UNIVERSITA' DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI "M.FANNO"

CORSO DI LAUREA IN ECONOMIA

PROVA FINALE

"A FinTech track in the healthcare industry"

RELATORE:

CH.MO PROF. Elena Sapienza

LAUREANDO/A: Sofia Allegra Minuti

MATRICOLA N. 1160652

ANNO ACCADEMICO 2019 – 2020

INDEX

ABSTRACT IN ITALIAN

La salute è essenziale ma l'accesso al sistema sanitario attuale è ancora complesso: la burocrazia è eccessiva ed i costi, alle volte, sono troppo elevati.

Modelli che abbinano sistemi privati a sistemi pubblici sintetizzano le diverse forme gestione dell'industria sanitaria nel mondo. Ma, questi profili organizzativi paiono ancora lontani da una gestione della sanità che si possa definire universale, ovvero una sanità che non esclude nessuno.

Il FinTech, ossia il risultato di una combinazione di finanza e tecnologia, sembra essere una possibile soluzione alle falle dei modelli sanitari esistenti garantendo efficacia ed efficienza, qualità, agilità ed anche inclusione ed interoperabilità; allo stesso tempo questo fenomeno emergente non è però esente da dubbi e problematiche.
La tecnologia finanziaria rappresenta il precorso odierno della società verso la digitalizzazione, potenzialmente capace di trasformare la sanità, grazie ad una maggiore efficienza ed efficacia nella gestione delle risorse. Il risultato consiste nella riduzione dei costi e della probabilità del verificarsi di errori umani trasformando il sistema sanitario in un organo maggiormente accessibile e migliorandone la qualità.

Il seguente elaborato si propone di spiegare ed analizzare il connubio tra FinTech e sanità cercando di capire in che modo il FinTech possa essere applicabile all'industria sanitaria e con quali effetti.

FinTech e Sanità: qual è l'effetto del legame tra queste due realtà?

INTRODUCTION

This thesis takes inspiration and wants to be a continuum of the final thesis titled "Fintech-Healthcare binomial: the cryptocurrency impact on the meaning of value. A study of perspectives" that I presented at Montpellier Business School in which I have analysed cryptocurrency, its behind technology and its possible consequent meanings of its application on the Healthcare industry. I approached a qualitative method by interviewing different experts who have enlarged my knowledge and helped me in considering and evaluating the advantages and disadvantages of these "new" tools in order to reach a positive step in, most of the cases fragmented, healthcare industry. In this thesis I will try to deepen the argument.

The meaning of FinTech still doesn't seem to be so evident. In few words it is possible to explain FinTech as the combination between Finance and Technology. It is this combination that revolutionizes the procedures and interpretations of Finance. But, as discussed with Professor Yermack, one of the respondents, this is an adaption rather than a disruption as the intermediaries don't disappear as the many think, but they collaborate with a changing and evolutionary landscape.

Money is considered the engine of the economy and this technological financial innovation is shifting the perspective toward a system moved by other types of value representations. I wondered the meaning of money and I got different interesting definitions from the respondents. To mention a few: according to Koepsell, CEO and cofounder of EncrypGen, money is a "a share agreement that exists and is worth something"; then Yermack, professor of Finance at the New York University in the United States, about money, referring to the economic paper titled "Money is memory" (Korcherlakota,1996), reports and affirms that "money records all the contributions that you have made to society, in terms of earning a wage, essentially producing what people wanted, whether if its skill labour or if you run a business and sell your products or whatever", Yermack then continues saying that "money is a type of account ledger" ; Grenzebach, co-founder and core developer at Dentacoin, introduces me his thought about the future of money affirming "I believe digital, deflationary money will be of much more significant importance in future. Moreover, I think there will be many purpose-based currencies that will be very easily exchangeable between each other".
The combination of Finance and Technology could help the healthcare sector to re-arrange the internal and external relationships in order to avoid a stuck positioning and avoid wasting value.

Indeed, FinTech could help to blur the borders imposed by many and apply a technology that builds an "interoperability bond" between stakeholders.
According to Philippon (2016), FinTech can disrupt borders and revolutionize industries. The main representatives of FinTech are blockchain and cryptocurrency. As the author states in "The Fintech Opportunity" (2016) in order to reach the objectives of an easier access to services and a stable system the regulatory system has to adapt too. Also, the ICAEW and ISCA analysis "Fintech innovation: perspectives from Singapore and London" (2018) seems to describe a sort of coevolution. This is a validity of what Yermack thinks too, agreeing on the fact that this is not a properly revolution of the existing system, but it is this last one that will include technology.
Philippon (2016) underlines the challenges of the result of the bond between Finance and Technology that he explains and denominates in, firstly, "Entry and level-playing field", relating with this to the different actors and the context in which FinTech proposes to enter ; secondly, "Leverage and history dependence", meaning with that the presence of a close link to the past conceptions to overcome and enhancing the necessity of a prompt reaction to innovations and, finally, "Consumer Protection", that is always at stake in the FinTech field making questions about trust and security arise.
As already stated by Philippon (2016) blockchain is one of the FinTech drivers and cryptocurrency is built on a blockchain structure.

Is FinTech a booster for accessibility and efficiency? It seems to be so, but this paper will try to look in deep the details to comprehend how digital Finance could shape links and form other bonds in order to achieve the so called "interoperability".
My research question is: how FinTech could be applied to healthcare? What are the effects and implications of this application?

Also, here the paper will follow the same logic of construction, meaning with this that there will be the presence of an introduction part, followed by literature, passing through methodology in order to present and discuss data finally reaching more personal, even if they will still be based on papers and articles, implications and the conclusion.

Consequently, the work is organised as follows: the first part consists in an introduction of the broad field of FinTech and the healthcare industry around the world, then it will briefly recall two of the FinTech areas and in particular the blockchain technology. After that the InsurTech sector will be analysed in order to introduce the analysis of the application of FinTech on the

healthcare industry. Consequently, data will be related to the arguments that have been introduced thanks to literature and they will be analysed and commented where finally, the possible consequences of the explained application will be discussed.

CHAPTER 1: A FINTECH PRESENTATION

1.1 THE FINTECH PATHS

The expansion of the "digital hype" is a booster of the FinTech sector that could be interpreted also as the digitalization of the financial services. In fact, as the PwC study "A Perspective on FinTech's growing influence on Financial Services" (2018) confirms, the changing environment has an impact in shaping a FinTech direction. Technologies as blockchain help discovering new and effective business models. FinTech is powerful in transforming not only the main proper Finance sector but it also irrupts and defines other industries. It is possible to conceive FinTech as the technological footprint in financial services. Moreover, ICAEW and ISCA analysis (2018) highlights that the major potential of this phenomenon arises when there is a connection between innovators, regulators and investors. This collaboration between the FinTech innovation and the imposed rules is highlighted as an efficient solution also by Mention (2019). Furthermore, the International Monetary Fund (2020) affirms that this collaboration between innovation and tradition is real, besides the huge attention of the institutions toward this new scenario, organizations react and open the doors to FinTech. In fact, cooperation seems to be an essential element enhanced by many researchers to the point that firms as Ernst and Young underlines the need of collaboration between FinTech and traditional financial services and institutions. In synthesis, it is possible to understand that this collaboration could lead to an emerging new value.

