and removing them will implicitly lead to accelerating financial convergence.The digital age provides infinite opportunities for FinTech development. The evolution of the banking sector in each country is affected by various changes in the international banking and financial environment. A well - functioning financial system allows an economy to fully exploit its growth potential by providing the necessary financing sources for investment opportunities at minimal cost. However, the explosive growth of technological evolution leads to the intensification of financial cyber attacks. FinTech services rely on the most efficient methods în order to achieve a high degree of customer satisfaction.

The main crossroads in the financial field means beyond any doubt, the opportunity to make significant progress based on the revolutionary methods, techniques and tools offered by FinTech services. The FinTech industry includes a range of innovative technologies based on powerful analytical tools, advanced algorithms, software applications, analytical processing of large data (also known in literature as ”big data”), high-resolution electronic trading software, data-based trading platforms, real-time data-based portfolio tracking and more. FinTech firms, organizations and companies provide new technologies to achieve significant growth in the financial industry. Despite its innovative terminology, FinTech can provide efficient and practical solutions even for people who live a normal life, without having to do with the financial field.

The financial structure is traditionally measured by the relative size of the different components of the financial market. A larger financial market is actually a channel for financial assets. In other words, the basic function of the banking system is based on collecting savings and after that channeling financial assets to profitable investments considering bank loans or other banking services. It is not yet known which systems are performing better, financial systems based on banks or financial systems based on financial markets. The structures and functions of financial systems are very complex and in a continuous change, especially in terms of globalization. These banking systems are made up of very heterogeneous financial institutions, such as : commercial banks, insurance companies, investment funds, capital markets and many others (Spulbar and Nitoi, 2012).It is also relevant to highlight the fact that it has been analyzed over time based on certain empirical studies, like: Spulbar (2008), Spulbar et al. (2012), Spulbar and Niţoi (2013), Spulbar and Birau (2019b; 2019c).

This research paper also aims to provide an accessible approach for understanding FinTech industry considering its key aspects such as blockchain technology, banking bitcoin and other cryptocurrencies. In a world ever changing, effective business decisions are essential to achieve the objectives set by decision-makers. The FinTech industry is completely different from the traditional financial industry. In recent years, FinTech services contributed to a significant extent to improving decision making process in the case of financial sector. FinTech (Financial Technology) provides intelligent solutions to current ordinary issues faced by most people in everyday life.

2. The rise of FinTech

Technology and innovation have advanced very much in all areas of activity. Some authors believe that we are living in the fourth industrial revolution due to certain aspects such as : (a) the rapidity of this evolution, (b) ampleness and profoundness of change and (c) the impact on several systems regarding the companies, industries, countries and society as a whole (Schwab, 2017a). In its turn, the financial system is influenced by the evolution of technological innovation. The link between technology and the financial sector has a long history, from the introduction of the telegraph in the early 1800s, to the first ATM which was installed by Barclays Bank in 1967, after major investments in data calculation and processing made by the bank which required powerful servers and computers. And nowadays, we are in the internet era, where technology is indispensable for both banks and customers (Arner, Barberis and Buckley, 2015). The combination between the two specializations, technology and finance, have given rise to a new term, FinTech. The origin of this term dates back to the early 1990s and it refers to "Financial Services Technology Consortium," a project initiated by Citicorp, the current Citibank, which had the purpose of facilitating the use of technology in financial sector (Hochstein, 2015).Regarding the definition of the term FinTech, there are several opinions and definitions provided by academic researchers and regulatory bodies. Professor Patrick Schueffel (2016), after a thorough analysis of the literature terminology, gives the following definition: „Fintech is a financial industry that applies technology in order to improve financial activities".

The literature, as well as banking practice, have identified four major classes of banking products and services in the retail segment, namely: savings products, investment products, loans (loans) and banking services or other products that generate commission. In other words, we must consider that the financial system is in a continuous dynamic state. Commercial banks are also changing, becoming more sophisticated and becoming universal in their activities. However, all this is happening in an area of commercial banking, which has been permanently regulated over time. At the same time, we must keep in mind that banking regulation means more processing times and additional costs, which are ultimately borne by the customer.

Retail banking products and services are usually provided by larger banks that have retail-focused banking divisions or by retail banks. The latter category differs, as the typology and activity spread from one country to another. Spulbar and Nitoi (2012) suggested that, in general, the main financial institutions that provide banking products and services in the retail segment are:

- commercial banks;
- savings banks;
- financial cooperatives;
- credit unions;
- banking networks that collaborate with post offices;
- mortgage banks;
- institutions specializing in savings deposits and lending;
- non-banking financial companies specialized in providing products and services to the population;
- niche banks.

