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*The challenges and recent developments in the compliance
function of the fintech companies*

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1. ABSTRACT

The 4th Industrial Revolution has brought changes in almost all aspects of our lives and consequently to the way we interact with money and financial services. Several financial innovations like the Blockchain Technology, the Distributed Ledger Technology, the Cryptocurrencies, the Smart Contracts, the Big Data etc have changed the financial landscape with the new technologically advanced services they provide like the electronic wallets, the digital payment servicem, the robo – the advice, peer – to – the peer lending, crowdfunding etc.

These companies face risks like prudential and non – compliance risks, fraud risk, third party – reliance failure risk etc. The compliance function, as a part of the company’s second line of defence, plays a significant part in risk mitigation.

This paper describes the technological innovations and the most common financial services these companies offer. Afterwards, the risks that this industry faces are explained and the role of the compliance function in risk mitigation is analysed. Finally, four relevant case studies are presented that signify the need for solid corporate governance practices in this industry and the importance of the compliance function. The modern fin tech ecosystem proposes that companies and legal entities become self-regulated using smart contracts, Artificial Intelligence etc. This thesis tries to prove that this is not yet the case and that the existence of the compliance function (along with the other lines of defence of course) is indispensable.

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2. INTRODUCTION

The modern era is largely defined by the wonders of the 4th Industrial Revolution. The disruptive innovations that use advanced computational power and artificial intelligence, along with the connectivity of people through social media and digital platforms, have changed the way we live, work, invest, socialize, vote, get educated etc. The financial sector was one of the first industries where such high-tech advancements were experimented. The integration of technology to the financial services has already started and the results of this endeavour will revolutionize the way people do business, invest, carry their money and so on. The traditional institutions of economy are being redefined as the bank has nowadays become an e- bank and the same applies to e- money and e trading.¹

In the following chapters the term fintech is being analysed, as well as some of the most important innovations that are applied in the financial sector.

¹ World Economic Forum. 2021. The Fourth Industrial Revolution: what it means and how to respond. [online] Available at: <<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>> [Accessed 12 October 2021].

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3. DEFINITION AND ANALYSIS OF THE TERM 'FINTECH'

3.1 Definition

According to the Merriam Webster dictionary Fin Tech is defined as “*The products and companies that employ newly developed digital and online technology, in the banking and financial service industries*”.²

The Financial Stability Board has defined Fin Tech as the “*technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services. The financial technology innovations are affecting many areas of the financial services.*”³

3.1.1. The evolution of the industry

These technologies and methods are not limited in number, but they are evolving constantly, adding new ways of delivering financial services. In this new fintech ecosystem significant investments in new technologies are made by the new firms that enter the financial market as well as their traditional competitors, the incumbent financial institutions that try to stay in the competition⁴.

Since the appearance of the first ATM machine back in the 1970s, that revolutionized the banking transactions, the financial landscape has changed dramatically. Many factors accelerated these transformations. Firstly, in the 1980s and 1990s we have the liberalization of entry and ownership restrictions in the financial services.⁵

² Merriam Webster <https://www.merriam-webster.com/dictionary/fintech> [Accessed 12 October 2021]

³ 5) Financial Stability Board. 2021. Financial Stability Implications from FinTech Supervisory and Regulatory Issues that Merit Authorities' Attention. [online] Available at: <https://www.fsb.org/2017/06/financial-stability-implications-from-fintech/> [Accessed 10 October 2021].

⁴ x. EBA 2021 “ANALYSIS AT A GLANCE” Eba.europa.eu. 2021. [online] Available at: https://www.eba.europa.eu/sites/default/documents/files/document_library/News%20and%20Press/Communication%20materials/Factsheets/1016165/RegTech%20factsheet.pdf [Accessed 8 October 2021].