In addition, "reshaping links" appears to be a key expression when it is to talk about this combination (Finance + Technology). As the ICAEW and ISCA analysis (2018) suggests, one of the FinTech capabilities is that of opening the doors of Finance offering progression and perspectives in terms of development of the global economy. In line with the report, the access to financial services is in the pole position between the opportunities of FinTech.

Going back to the origins of this "innovative phenomenon", according to Thakor (2020) the buzzword of FinTech started to be diffused already in the 1966 and this is clear if we look at the definition of FinTech as a strict bond between Finance and Technology because, as the author shows, it starts in the period of the transatlantic cable and the Telegraph, in fact, as reported by Iman (2020) the 70s experiment the arrival and presence of the credit card and the ATM/cash card, then Thakor (2020) represents that the FinTech concept started to grow presenting the electronic aspect of Finance to finally enter a more innovative phase that continues also today. The IMF defines FinTech as "the technology-enabled innovation in

financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services." (Sahay 2020, p. ix)

The IMF (2020) maintains that the birth of FinTech is due to many factors that have to do with the technological development, i.e. "massive data generation".

According to Mention (2019) FinTech will be present in the near future and many important players are looking for opportunities in this sector even if the challenges, such as the regulation borders or the reliability doubts, are many.

FinTech is patent also in the so called "InsurTech" whose principal sectors are the automobile and the healthcare ones according to Thakor (2020).

In line with the PwC report "FinTech calls for fuel" (2020) the Covid-19 emergency raises awareness on Financial Technology. Indeed, FinTech seems to allow a security and easiness in transactions.

As a matter of fact, talking about FinTech means conceiving a sector that, combining technological and financial competences, comprehends different instruments impacting the society of today. Indeed, as reported by PwC it is possible to consider web platform, IoT, blockchain, cryptocurrencies between the many FinTech tools that play an important role in different already existing areas that PwC (2020) divides in "Payments", "Money Management", "Wealth and Asset Management", "Other Crowdfunding", "Lending", "Capital Market and Trading", "InsurTech" and "RegTech".

The complexity and several nuances of FinTech are underlined also by Iman (2020) who thinks that there is a lack of a unique and single definition that could be related to FinTech.

Statista (2017) shows that the 54% of FinTech startups were related to the Web platform sector whereas only the 2% concerned the Internet of Things, and a little more, but still the 8% were present in the blockchain area.

Consequently, it is possible to widen the FinTech view and apply its functionality in several industries. In fact, EY global fintech adoption index 2019 reports that the efficiency and variety in functions are what pushes, respectively the individuals and the SME, to approach the Fintech scenario.

Moreover, according to Forbes (2019), both technology and finance have become intersectoral leading, in this way, to a new kind of value offer.

Nakashima (2018), referring to FinTech and IoT states "These new technologies trigger a process with the potential to not only transform products or services, but to revolutionize the business, industry and the company itself." (Nakashima 2018, p. 62)

This is a key concept that this paper would try to explore and enhance. In fact, FinTech is a wave that is shaping sectors. It is not just the delivering of a service, but it is the new shape of a bound of relationships in different fields. According to Nakashima (2018), FinTech is one of the "revolutionary technology" that helps achieving a social development.
FinTech is the expression of a mutative environment.
Physical is going digital according to Thakor (2020). In line with the author, in fact, the effect of FinTech on payments will have a major and immediate influence in countries in which banks are not popular. Furthermore, the author analyses the cryptocurrencies by starting from the basic purpose of money, considered, as we know, as a medium of exchange, a store of value and a unit of account, and he individuates that the lack of stability , the fact that it is currently used only for the exchange of certain goods and that it is not already really independent from third parties are the main frictions of cryptocurrencies.

FinTech is also a good ally of startups in order to collect their funds, as Edermaniger (2017) reports.
FinTech in fact comprehends different effective means such as crow-funding, blockchain and wearables that permit a better and more effective organization of transactions and its relative costs.
Talking about FinTech, Bennett (2016) considers "Business process outsourcing", "Investments and Capital Markets Tech", "Digital Lending", " e-commerce and Marketing Tech", "Financial Media & Data Solutions", "Insurance & Healthcare Tech" , "Payments", "HR and Payroll Tech" and "Security Technology" sectors of the FinTech industry (Bennett 2016, p.2).

According to El-Masri et al. (2019) the TechFin has highly impacted the insurance field leading, through the use of technologies, to new forms of value. The authors represent the evolution of insurance services in insurance from 2015 to 2017.Furthermore, Kalmykova et al. (2016) define FinTech as one market that is experimenting a really high growth, satisfactory for the society as a whole.
In line with the authors FinTech is emerging and is having a huge effect in the existing institutions whose purpose is now that of offering improved and better services.
This paper would like to explore the possible FinTech potentials, quickly passing through the blockchain and cryptocurrency ones, approaching the so called InsurTech, in different sectors even if especially focusing on the healthcare industry.

1.2 FINTECH MARKETS

A study named “The economic forces driving FinTech adoption across countries” aimed to find connections between FinTech and economic movements conceiving FinTech also as a tool to promote “growth” and “inclusion” conducted by Frost (2020) nonetheless the higher and higher diffusion of FinTech nowadays mostly all around the world, the youngest ones seem to be the most keen on adopting this new type of “financial model”. Nonetheless, not every country has the same level of confidentiality with this new field. In fact, Frost reports that in some parts of the world FinTech is still considered in some way exclusive whereas in others it is already well inserted in the economy of the country. In his paper Frost (2020) wonders the reason of this difference around the world reporting data representing China as the most “developed” in mobile payments compared to the United States, which, besides that, is strong in the patent activity according to the International Monetary Fund (2019), and excels together with China and the United Kingdom in the widespread of in the “fintech credit platforms” as a mean of supporting the small and medium enterprises.

Frost (2020) reports that the importance of some cities by a financial point of view considering other areas of Finance is not always proportionally related to their positioning in the FinTech industry, mentioning for example Milan that has still a long way to run compared to Tel Aviv. It is also to take in consideration that the access to technology is not easily reachable by everyone in every country, because of, for example, electricity issues, as Yermack argues. Mendenhall, director of Business Development in ACCESS Health International, states that digital finance, such as digital wallets, could be used into elaborate “finance options” with the purpose of “help financing”, especially the less lucky people. As a matter of fact, Frost (2020) specifies that having a bank account in some countries is most of the times a desired condition but nonetheless, this situation does not guarantee you the access to certain services. In this terms Fintech credit, that Claessens et al. (2018) describe as a “credit activity facilitated by electronic platforms that are not operated by commercial banks”, is of great importance. The authors continue affirming “the higher a country’s income level, the larger is fintech credit activity” (Claessens et al. 2018, p. 29)

According to Frost and also many others, FinTech could play a role to enlarge the domain of the finance presence around the world developing possibilities and opportunities in a field that is actually uncovered, or where the existing services are not affordable. The IMF affirms that FinTech allows an economic, simple and safe method of payment, the digital one.

Frost reports also that FinTech pushes the existing financial institutions to improve too. Anyway, FinTech according to Frost is sensitive to the common failures and risks that are currently present in the financial market.

A pillar line for an incentive in Fintech adoption is always the sphere of rules. Indeed, in the analysis conducted by Frost (2020) is clear, but not determinant and still not fully confirmed, that a right measure of regulation controls, a smooth regulation of banks with low entrance barriers and opposition to illegality could be the triggers for FinTech. Nevertheless, Frost wants to precise that the "regulatory arbitrage" is not the main driver.