Table no.1 Adoption by consumers of FinTech services in 27 international markets in 2019

Country	Percentage of the digitally active population
China	87 %
India	87 %
Russia	82 %
South Africa	82 %
Colombia	76 %
Peru	75 %
Netherlands	73 %
Mexico	72 %
Ireland	71 %
UK	71 %
Argentine	67 %
Hong Kong	67 %
Singapore	67 %
South Korea	67 %
chile	66 %
Brazil	64 %
Germany	64 %
Sweden	64 %
Switzerland	64 %
Australia	58 %
Spain	56 %
Italy	51 %
Canada	50 %
US	46 %
Belgium and Luxembourg	42 %
France	35 %
Japan	34 %

Source: primary data processing provided by Global FinTech Adoption Index 2019, EY

On the other hand, FinTech-type businesses provide services rather similar to those specific to a bank, but they are not banking institutions in the true sense. In order to obtain a banking status, a company must meet certain minimum capital requirements, which many startups cannot meet. However, there are considerable differences between banks and FinTech companies. Financial technology companies are associated with concepts such as innovation, simplicity, novelty, accessibility, communication, personalization, information technology and convenience.

FinTech revolution is a very complex phenomenon involving both advantages and disadvantages. Financial services have been for a long time perceived as an integral part of a traditional industry. Commercial banks are financial intermediaries but this fundamental role is questioned by the increasing evolution of FinTech services. FinTech offers innovative solutions for various financial issues. In general, traditional banking involves higher transactional costs. Financial technology companies are geared towards attracting as many as possible potential customers. This ongoing process validates the revolution triggered by the new technologies and innovation implemented by FinTech services industry. Moreover, software and hardware technology are very important for FinTech industry.

The International Monetary Fund (2018) highlighted the significant importance of continuous innovations and technological progress in order to achieve a sustainable

economic development and an optimal inclusive growth. Mehdiabadi et al. (2020) investigated relevant issues regarding the banking systems dynamics in industry 4.0 and revealed that currently, a company or a startup has the opportunity to make available to customers banking services based on FinTech applications.

There are various applications of FinTech systems and they can be classified into various categories. Thus, FinTech applications can be classified into four major operational processes:

- the payment
- consulting service
- financing
- compliance.

It is important to understand how such innovative technologies could create business value. For example, in terms of payment aspects, cashless payment is the key development trend of the banking segment. In this regard, more and more companies have developed payment solutions for their customers. FinTech can be perceived as an interdisciplinary subject that combines finance, technology management and innovation management. Specifically, FinTech refers to any innovative ideas that improve financial services, proposing technology-based solutions for different business situations. On the other hand, these innovative ideas could also lead to new business models or even new businesses (Leong and Sung, 2018).

A global organization requires innovative business models in order to face the high amount of daily informations. However, the new global reality also has negative effects inherent vulnerabilities due to fierce competition, ever-changing economy and cybercrime attacks. The FinTech innovations are characterized by many advantages that increase customer satisfaction being a significant progress in the evolution of the global financial system. Unfortunately, we must point out that FinTech's disadvantages or limitations are also an undisputable certainty. Due to the dynamic growth of FinTech industry, the dark side of this revolution was less discussed. Under the globalization, the significant changes within the financial sector highlight particular vulnerabilities that allow cyber attacks, especially bank frauds. The potential risks related to FinTech industry include the following limitations : consumer and investor protection, the clarity and consistency of regulatory and legal frameworks. In another train of thoughts, Spulbar and Niţoi (2016) suggested that “higher liquidity is positively associated with efficiency, while solvency risk is negatively associated with efficiency”.

3. Understanding Blockchain technology

Lets ask a very simple and pertinent question…What are blockchain technologies? Rudimentary speaking, the word “blockchain” includes two other words : “block” and “chain” used in the same context. In other words, ablockchain is actually “a chain of blocks” which store digital information about transactions, traders and other key elements. A blockchain is a shared ledger technology used to jointly manage a common digital information history. A blockchain is a central piece in the evolution of global financial transaction services. However, the blockchain assessment is not perfect, but on the contrary it can be considerably improved in order to achieve a higher level of efficiency.Blockchain is a particular mechanism or data structure that employs cryptography and algorithms to record data in an immutable manner. However, not all distributed ledgers employ blockchains and, conversely, blockchain technology could be

used in other contexts, but the concepts "blockchain technology" and "distributed ledger technology" are commonly used interchangeably (Natarajan et al., 2017).