⁵ Yesha Yadav and Chris Brummer, Fintech and the Innovation Trilemma, 107 Georgetown Law Journal. 235 (2019) Available at: <https://scholarship.law.vanderbilt.edu/faculty-publications/1084>

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Then we have the so called “digital triumvirate”⁶: the development of computation, connectivity, and data. The computational power has not only augmented in the recent years, but it is also becoming cheaper and thus accessible to everyone. In addition, all sorts of data are collected and stored serving diverse economic and commercial purposes. Due to the increasing digital connectivity the data in storage can be shared globally and that has created innovative technological tools that help companies provide new financial services to their clients.⁷

The combined effect of the deregulation and technology leads to the spur of institutional change, that provides speed and improved quality in the financial transactions, lower information costs and lower transaction fees. The traditional brick- and- mortar banks with the numerous physical branches are trying very hard nowadays to compete the digital platforms and mobile apps that offer similar financial services cheaper and faster. Another important element of the evolution of the digital economy is that consumers that were marginalized by the financial and economic system can enjoy the services and products of companies that are similar to banks. Fin tech has made the access to financial instruments more inclusive to millions of people. The examples of E- Pessa and Ali – Pay is significant⁸⁹. Through these mobile applications, thousands of users who live in poor rural areas in Africa and Asia have gained access to electronic payments and thus have made their life better.

3.2 The important technological innovations

The evolution of fintech became a reality because of the important technological innovations of the recent years:

⁶ Arslanian H., Fischer F. (2019) The Digital Triumvirate of Computation, Data, and Connectivity. In: The Future of Finance. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-14533-0_1

⁷ Deloitte (2021) The Future of Fintech <https://www2.deloitte.com/tr/en/pages/financial-services/articles/the-future-of-fintechs> <https://www2.deloitte.com/tr/en/pages/financial-services/articles/the-future-of-fintechs.html>

⁸ Ignacio Mas and Dan Radcliffe “Mobile Payments Go Viral M-PESA in Kenya” https://documents1.worldbank.org/curated/en/304221468001788072/930107812_201408251051724/additional/634310PUB0Yes0061512B09780821387450.pdf

⁹World Line Documentation Alipay <https://epayments.developer-ingenico.com/payment-product/alipay/overview>

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3.2.1 The Distributed Ledger Technology.

A major innovation that is the basis for many more applications of fintech is the distributed Ledger Technology or Blockchain Technology, which is the underlying technology of the cryptocurrencies like the Bitcoin or the Ethereum. The blockchain technology has revolutionised the way that anything valuable, like tangible and intangible assets is transferred. The innovation that characterizes the distributed ledger technology is the fact that the system is decentralized. Instead of having a central administrative point, or a central node that coordinates the other participants of the project, this system has various equal peer – to -peer- nodes that operate together on an equal basis without any hierarchy. The above can be better explained with an example. Let's suppose that the user A wants to transfer a sum of money to user B. In the traditional banking system, A would go to a central counterparty, the bank, which would execute the transaction through its private exclusive ledger and receive fees for this service. In the decentralized system there is no bank, just the community of the users that must validate the transaction, after they all verify that A has the necessary funds to proceed. This can only be done when the ledger is open to all participants who can share at any moment the information of every user. To avoid the possibility that a node attempts to present fraudulent statements, the participants agree on a protocol that would help them verify the credibility of the information. In the previous example, when a node verifies that A has the money, it must inform the other nodes which in turn verify by themselves that the protocol was followed.

3.2.2 The blockchain technology.

It is an application of the distributed ledger. On a blockchain platform all the pending transactions form a block, that follows the previous block of the already executed transactions, and inevitably the latter would be followed by the blocks of the future transactions. In this way, the group of transactions or “blocks” creates a chain that is being formed in chronological order, much like using a book as a ledger, where transactions are recorded chronologically, and new transactions are registered to the blank pages. If a user or a node wants to validate the information over the transactions, it can use this “book” or blockchain and get the information it wants. To the inevitable question if it is possible that this information gets tampered, the answer is that the data

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that is recorded in the blockchain is protected against unauthorized alteration with the use of a cryptography technique, called “hash”. With this method all information is encrypted with an alpha arithmetic code, that contains the hash value of the specific transaction and the hash value of the previous block. Through this repetitive procedure the accuracy of the blockchain order can be verified by all participants up to the initial block which is called the genesis block. The blockchain can get altered only with the consent of the majority of the users.