It interesting to notice, as Frost reports, that the populations in which the FinTech is more commonly used are the ones in which the average age of people is lower than those countries in which FinTech is not the preferred mean and more traditional ways of transactions are present.

The International Monetary Fund (2019) represents the diffusion of FinTech in the different parts of the world presenting Africa and Asia as high FinTech-friendly countries, Europe is on its way, in Cacasus and Central Asia, Middle East, Afghanistan, North Africa and Pakistan FinTech is expanding as well as in Latin America and in the Carribean in which in some regions Central Banks are considering the idea of a digital currency.

Moreover, the IMF survey individuates cybersecurity as the FinTech field in which there is the most "international cooperation" with an 84 percent and the IMF and the World Bank are not excluded from this sort of developing connection with a present alarm for international standards to be set.

IMF argues that opportunities present also consequent risks such as exclusion due to the absence of the basic tools to access the FinTech services; consumer and data protection, connected also to the privacy issue; and discrimination. It is also enhanced that the FinTech impact is noticeable in capital markets. The IMF enhances that the introduction of FinTech could reshape the international financial links making regulations necessary, changing the actual financial models and connections, remembering the need of a solid cooperation between countries.

A study done this year by the IMF shows an higher and higher popularity in these last times of digital payments demonstrating the value of money transaction is a well contributor to GDP in countries such as Bangladesh where the money transactions constitute almost the 20 percent of GDP and to arrive to Zimbawe where these payments are the 140 of GDP.

1.3 A SUSTAINABLE CRYPTOCURRENCY: TRUTH OR TRICK?

During my research I have found complex and delicate talking about cryptocurrency; even if, according to Statista, cryptocurrencies are not considered as part of the FinTech market, Investopedia (2020) considers the development of these new types of currencies as included in the FinTech field nonetheless, as argued by many, still low in credibility. The IMF (2019) study

affirms “most jurisdictions agree that crypto-assets present risks to investors but are not yet a threat to financial stability” (International Monetary Fund 2019, p. 22).
The analysis then argues that the risks of these digital currency consists in the volatility and lack of scalability that could make, a threat, between others, to the monetary policy arise. It is possible to argue that there is not a stable clear definition and identity of “crypto-asset”, word that can be interpreted in various ways as reported by the IMF and also underlined by Yermack. Is it accepted to conceive cryptocurrencies as new methods for transferring value?
The answer is that we still don’t really know, and the contractionary points of view are still many. What is known is that these digital or virtual currencies are based on a blockchain structure, a technology made by a connection of blocks containing information. The concept has been ideated by Nakamoto, a still unknown identity. Cryptocurrency revolutionizes the sense of money by introducing new ways of completing transactions and new links between the parts and their relationship with data. It is not regulated by a central bank. Besides that, as reported by the IMF the digital currency is attracting also Central Banks looking at inclusion, efficiency, control and convenience.
Talking about cryptocurrencies is also important to underline ICO process that Thakor (2020) describes as a mechanism where investors buy tokens thus financing the development of cryptocurrencies.

In my opinion money has been reshaped by FinTech considering other method of exchanging value. As already stated many times, the basic structure of cryptocurrencies is the blockchain whose characteristics are listed by Visconti (2020) and this elaborate will recall: “decentralization”, “persistency”, “anonymity”, “auditability” and “trust”. He points out the secure and inter-operational wave of this technological application.
But FinTech is also much other than maybe cryptocurrency and this time this paper would try to explore the other areas.

1.4 BLOCKCHAIN

As many articles and experts state, the blockchain technology seems to have an enormous potentiality in the near and long future and, if well and properly managed, it could offer many opportunities of development.
As a matter of fact, blockchain is a technology tool widely used and with explained advantages by many researchers. It consists in a chain of blocks in order to transfer data. It is the technology that is behind the cryptocurrency and, as maintained by experts, it could offer a great value to many industries.

My previous analysis learnt the potential of blockchain as a precious tool guaranteeing transparency, memory and security covering the road of a data-driven system. These features that characterize the blockchain could manifest their efficiency in the healthcare industry. Deloitte[1] describes the blockchain as a chain of blocks that securely and permanently records a network of transactions between many actors.

[1] Deloitte. Blockchain. Available on: https://www2.deloitte.com/it/it/pages/financial-services/articles/blockchain---deloitte-italy---financial-services.html

CHAPTER 2: THE HEALTHCARE INDUSTRY

2.1 THE HEALTHCARE INDUSTRY

The Healthcare industry is a structured system that, as Ribitzky et al. (2018) state, consists in a set of actors that considers "institutions", providers, "patients", "payers" and "government" all shaping different frames of connection. According to the authors, in their analysis that enlarges the borders of the Healthcare industry, it is here that there is an opportunity for healthcare to overall high the level of care and at the same time decrease the expenses.

The impact of blockchain on healthcare is due to the characteristics that Ribitzky et al. (2018) identify in the "data storage" recording individual data, not only strictly health data, but also personal ones guaranteeing a privacy outlook over them; "confidentiality"; "data integrity" is then assured even if it is possible to delete the data only it is the patient himself/herself who desires it, preserving "the right to be forgotten"; "availability", "adequacy" and "compliance". According to the World Health Organization (WHO 2019) an individual health status is a guarantee of development in the economics as it offers the basis to people to change their life, in better.

2.2 THE HEALTHCARE AROUND THE WORLD

There is not a unique system for healthcare worldwide, besides that, it is important to recall what Reynolds (2018) states: "the challenges facing all healthcare systems around the world are identical" (Reynolds 2018, p.1). This is what Reid (2009) already reports in the description of the different "models" that synthetize the healthcare management around the world considering the constant looking for health, the care of sickness and the importance of a care that does not disrupt financial stability, the objectives of the system. It is necessary to underline the importance of an accessible and affordable healthcare. Health is the basis of life. Nonetheless, this conception does not find a perfect fit in the current society. Indeed, as reported by Reynolds (2018), the constant and actual realities show still the dominance of private systems or the combination between public and private, making the universal healthcare appear an idyllic situation that is still far from the present.

There are different models that identify the healthcare regulation in different parts of the world. Precisely, experts cite four different models of conceiving the structure of this industry. In a scale of universality we can individuate the "out-of-pocket model" at the bottom due to its sort of discrimination based on the income and level of economic wealth of people. As a matter of fact, Reid (2009) states that in the countries in which this model is in force there is a huge disorganization, consequently there is no attention toward the ones needing care who cannot

afford it. Saw that, going up in the scale it is possible to find the "Bismark", the "Beveridge" and the "National Health Insurance" models; these ones are different from the out-of-pocket model because they are more structured or, at least, they are based on a different level of collective management of resources. This expression would like to share the idea that they form a system, or better, an organized structure: as reported by Reid (2009) the Beveridge considers a mix of public and private and it is based on a tax system, whereas the Bismark one is based on an insurance system and finally the National Health Insurance consists in a model in which there are elements of private and an unique insurance model held by the government. Oliver Reynolds (2018) shows that developing countries follow a private system of healthcare, according to the World Bank Open Data reported by Reynolds the South Asia presented a 61.5 percent of the "total expenditure on health" compared to the 25.2 percent of East Asia and Pacific and the 13.6 percent of the countries that are parts of the OECD. Reynolds (2018) enhances the problems of the persistence of a private apparatus that seems to play the role of an incentive to inefficiency, exclusion and inequalities.
Besides that, other countries opt for social insurances, this is the case of many parts of Europe. The "General Taxation" is another scheme presented by Reynolds that smooths the system and overcomes bureaucracy but, according to the economist, this model "has the potential to be fair, but it can also be financially fragile" (Reynolds 2018, p.1)

So, after having analyzed the different networks that are present in the countries of the world it is natural to reflect about a complexity of this industry and it is important not to take the wrong direction of thinking imagining that a new invention, whatever it is, it is applicable in the same way in all the countries all over the world.