Financial technology companies have the ability to develop and implement disruptive financial innovations in order to improve customer satisfaction. FinTech industry has launched innovative startups such as alternative payment systems, cryptocurrencies technology infrastructure, automated investment advanced tools and digital asset services platform. Digital banking is a certainty in the context of global economy. FinTech companies represent a relevant part of the whole of society. Nevertheless, commercial banks perceive FinTech companies more as a growth opportunity than as a threat. In addition, financial markets have undergone radical transformation transformations due to the impact of FinTech revolution.

On the other hand, the human resource is very important for achieving a sustainable development of FinTech industry. It is important to highlight that specialists in FinTech have a major contribution in driving the evolution of a functional financial system. For example, as a quantitative approach, so far EUR 83 million have been allocated by the European Union (EU) to blockchain related projects, and potentially up to EUR 340 million could be committed from 2018 to 2020 (European Commission, 2018). European Commission suggested that blockchain technology may bring great improvements for the European industry - from start-ups to large corporates, administrations and citizens since it can enable the provision of more efficient services and the emergence of new ones by providing an improved approach in terms of business activities that take place in different environments such as companies, government authorities, organizations.

Blockchain could be well combined with big data networks. Here you can roughly classify the combination into two main categories: data management and data analysis. In terms of data management, blockchain could be used in order to store important data because it is distributed and secure. Also, blockchain technology could provide assurances that the data is original (Zheng et al., 2017). Current blockchain systems are classified into three main categories: public blockchain networks, private blockchain, and consortium blockchain (Buterin, 2015).

4. Banking Bitcoin and other cryptocurrencies

Cryptocurrencies are not currencies in the traditional sense, since much more complex approaches are involved. Moreover, cryptocurrencies are digital assets which play an essential role in the development of FinTech industry. However, it is important to highlight the existance of certainly assimilation between cryptocurrencies and traditional means of payment such as physical currency (money) issued by national central banks. Cryptocurrencies and blockchain have gained a growing importance over the recent past. Blockchain is a type of distributed ledger technology that forms the backbone of the crypto-market and it is the technology behind the large variety of cryptocurrencies currently in circulation. However, it is important to state that cryptocurrencies, are just one specific application of blockchain technology. Moreover, Bitcoin Cash (BCH) is decentralized P2P digital cash and it is also known in the crypto-community as a "hard fork" of the Bitcoin blockchain (Houben and Snyers, 2018).

European Central Bank (2012) have provided a complex definition for cryptocurrencies which represent : "*a subset of virtual currencies, such as a particular form of unregulated digital money, usually issued and controlled by its developers, and used and accepted among the members of a specific virtual community*". As official

statistics,a very significant amount of more than 50 billion dollars ($) served as investment support in the case of 2,500 companies starting 2010 considering these financial innovatorsrestructures the image of traditional banking (Accenture, 2018). For instance, Hileman and Rauchs (2017) argued that despite the fact that bitcoin stands out as the most representative currency cryptocurrency, considering market capitalisation.

5. Financial cybercrimes: The swan song of FinTech?

In the literature there is no universally accepted definition of cybercrime. Online criminal activity has multiple negative implications in terms of banking system activity. Understanding cybercrime is a major challenge, especially in the context of the global economy. The acts of cybercrime have multiplied their consequences because of their global dimensions. Moreover, cybercrime is also known as computer-oriented crime or computer crime. Cybercrime is an extremely profitable activity considering the high amounts of money obtained through bank fraud or money laundering. Moreover, a phishing scam represents an illegal activity that deceives the user to obtain quick and easy financial gains. However, these cybercrime activities are very hard for law enforcement to follow. Cybercrime includes certain categories such as: electronic fraud (cyber fraud), cyber espionage, malware attacks, identity theft, cyber stalking, spam attacks, copyright infringement, cyber terrorism, and computer viruses. Online banking is a relatively new component of the banking system, very attractive but also very vulnerable to cyber attacks.

The extremely rapid technological evolution leads to the intensification of cyber attacks. It is very important to emphasize that the transmission channels of cyber crimes include certain components of the Internet, i.e.: e-mails, websites (in particular e-commerce sites), chat rooms, discussion groups, instant messaging (IM), open forums, social networks, and messenger or other online services. However, Spulbar and Birau (2019) suggested that digital age provides unlimited opportunities for proliferation of cyber attacks based on highly sophisticated damaging tools.

Moreover, Antonescu and Birau (2014) have also highlighted the non-financial implications of cybercrimes which include a high number of essential problems like the following: loss or compromise of consumer trust (confidence), denigration campaign based on negative publicity (image turmoil, public defamation, reputational damage and prejudice), discontinuity and interruptions in the business activity, productivity influenced in the sense of reduction, compromising confidential data of customers, unauthorized and prohibited access to various product innovations, affecting intellectual property, as well as many other such categories.