For a block to be accepted by the users it has to get verified and receive the necessary consent. The consensus process is called mining and it is performed like this: every node of the distributed ledger has incomplete transactions that are presented to the network, but they are not attached to the blockchain yet as the consensus is pending. Each node proposes the candidate block for the “chain”. To succeed it must solve a mathematical puzzle that contains a “number used once nonce” that will be attached to the hash value of the candidate block and it also contains the hash value of the previous block. This number is found using the trial-and-error method and this process that requires great computational power is called proof -of -work. As this method is accused of consuming too many energy resources, some blockchain platforms have found other ways to perform the mining process like the proof of stake, where the nodes complete each other to verify first the accuracy of the candidate block.

The blockchain platforms can be either open- public or closed – private. At the latter the participants need permission to join the platform.¹⁰

To recapitalize the blockchain technology is decentralized, transparent, immutable and consensus driven.

With the use of blockchain technology all assets can be digitized so that they can be negotiated, sold, or traded. This process is called tokenization. The token is a digital proof of ownership of the asset, and it can be uploaded to the digital platform. If the seller and the buyer agree on the price of the token, then the token is transferred to the byer along with the asset or a part of it, if the token is referred to a fraction of the ownership of it.

¹⁰ 25) Panayotis Alexakis, Faidon Kalfaoglou 2019 “The Regulatory Framework of the Banking System” Nomiki Bibliothiki p.206 fol.

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When the tokens are created, they are offered to the public through a procedure that is called Initial Coin Offering or ICO. The coordinators of the ICO write down on a “whitepaper” their investment proposals that need funding through tokenization. The investors buy a part of the project through the ICO tokens that they can keep and enjoy the profits of that investment or sell them at the secondary market.

3.2.3 The cryptocurrencies:

The cryptocurrencies are the oldest and most popular examples of the crypto assets. Their difference to the traditional currencies is that they are not issued by a central bank. They are used for trading on various applications unlike the tokens that are issued to be used on certain assets. The issue of the Bitcoin and the other cryptocurrencies have challenged the opinions of the academic community on the definition of money and its function. According to the classic approach money has three functions: Primarily, it is the measure of the value of the goods and services. Secondly it is a payment instrument and thirdly it is an instrument for the preservation of the value for the future payments a fact that underlines its timeless importance.

All the above functions of money are achieved only when there is trust among the participants of the money exchange. Traditionally, public, or private centralized administrative authorities issued money, while attempts of private entities were not successful due to the fraud incentive.

The cryptocurrencies have changed this established architecture and they advertise that they achieve trust using technology. For example, the acquisition of the Bitcoin can be done as follows: Firstly the consumer must download a digital wallet and then he has to fill it with the cryptocurrency. He can either buy bitcoins using fiat currency or he can “mine” the currency with the same technology we described above at the blockchain chapter. The mining process guarantees anonymity due to the encryption methods that are used and safety from fraud and duplication of the currency because of the use of verification methods similar to the blockchain hashing and tokenization. When someone wants to make a transaction using bitcoin currency that was acquired by both the abovementioned ways, the legitimacy of the transaction is verified by the participants of the ledger and the relative consensus is given.

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3.2.4 The Smart Contracts

These are programs that are stored on a blockchain system, and they are developed to run when predetermined conditions (which form the “terms” of the contract), are met. These conditions are written in lines of code, which controls the execution, and guarantees that the executed transactions are trackable and irreversible.

In this way trusted transactions and agreements can be carried out between anonymous users without the need of the intervention of a central legal or administrative authority. They are also trackable and irreversible according to the principles of transparency and consensus that are met on all the blockchain applications. Moreover, the participants are reassured about the accuracy of the outcome as there is no human intervention in the process, that could cause false execution or delay.

Examples of the application of smart contracts in the fintech industry can be found in the credit mortgage approval procedure. The digital platform collects the customer identification data and financial documents and afterwards it processes and stores them automatically. When this task is concluded, the executed contract automatically authorizes the next step of the procedure, which is the decision on the eligibility of the client to be granted the credit or the mortgage that is executed by an algorithm.

National legislative bodies are thinking about ways to incorporate smart contracts into their legal framework. The Cyprus Republic, for example, has issued a deliberation process on adding provision for the use of smart contracts to the Contract Law.