2.3 THE APPLICATION OF FINTECH ON HEALTHCARE

As Mettler (2016) affirms blockchain manifests its importance in the healthcare industry thanks to its decentralized network that allows a better management of the patient data favorizing an easier but secure access to this information. Consequently, according to the author, this technological tool helps in saving time and resources overcoming frictions commonly related to a different and vast information as it is possible to consider it as a track of all the individual health data. In fact, transparency and efficiency are the main features that characterises the introduction of blockchain technology in any system.
In these terms, blockchain saves value by minimizing procedures and connecting stakeholders. Furthermore, as Yermack states and Mettler (2016) writes, blockchain has proven to be a possible mean in order to fight the counterfeiting of drugs defending the patients' health. This

is also stated by Zhang et al. (2018) that considers blockchain as a possible solution for safety in prescriptions resulting in more effective cares.

According to Zhang et al. (2018) in "Blockchain Technology Use Cases in Healthcare" blockchain could help in building a reliable network in the healthcare system allowing interoperability. The main problem in line with the experts is the lack of connection between the different parties in the healthcare industry. Zhang et al. (2018) considers interoperability as a necessary condition in order to have an efficient healthcare system as reducing the probability of errors and finding the right care for patients. The authors present three different types of interoperability: "foundational", "structural" and "semantic". They list the problems of the current healthcare scenario where data are shared anyway but through a process that is defined as "slow", "insecure", "incomplete" that "lacks of context". (Zhang et al. 2018, pp 3-4)

In line with Zhang et al. (2018) one of the features that characterises the healthcare system nowadays is the fact that the patient is not at the center and the personal health information is not controlled by him making privacy attacks easier to happen. In these terms, blockchain permits agility in the system.

As Baker (2020) affirms, FinTech manifests itself in the possibility of paying cashless, blockchain used as data recorders and methods of payment that include cryptocurrencies, manifesting an increasing digital path and "data security measures".

Though there are still many doubts around cryptocurrencies, because of the lack of regulation, high volatility and other many reasons, blockchain effective and positive impacts in many fields seem to be confirmed by many experts. In particular, Visconti (2020) enhances the high contribution of this technology on healthcare.

As Edermaniger (2017) points out the impact of FinTech on Healthcare consists in revolutionizing this field but also try to make it more inclusive.

Ribitzky et al. (2018) referring to blockchain affirm "Blockchain technology is designed to establish trust, accountability, traceability, and integrity of data sharing". (Ribitzky et al. 2018, p.2)

2.4 THE INSURANCE SECTOR ANALYSIS

At first sight the relation between FinTech and InsurTech is not so obvious. Is InsurTech part of FinTech? Are they similar concepts driving in the same direction?

According to the Financial Times (2017) "InsurTech" is one of the most attracting areas for investors.

Okada (2018) defines it as “the insurance version of financial technology (FinTech)”. Cenfri (2019) considers an InsurTech as a structure inside the insurance industry that positively contribute to the industry thanks to technology. In the same line of thought, Stoeckli et al. (2016) conceive InsurTech as a set of innovations in several markets that is boosted by technological features in order to benefit the insurance complex. They also recall PricewaterhouseCoopers considering InsurTech as relative to the insurance sector part of FinTech.

From these few definitions it is possible to conclude that InsurTech is part of FinTech.

In these terms Raj (2019) writes about InsurTech saying: “InsurTech is referred to as the combined technical and strategic work of technology and insurance, which has considered FinTech as its idol” (Raj 2019, p. 30)

Frost (2020) also states that FinTech is more and more impacting and increasing in the so called InsurTech and the IMF (2019) explains that the application of tech on insurance is synonym of accuracy, fastness and personalization that gratify the final customer. This is an important aspect that, if applied to the healthcare industry, moves the focus toward the patient leading to the conception of the importance of the user.

In line with Esser et al. (Cenfri 2019) emerging markets are assisting at a considerable growth of InsurTech that is not disrupting the traditional scenario but, that, at the same time, is creating new business models. Moreover, according to the experts there are six different “InsurTech categories” that they list, reporting their own words, as: “new data and analytics”, “digital platforms”, “technology-enabled partnerships”, “parametric insurance”, “peer-too-peer insurance” and “demand-based insurance” (Esser et al., p.6). Furthermore Esser et al. (2019) explain that technology in insurance is making the sector more accessible. They, in fact, identify the challenges of Insurance nowadays and affirm that the low-income consumers are often out the insurance system influencing in this way the exact calculus of the different insurance profiles by the insurers. These emarginated consumers are also difficult to reach, lack of education about financial services, cannot pay high costs and need a variety of solutions suggesting the necessity of customization.

CHAPTER 3: METHODOLOGY AND DATA

3.1 METHODOLOGY: A CHANGING PERSPECTIVE

In my previous study "Fintech-Healthcare binomial: the cryptocurrency impact on the meaning of value. A study of perspectives" I used a qualitative approach because I wondered to answer the following research questions:

- "Could FinTech, in particular cryptocurrency, add value on the Healthcare industry?"
- "Considering the binomial FinTech-Healthcare what is the meaning of money then?"
- "Will institutions be active part of the system?"

In my study I analysed the blockchain technology and cryptocurrencies. I learnt that blockchain technology can be applied to the noticeably fragmented healthcare industry probably leading to a more efficient system, a secure data-driven mechanism. Besides that, cryptocurrency has still some barriers that prevent a complete trust on it. I also learnt that institutions will still be part of the future. I used a qualitative method reporting the thoughts of some experts that I interviewed.

In this research I would like to further analyse the FinTech world, its different areas and their possible applications on healthcare. I will use a qualitative approach also this time, besides that, it will be more focused on some already existing surveys, articles, studies and researches even if pieces of thoughts of the respondents I interviewed will be present also in this elaborate. In fact, in this paper I will report the thoughts and ideas of some experts of this field and professionals I interviewed considering cryptocurrency and the blockchain structure. Nonetheless they offered me concepts that can also be connected to the other areas of FinTech. During the interviews I tried to follow the same structure by asking about the combination of FinTech and Healthcare, then others related reflections aroused and it is from these that I took my inspiration that is constantly driving me in this research.

Moreover, everything will be analysed by another perspective because, this time, the subject is FinTech track in the healthcare industry, hence, not only the application of blockchain technology in this industry, is at stake. This will maybe result in a more general analysis.

Indeed, in this paper I would like to focus my research more on the Health Insurance effects, introducing what it is called InsurTech, already cited before. I would like to understand the road of FinTech in the Healthcare sectors.

3.2 THE REALITIES

3.2.1 THE CONNEXIONS

According to Statista (2019) China is first in the line as the country in which 91% of SMEs used FinTech solutions, the US is second, Africa is third and then UK and Mexico follow.