At the same time, FinTech innovations offer potential advantages for all financial services users. These include expanding the access to financial services (financial inclusion), decreasing consumption, reducing transaction costs, offering greater convenience and efficiency and allowing rigorous controls on budgeting/spending. Collectively, these could lead to a improved customer experience, offering a better understanding of products and terms (BIS, 2017). In other words, in the future banking landscape an important role will be occupied by the customer experience with the providers of financial services and also this requires special attention from practitioners and from field researchers. Moreover, The significant decline in recent years of traditional banking is directly correlated with the concept of shadow banks and the impact of FinTech (Buchak et al., 2017).

For the first time, the term Economy of Experiences was brought to the reader's attention in 1998 by B. Joseph Pine II and James H. Gilmore. They saw the economy of experiences as the next step that the seller should create for the consumer to maximize sales, at the same time, in the era of the new economy, based on technology and change in customer behaviour; "goods and services are no longer enough." Furthermore, according to the same authors, in an economy where the customer's experiences will count more and more, companies must realise that they create memories, not good or services, and these memories create the scene for generating greater economic value. In terms of global customer acceptance of the services offered by companies like FinTechs, it is increasing year after year.

According to the study made by EY (2017), regarding the analysis on the degree of acceptance of services and products offered by financial technology companies, there was an increase in 2017 compared to 2015. We can see that the biggest evolution was registered in terms of money transfer and payments, from 18% in 2015 to 50% in 2017. But on the other side, it was noticed that there was an increase in the degree of acceptance regarding the other services and products like (i) savings and investments, (ii) insurance, (iii) financial planning, and (iv) loans. For instance, according to World Bank estimates and official statistics, in 2016, the customers of financial services were affected on average by over 65% more cyber attacks compared to any other industry sector (World Bank, 2018).

The action of effectively combating the negative phenomenon of cybercrime is based mainly on a clear and predictable legal framework. Implementing rigorous cybersecurity standards are essential in reducing the effects of cybercrime. Malicious virtual applications represent one of the most prolific forms of cybercrime. Moreover, an action of great financial importance for bank customers is combating bank frauds as an essential component of cybercrime that affects the banking system. A cybernetic hacking attack represents an illegal activity mixture-based oriented on obtaining financial benefits based on deception, cheating, and the extortion of individuals, public institutions, business firms or financial institutions such as banks.

6. Conclusions

The financial world is changing at a rapid pace, and traditional banks are struggling to protect their well-established path and find a new approach so as to retain their customers. Emerging technologies play an important role in refreshing the banking industry, increasing efficiency and competitiveness among financial actors. FinTech revolution is not a fantasy or an utopia. It is an increasingly important part of the new global reality. FinTech companies are driving innovation and new technologies in financial services in order to minimize costs and optimize financial trading time. Business companies must adapt to the advanced technology's rigors in order to succeed in this new global reality. The financial services industry focuses on the high impact of technology - driven innovations. Understanding FinTech rapid development is the key for reaching a relevant level of knowledge about a global sustainable financial system. FinTech industry provides innovative new products and business models much more suitable to adapt to a constantly changing reality. The traditional financial industry is outdated and therefore is not is not appropriate to meet the growing demands of global intelligent customers.

In spite of innovative terminology, FinTech can offer efficient and effective solutions even for normal people living normal lives. The evolution of the FinTech

services relies on the most effective methods in order to achieve a high degree of customer satisfaction. The wind of change means beyond all the possibility of achieving significant progress in the financial field based on the revolutionary methods, techniques and tools provided by FinTech services. FinTech industry includes a series of innovative technologies based on powerful analytical tools, advanced algorithms, software applications, big data analytics processing, high resolution e - trading softwares, powerfull charting tools, data - driven trading platforms, portfolio tracking based on real - time data and many others.

FinTech is practically a technologically activated financial innovation that generates new business models, applications, processes and financial products. By default, they could have a significant effect on financial markets and institutions and the provision of financial services globally. Banks play an important role in the economy by carrying out financial intermediation activities. The evolution of the banking activity has known over time a series of peculiarities. Specifically, Fintech is a financial industry that applies new technology to improve financial activities. The opportunities are overwhelming in the context of the expansion of these innovative financial technologies that are gaining ground over traditional financial-banking products and services.

FinTech firms, organizations and companies provide new technologies in order to achieve a significant growth of the financial industry. In other words, the development of technology encourages changes in financial banking users' behavior and in what those users require; real-time services are required, 24 hours /7 days a week, mobility, easiness, convenience, transparency, but at the same time safety, security, and fewer expenses.

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