In line with a WHO study (2019) there are still many people that suffer and cannot afford the basic care, lack of health coverage and live in poor financial conditions. Indeed, nowadays the cost of healthcare is expensive so that the idea of a Universal Health Coverage (UHC) has been put among the sustainable Development Goals meaning with that a coverage that ensuring people an access to care and prevent the poverty due to a fragile financial condition.
According to WHO the efficiency of healthcare is due to a care of quality that considers people its center.

WHO Global Health Expenditure database[2] shows that Italy Domestic Public Health Expenditure corresponded to 6.5% of GDP in 2017, the same percentage of a 2005 despite an increase of the population of almost 3.000.000 of people. Besides this WHO table shows that the Domestic Public Health Expenditure percentage of Total General Government Expenditure decreased of a 0.3% from 2005 to 2017. To briefly sum up the Italian scenario in those years we can affirm that: the population has increased, the domestic expenditure on health has been stable, the percentage of the domestic public health expenditure to the Total General Government expenditure is diminished and the current Health Expenditure is slightly decreased (from 2863 to 2840 US dollars) as well as the GDP per capita falling down to 32.127 US dollars in 2017 from the 34.239 dollars of 2005. In Italy in 2017 the reliance on out-of-pocket spending is around the 20%.

The situation of the United States of America is different. The U.S. is a country in which an augmentation of the population between 2005 and 2017 lead to an increase of the GDP and a relative increase in the percentage of the Domestic Public Health Expenditure as well as the part of government expenditure destinated to healthcare.

2 https://apps.who.int/nha/database/country_profile/Index/en

China presents a context in which the GDP almost triplicated, followed by an evident augmentation in the Current Health Expenditure and a consequent increase of the Domestic Public Health Expenditure related to the Current Health Expenditure and related to the GDP. In China the Out-of-pocket expenditure percentage of the Current Health Expenditure diminished and the Domestic Public Health Expenditure related percentage of the Total General Government Expenditure increased of 1,6 percentage points.

In Argentina the increasing of population is connected to an augmentation in the GDP of the country as well as an increase of the Domestic Public Health Expenditure compared to GDP shifting from 3,9% of GDP in 2005 to 6,6% of GDP in 2017. Argentina in those years assisted to a reduction of the Out-of-pocket payments of most of the half of the percentage in 2005.

Moreover, in Singapore an increase of GDP is related to an increase in the population and a correspondent augmentation of the Domestic Health Expenditure percentage compared to the GDP in addition to a move of 5,7 percentage points from 2005 to 2017 of the Domestic Public Health Expenditure compared to the Total General Government Expenditure. In Singapore there is also evidence of a reduction of the Out-of-pocket payments that falls from the 50,0% to 32,1% of the Current Health Expenditure.

Inkster et al. (2019) in affirm that the acknowledgement and the comprehension personal financial data could lead to an improvement of the quality of healthcare also arguing that "linkage to information about mental and physical health could create more holistic financial support systems" sustaining a "strong connection between money and health"(Inkster et al. 2019, p. e110) underlying the fact that a scarcity of money can deteriorate the state of health of a person that, consequently, conditions his/her financial situation. In this context FinTech shows its great potential in order to develop the research, as suggested by Inkster et al. (2019).

In "Building the future of financial healthcare technology practices" Inkster et al. (2020) think that today the costumer and her/his needs are more and more at the center and that a connection between health, technology and finance could have a positive impact and boost innovation, believing in the potential of what they call "FinHealthTech", that would help people who live in poor financial conditions.

In line with "Opportunities await: how InsurTech is reshaping insurance" a PwC Global FinTech survey (2016) only the 32% did not have nothing to do with FinTech at that time.

Okada (2018) reports that in 2016 in Japan a medical insurance connected to the "health age" started to be diffused promoting health in order to decrease premium costs, better the health conditions of a persons are, always related to its age, lower the premium cost is. This is not, according to Okada (2018) a search for efficiency, but it is also an improvement of behaviours. This is not a lonely case and these forms of insurances are defined as "promotion-type" insurances.

As a matter of fact, Okada (2018) also affirms that platforms are also experimenting these new incentives. Despite this, as Okada (2018) affirms it is also true that this new insurance leads to a system in which the highest costs are for the ones with a bad health status, that unfortunately, in most of the cases is not always the result of a scarcity of willing to stay healthy. In these terms Okada (2018) launches an alarm for the need of future progresses. Then he also recalls the existence of group insurances and the constant existing need for partnerships between "insurance companies" and "InsurTech".

Lee et al. (EY 2019) let us imagine a future in which health connected to finance could be a great source of value coming from the connection of technology, health and finance pointing out the already cited connection between all the forms of health. It is exactly this linkage that as Lee et al. (2019) report will make prevention possible and it will be an incentive for a reduction of insurance costs.

In my previous study I interviewed some professionals that could have been related to the blockchain and cryptocurrency field. At that time I got in touch with my respondents by mail and I conducted a semi-structured interview to each of them in order to find an answer to the three above reported research questions (could FinTech, in particular cryptocurrency, add value on the Healthcare industry?, considering the binomial FinTech-Healthcare what is the meaning of money then?, will institutions be active part of the system?")

The people who I interviewed are: David Koepsell, the CEO and cofounder of EncrypGen, Adrienne Mendenhall, director of Business Development ACCESS Health International Singapore and one of the main people working in the FinTech program; David Yermack, Professor of Finance at the New York University in the United Sates; Jeremias Grenzebach, co-founder and core developer at Dentacoin; Hugh Terry, the founder of The Digital Insurer. All their thoughts have been really useful and inspiring in the previous and in the current analysis.

Terry, one of the respondents whose purpose is "working together to accelerate the digital transformation of insurance" putting emphasis on acceleration, considers that technology has a

great potential in the management of risk. This is not the only one potential stated by the founder of The Digital Insurer that mentions Sweatcoin. As the name suggests this app that gives incentives to the users in order to improve their health conditions by rewarding steps with virtual money enhancing the importance of technology in fostering prevention in health leading to an overall reduction of costs. This is also the mission of the cofounder of Dentacoin who answers at the question "what is your mission?" with the following sentence: "by the means of smart tech solutions, we aim to shift the paradigm from treatment to prevention, thus improving oral health and reducing costs". The founder of the Digital Insurer maintains that the privacy is a "massive issue" but at the same time the sharing of data is extremely "valuable" especially in prevention and this drives us in a delicate sphere.

Terry wants to enhance the importance of the need of a consumer centered system too.

Yermack thinks that the blockchain is the most fascinating part of cryptocurrency of which he enhances the great value of its security.

A real example of the application of FinTech on healthcare is given by Dentacoin that defined by the words of Grenzebach is "the first and only blockchain solution for the global dental industry" consisting in a network of smart contracts in order to have dental assurance and cryptocurrencies as a method of payments and a tool for rewarding.

Grenzebach explains a reality in which FinTech is combined to healthcare by offering to users the possibility to earn Dentacoin The dentists, to whom Dentacoin can represent a symbol of "loyalty", are rewarded too. The earnings have multiple uses and, according to the co-founder, are subject to a "network effect" meaning that the adoption of the cryptocurrency is a determinant of the value of the currency itself. Referring to the combination of FinTech and Healthcare, Grenzebach maintains that "the main benefit it brings to the world is the secure transfer of data and value. It will take time for the structured Healthcare sector to adapt to this new technological environment, but the benefits are indisputable".

"Digital is the new "now" and is shaping the healthcare systems of the future" (Deloitte 2020, p.1) consequently more and more is the current and future presence of technologies. According to Deloitte the advantages and the triggers of this digital path are: the necessity of a "predictive and preventive care", the reduction of costs and errors and the effectiveness and attention in the care as well as the "consumer/patient demand".

"It is crucial for health care stakeholders to work toward a future in which the collective focus shifts away from a system of sick care – treating patients after they fall ill to one of healthcare" (Deloitte 2020, p. 4). This sentence underlines the importance of prevention in healthcare and the possibility to achieve it rethinking about the existing structure and system. In fact, Deloitte

continues then explaining that a so-called smart health community (SHC) approach could lead to accessibility, efficiency, higher quality and innovation.
Deloitte (2019) cites the blockchain as one of the technologies that is shaping the healthcare that is looking for acceleration and capabilities to keep up with the trend. Following the analysis done by Deloitte the healthcare sector has many proves consisting in reshaping its linkage with finance by offering high level and accurate healthcare trying to pursue a sustainability, intended by financial perspective, embracing innovation and following the digitalization moving the attention toward the consumer and always look for talents.

According to the International Monetary Fund (2020) FinTech is an optimal tool in order to guarantee the access to more people in the financial system, this seems to be a booster of economic development. The IMF then adds "provided the financial sector is well regulated, it does not hurt financial stability" (Sahay et al. 2020, p.3). In line with this thought it is possible to comprehend that FinTech can offer a path of opportunities, even if, as the IMF specifies "the benefits and risks cannot be easily quantified".
There is the need of a good management of this "innovation". In fact, the IMF discovers that FinTech could be a promoter of a more open access to finance reducing unjustified privileges and having a huge impact on the GDP, but, at the same time, it could make new forms of not inclusion arise. The IMF, at this purpose, has ideated two different indexes: "the "digital" and the "traditional" financial inclusion indices".
The IMF shows that the areas touched by this finance and technology combination are: "domestic payments", "credit", "remittances" that in simple words could be described as the money sent back to countries of origins, "savings", "insurance" and "investment management".

The IMF explains then that FinTech is not disrupting the existing financial system due to the complementary role that it plays in the actual financial landscape in a "give and receive" relationship. Furthermore, the high presence of FinTech it is explained to be connected with the scarcity of the traditional system. Nonetheless the IMF continues specifying the competition is not excluded. In both cases, collaboration and competitions are leading to new conceptions of financial services.

3.2.2 THE EXISTING "FINHEALTHTECH" REALITIES

The expression "finhealthtech" already compared above as a term used by Inkster et al. (2020). It stands for the combination between finance, healthcare and technology. In this paper maybe it is preferable to interpret it as the combination of FinTech and Healthcare, or better a plunge of the FinTech area in the Healthcare industry.

Talking about FinTech in Healthcare means approaching the digital health theme. In order to introduce the digital health argument, this elaborate will refer to the Draft global strategy thought by the World Health Organization (WHO). In this draft, in fact, the WHO underlines the capabilities of the new technologies to positively impact the existing and fragile healthcare system in order to improve and broad it in many parts of the world enhancing the search for universality,referring to a "health for all" (WHO 2020) and for an intersectoral feature. As a matter of fact, the purpose of the WHO is that of promoting this digital wave on health in a way that respects the principles, among others, of ethics, sustainability and security looking for the importance of a set of rules supporting the idea that "digital health can improve the efficiency and the cost-effectiveness of care, allowing for new business models in the delivery of services"(WHO p. 5). It consists in a building of digital networks that smooths procedures and includes the many promising security.
Despite this, the level of digitalization will be different in countries shaping respectively following the standards of every single country and accompanied by a solid structure looking for inclusion and safeguarding with a proper attention toward the poorest countries. Even if considering the different situation of countries the WHO underlines the necessity of a common and cohesive path toward development in the digital scenario with a constant relation with the existing system in a framework of rules boosting the digital in healthcare, assuring security and including the people at the center widening knowledge and integration. The purpose is that of achieving sustainability, pursuing an overall efficiency, catching up with digitalization with a final evident improvement of health. WHO stands out for the importance of collaboration, with a constant observation of the results and an implementation of these aiming to development.

In line with Deloitte (2018) digital in health is driving to a better quality thanks to the technological tools that allow data transmission and a new conception of the overall healthcare system. The prevention in medicine would help in reducing the overall costs. This decrease of costs connected to an improvement of quality remain the major focuses also this time. A technological expansion in the healthcare will offer benefits to the system as a whole pursuing optimization deforming the actual conception of perceiving cares. Deloitte (2018) predicts a 4P future for the healthcare system that namely will be driven by prediction, prevention, personalization and participation.

According to Noizet (2020) the digital health in insurance is a positive step in order to make this sector and its procedures easier.

Chan (2019) enhances the increase of the consumer centricity in the field of his/her health predicting a future healthcare that will develop around the user enlarging the technological presence in the industry in order to smooth the line. Yakey (2019) thinks that in 2020 blockchain will become more and more present in the insurance industry. Also, Chan (2019) argues that in the near future also insurance will change from "risk protection to risk prevention". Moreover Deloitte (2018) stands for the promotion of value in healthcare, in these terms the passage consists from a fee-for-service toward a "value-based care".
Furthermore Noizet (2020) is of the idea that there is more and more the attention toward the services as business guidelines in the insurance scenario building, in this way, a sort of ecosystem around the patient. As also Grenzebach affirmed, Noizet (2020) argues that digitalization in insurance becomes a mean of loyalty.

Frew (2019) lists the many innovations in the digital financial health: the possibility of patient-provider connection through text message and the consequent easiness of payment through the same platform, this is the so called "Text-to-Pay"; "Digital solutions"; smoothing the line between the system and the user; then they also introduce the "mPOS"; the "Online Portals and Payment Plans" and the "EHER integration".

The combination between Finance and Health recalls the concept of InsurTech, that, as explained before, could be considered as a part of the FinTech world and could be a good representant of this area in the healthcare industry.
Cenfri (2019) presents a map of the diffusion in the InsurTechs in the emerging countries showing 202 initiatives in Africa, whose 33 percent in the Healthcare field 143 in Asia and 136 in Latin America.
According to Levin (2020) the health insurance is in the direction of the modernization firstly through a better connectivity and sharing of data between the different involved actors.

As maintained by IlSole24Ore (2020) the Insurance sector is vastly looking forward digitalization especially in this last period. As a matter of fact the journal affirms citing the "InsurTech Global Outlook report" by Everis and Ntt Data that the investments in this field have more than duplicated. Furthermore, ilSole24Ore states that the United States is in the pole position. IllSole24Ore (2018) suggests that the future of FinTech and InsurTech will be fertile.

This because as also maintained by El-Masri (2019) in the actual context the GAFA[3] are more and more present.

The society is approaching digital in each of its forms. PayPal[4] bound to healthcare is a good example of the use of FinTech in the management of the healthcare. As a matter of fact, PayPal offers different "medical plan choices", that cover the expenditure of prevention in healthcare, and, through several features, allows the consumer to choose the most fitting plan. It seems to be a booster of virtual and preventive care.
Garrity (2019) reports the "Global Care Pay" initiative based on a blockchain structure aiming to cost-efficiency reducing the expenditure on bureaucracy.

3.3 COMMENTING DATA AND HYPOTYZING CONSEQUENCES

Data show that FinTech is an emerging topic and it is widely spreading in almost every part of the world with different percentages even if its adoption is at different levels.
In a world that still presents some lacks in the healthcare industry the FinTech could offer an opportunity thanks to its tools that are marks of transparency and feasibility. Probably, FinTech application would drive to a condition of efficiency thanks to the means and networks that would reshape the concept of healthcare centricity "putting people at the center".
Besides that, data demonstrate that healthcare is not at the same stadium in every country and that a different approach is needed. It is not so easy to identify all the bias in the different healthcare systems, but data manifest that there are still many people that do not live in a fair enough condition in order to be able to afford cares and this is not a reality that touches only the low-income countries. Despite this difference in approaching the contexts, a common focus toward the digital scenario seems to be the optimal solution.
In fact, as the above some of the collected data demonstrate, finance is hugely connected to healthcare and this connection causes a reciprocal influence between the two domains, consequently, it is easy to imagine that a change in financial services, that seems to offer an opportunity for accessibility and inclusion, could have a positive impact in the Healthcare system. Healthcare is precious and, exactly for this reason, its good management is essential. Digital is moving the attention toward the patient leading to innovation that includes the many. There are realities that are moving in this direction trying to improve more and more the quality

[3] GAFA: Google, Amazon, Facebook, Apple
[4] Medical plans overview. Available on: https://www.paypalbenefits.com/us/health/medical-plans-overview

of care at the same time thinking about strategies and models in order to reduce the costs and make the healthcare a service for many and not only for the ones who can afford it.

Financial Technology associated to Healthcare has driven this elaborate toward the research of Insurance connected to Healthcare and InsurTech showing that digital leads to preventive and cost-efficiency conceiving health lifestyles as method for rewards, payments and loyalty in relationships. This is an increasing phenomenon that allows to perceive healthcare closer to many.

As my previous elaborate already explored, the connection introduces to new forms of value.

The new technologies foster a new perception of risk. So far, quality, cost-efficiency and universality seem to be the purposes of a FinTech fingerprint in the healthcare industry.

In this new context is possible to affirm that there is the incentive toward a predictionary and preventive medicine. This is the case of the new shape of insurances that are approaching technology and also to the relatively new existing realities. This is the path that someone is taking, whereas others are working on it. The InsurTech is gaining more and more attention: the investments in this field are growing. Thanks to this innovative insurance there is the offer that shifts from a product to a service that is built around the consumer. This is a phenomenon that suggests the constant shaping of society around individuals as a search for efficiency.

It is also a track that reflects the modern context in which the digital becomes more and more a "must have" keeping in mind the actual pillars to follow for the future such as, for instance, sustainability and inclusion.

It is a new ecosystem that manages its resources around the important concept of "patient-centricity" introducing and developing the themes of personalization, individualization and customization that helps to considerate in a new manner the network of relation leading to a reduction of costs that is promoted by a preventive way of operating boosting in this way quality and covering inefficiency.

This introduces to the presentation of another key word: interoperability, that consists in the interactions of systems and their high compatibility in the level of communication and sharing. According to Iroju et al. (2013) interoperability in healthcare is a good mean to solve the inefficiencies of the system finding a solution to fragmentation and reducing the possibilities of errors and the overall costs. In fact, as Iroju et al. (2013) state, the lack of interoperability causes high costs and errors.

It is possible to understand from data that the concepts of interoperability, preventive healthcare due to technology introduction in the healthcare system and digital healthcare are also connected to new forms of payments that are based on prevention, rewards, trust and feasibility.

FinTech seems to be a tool for inclusion and smoothness so its application to healthcare could lead the system toward more integration due to its achieved cost-efficiency and quality.
Interoperability is also the result of the combination of technology to Finance and its application on the healthcare system leading to a new conception of healthcare made available by technological factors.
Healthcare could be an attractive industry and the digital firms that were not born in the health landscape are approaching this scenario because healthcare is a common interest.

CONCLUSION

A good regulation of the introduction of FinTech in the healthcare industry could help society to achieve a step ahead toward a universal healthcare system. FinTech is the connection of finance and technology, whose origin probably is traceable some years ago, but that, nowadays, is disrupting and/or adapting to the traditional context in many parts of the world raising attention and calling for collaboration. FinTech presents several opportunities and challenges. Besides that, it has appeared to be synonym of transparency, accuracy and smoothness. Along with this theory it is possible to represent FinTech as a set of areas and tools such as cryptocurrency, IoT, Blockchain, crowdfunding and InsurTech. FinTech seems to be a good ally for inclusion and development even if it is not protected by possible failures and makes doubts about privacy, security and possible forms of exclusion arise. The youngest generation seems to be mostly oriented toward this innovation.

FinTech is related to blockchain and cryptocurrency, namely respectively a chain of blocks that records information and data and a method of payment based on this technological structure. This time this elaborate preferred to quickly explain these two areas that I have already analyzed in the healthcare landscape in order to move in the broad field of FinTech and approach the InsurTech. As a matter of fact, my purpose still was that of figuring out the effect of the so called “FinHealthTech” combination: also this time I have tried to analyze the healthcare industry structure, recalling the four basic healthcare system models, and its several ways of management still considering with the expression “healthcare” a network of agents providing, organizing and receiving care. Patient centricity and prevention are the basic concepts that explain the possible results of the combination between FinTech and Healthcare. InsurTech is in some way related to the Fintech field and introduces new ways of conceiving insurance basing premiums on a system of rewards and building loyalty in the relationship between provider and client. Expenditure on health is still high and a FinTech scenario proposes to reduce the costs and improve the overall quality. There is in fact a suggestion considering a relation between finance and healthcare that causes a vicious circle influencing the state of health of people.

This is the trigger to realities that consider the health age as a parameter in order to measure costs and that foster prevention and centricity. Opportunities, risks and challenges have to be studied and deepened.

In conclusion, FinTech bounded to healthcare seems to be one possible road for integration but there is still a lot to understand.

BIBLIOGRAPHY

Adewolu Bayo. (2018). “A Perspective on FinTech’s growing influence on Financial Services”; *PwC Nigeria Alumni Breakfast Meeting. PwC.*

Baker Angela (2020). “How Financial Technology can help the Healthcare Industry”. *FinTech Weekly*.

Bennet Jessica, Kessler Scott, Panno Kellsy, Holt David, Garber Kate. “An introduction to FinTech: Key sectors and trends". *S&P Global. Market Intelligence*. October.

Cenfri (2019). “Insurance innovation spotlight: Insurtech in emerging markets”. (*Inphographics) Cenfri*.

Chan Joyce (2019); “InsurTech will transform the healthcare experience”. *Clyde &Co.*

Claessens Stijn, Frost Jon, Turner Grant, Zhu Feng (2018). “Fintech Credit Markets Around the World: Size, Drivers and Policy Issues”. *BIS Quarterly Review,* September.

D’Ascenzo Monica (2018). “FinTech and Insurtech, corrono gli investimenti a livello globale”. *IlSole24Ore*. December.

Deloitte (2018). “A journey towards smart health. The impact of digitalization on patient experience”. February.

Deloitte (2020). “2020 global healthcare outlook. Laying a foundation for the future”. Deloitte Insights.

Edermaniger Leanne (2017). «How fintech could power medtech»; *MedTechENGINE*; December.

El-Masri Mazen, Al-Yafi Karim, Samir Sherif Karma (2019). “The Digital Transformation of Fintech: Disruptions and Value Paths”. *Twenty-Third Pacific Asia Conference on Information Systems, China.*

Esser Antonia. van Vuuren Pieter Frederik Janse; Thom Mia (2019); “Insurtech for development: Emerging market trends. An update.” *(report) Cenfri.*

EY (2017). “Unleashing the potential of FinTech in banking”.

EY (2019). “Global FinTech Adoption Index 2019.As Fintech becomes the norm, you need to stand out from the crowd”.

Financial Times (2020). “Five areas of fintech that are attracting investment”; *The Financial Times Limited.*

Frew Jill (2019). “Innovations in Fintech Poised to Revolutionize Healthcare Payments”. *Cain Brothers. Industry Insights*; April.

Frost Jon (2020). “The Economic Forces Driving Fintech Adoption Across Countries” *Monetary and Economic Department. Bank for International Settlements. BIS Working Paper No. 838.* February.

Garrity MacKenzie (2019); “Former payPal CTO creates blockchain-based payment system for healthcare”. July.

Hwa Gary, Lloyd James, Hatch Matt, Bull Tom, Chen Sharon (2019); “Eight ways Fintech adoption remains on the rise”. *EY*. June.

ICAEW and ISCA (2018). “Fintech innovation: perspectives from Singapore and London”. *ICAEW THOUGHT LEADERSHIP*.

Iman Nofie (2020) “The rise and rise of financial technology: The good, the bad, and the verdict”. *Cogent Business & Management. 7:1, 1725309.*

Inkster Becky, Loo Peggy, Mateen Bilala, Stevenson Andrea (2019). “Improving insights into health care with data linkage to financial technology”. *THE LANCET Digital Health. Volume 1, Issue 3, E110-E112, July.*

Inkster Becky, Stevenson Andrea, Mateen Bilaal A.,Loo Peggy (2020). “Building the future of financial healthcare technology practices”. *V1.0 14.06.*

International Monetary Fund, World Bank (2019). “FinTech: The Experience so Far”; *Policy Paper No. 19/024*. June.

Iroju Olaronke, Soriyan Abimbola,Gambo Ishaya, and Olaleke Janet (2013) “Interoperability in Healthcare: Benefits, Challenges and Resolutions”. *International Journal of Innovation and Applied Studies ISSN 2028-9324 Vol. 3 No. 1, pp. 262-270*. May.

Kagan Julia (2020). “Financial Technology – FinTech”. *Investopedia.*

Kalmykova Ekaterina, Ryabova Anna (2016). “FinTech Market Development Perspectives*”. SHS Web of Conferences 28, 01051*.

Lazarow Alex (2019). “How FinTech Is Eating The World”. *Forbes*, July.

Lee Mike, Wightman Mark (2019). “How will you personal data affect your future health and financial well-being?”. March.

Levin Michael (2020). “Lessons from Plaid for Health insurance digital transformation”. *FinTechNews*; August.

Mention Anne- Laure (2019). “The Future of Fintech”. *Research-Technology Management. 62:4, 59-63.*

Mettler Matthias (2016). "Blockchain technology in healthcare: The revolution starts here". *2016 IEEE 18th International Conference on e-Health Networking, Applications and Services (Healthcom)*. Munich. pp. 1-3.

Nakashima Tokushi. “Creating credit by making use of mobility with FinTech and IoT”. *IATSS Research 42 (2018) 61-66; Global Mobility Service Inc., Japan.*

Noizet Aline (2020). “The New Era of Health Insurtech in the Insurance Industry”. *Community on Insurance*.

Okada Futoshi (2018). “Business Model Changes Through Collaborative Dynamic Capabilities Through Insurance Company Use of IT (InsurTech) in the Medical and Health Sectors”. Collaborative Dynamic Capabilities for Service Innovation Creating a New Healthcare Ecosystem,Edited by Mitsuru Kodama. Chapter 6.

Philippon Thomas (2016). “The fintech Opportunity”. *Nber Working Paper Series; National Bureau of Economic Research*. Chapter 3.

PwC (2016). “Opportunities await: How InsurTech is reshaping Insurance”. Global FinTech Survey. June.

PwC (2020). “FinTech Calls For Fuel” “To exploit a great, maturing and increasing potential”. Italian FinTech Observatory 2020.

Raj Vivek (2019). “InsurTech – A Tool for Insurance Penetration”. *Journal of the Insurance Institute of India*. October.

Reid T.R. (2009). “Four Basic Models of Health Care”. Health: The Big Picture. *The Change Agent*. March.

Reynolds Oliver (2018). “A Look at Healthcare Models Around the World”. *FOCUSECONOMICS Economic Forecasts from the World’s Leading Economists*. March.

Ribitzky Ron, Clauson Kevin, Ahier Brian (2018). “Pragmatic, Interdisciplinary Perspectives on Blockchain and Distributed Ledger Technology: Paving the future for Healthcare". *Blockchain in Healthcare Today. ISSN 2573-8240 online. ResearchGate*. March.

Romanova Inna, Kudinska Marina (2016). “Banking and Fintech: A Challenge or Opportunity”. *Contemporary Issues in Finance: Current Challenges from Across Europe*; *Contemporary Studies in Economic and Financial Analysis*. *Vol. 98*. Emerald Group Publishing Limited, pp. 21-35.

Rusconi Gianni(2020); “L’insurtech riparte dal coronavirus : nuove opportunità dopo il boom del 2019”. *IlSole24Ore*. April.

Sahay Ratna, von Allmen Ulriic Errison, Lahreche Amina, Khera Purva, Ogawa Sumiko, Bazarbash Majid, Beaton Kimberly (2020). “The Promise Of FinTech: Financial Inclusion in the Post COVID-19 Era”. *IMF; Departmental Paper No. 20/09.* July 1.

Statista (2017). “Distribution of FinTech startups in Italy as of May 2017, by sector”.

Statista (2019). “FinTech adoption rates in financial management sector in selected countries worldwide in 2019”. June.

Statista. FinTech worldwide. Digital Market Outlook.

Stoeckli Emanuel, Dremel Christian, Uebernickel Falk (2018). "Exploring characteristics and transformational capabilities of InsurTech innovations to understand insurance value creation in a digital world". *Electron Markets 28,28:287-305.*

Thakor Anjan V. (2020). "FinTech and banking: What do we know?". *Journal of Financial Intermediation. Volume 43.*

Visconti Roberto Moro (2020). "Connecting Patient-Centric Blockchains with Multiplayer P2P Networks and Digital Platforms". *ResearchGate.* January.

World Health Organization (2019). Universal Health Coverage (UHC). January 24.

World Health Organization (2020). Draft Global strategy on digital health 2020-2025. July.

Yankey Cheryl (2019). "Blockchain breaks out and enjoys widespread adoption". *Clyde &Co.*

Zhang Peng, Shmidt Douglas C., and White Jules (2018). "Blockchain Technology Use Cases in Healthcare". *Vanderbilt University, Nashville, TN; Gunther Lenz, Varian Medical Systems, Palo Alto, CA. Book Chapter Proposal for Chapter 3.*

9914 words (excluding title page, index, abstract and bibliography)