3.2.5 Big Data & Big Data Analytics.

In today's digital and connected everyday life, massive amount of information circulates through devices, private and public platforms, the social media e.t.c. All the above consist what we call Big Data. This data is found on various forms such as structured data, like an Excel sheet, semi structured, as in e mails and unstructured, like videos and photographs. Due to its volume, Big Data cannot be stored, processed or analyzed with the use of the conventional information technology tools. Once gathered in its raw form Big Data is practically useless, unless processed to extract out of it meaningful insights about consumer behavior and preferences, market trends,

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company operations etc. This process that interprets Big Data is called Big Data Analytics and it applies to the fintech industry in various sections such as credit risk scoring and assessment, fraud detection, prevention security etc.¹¹

3.2.6 Cloud Computing and Storage

It is the delivering of computer and storage services, like data storage, servers, databases, networking, and software, over the internet and not on the individual server of computer of a company with the use of physical means. This innovation has enhanced the cheap, fast, and effective communication and interconnectivity of the various functions and operations of the companies not just locally but nationally and sometimes globally. With the use of cloud computing and cloud storage, the physical space manpower needed to operate large loads of data is minimized and someone can use a banking or a trading service without the need to visit a bank. It is the underlying technology of the fintech platforms and smartphone e - pay applications that was discussed previously.

3.2.7 The Artificial Intelligence and Deep Learning.

Scientific research has succeeded in creating computer programs that adopt qualities and capacities that are very similar to the way the human brain functions such as contemplation, judgment, and intention. Based on this software these applications can make decisions which normally require human level of expertise and in addition scientists have made it possible that these computer systems can continuously update their skills and “learn” new things through their interaction with other forms of software or people. This characteristic is known as “Deep Learning” and it helps the users (companies, government entities etc) to operate with smoothness, security, transparency, and speed, as no human intervention in the process is needed.

¹¹ EBA REPORT ON BIG DATA AND ADVANCED ANALYTICS 2020. [online] Available at: <https://www.eba.europa.eu/sites/default/documents/files/document_library/Final%20Report%20on%20Big%20Data%20and%20Advanced%20Analytics.pdf> [Accessed 10 October 2021].

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3.2.8 The Biometric Technology.

It is the technology that allows individuals to be identified with the use of their unique morphological and behavioral characteristics.

The morphological identifiers mainly consist of fingerprints, the hand's shape, the finger, vein pattern, the eye (iris and retina), and the face's shape. The most common behavioral measurements are voice recognition, signature dynamics (speed of movement of pen, accelerations, pressure exerted, inclination), keystroke dynamics, gait, the sound of steps, gestures, etc.

Biometrics technology is very important for the fintech industry, because it can authenticate the participants easily, securely and without much cost. It is a prerequisite for the onboarding of new clients, the Know Your Client procedure, and the security of the transactions and operations of the company. ¹²

3.2.9 The Internet of Things

It is a system of everyday devices that are connected to the internet and interconnected to each other as well. These devices that include wearables like smartwatches, smartphones, GPS trackers, smart TVs, robot vacuum cleaners etc, gather and communicate information of our everyday activities not only to each other but also to bigger digital platforms like Google, Facebook etc. In this way with the use of Artificial Intelligence and Big Data Analytics, companies can create the consumers' profile and use it for marketing purposes. These applications help fintech companies to some extent by creating the marketing profile of the consumer and in case of insurance companies by tracing and rewarding the individuals who engage in some sort of physical activity for the benefit of their health.

3.3 The Fintech services.

The fintech companies provide the following services:

¹² KPMG 2021 A smarter way to authenticate customers A smarter way to authenticate customers. [online] Available at: <<https://home.kpmg/xx/en/home/insights/2019/06/smarter-way-to-authenticate-customers-fs.html>> [Accessed 10 October 2021].

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3.3.1. Digital Payments

In the financial market there are already many companies that offer e-wallets and digital payment services. The consumer can open an account through a platform without visiting a physical branch of the company. A credit or debit card can be issued and sent to him by mail, although instead of a physical card, a mobile application can serve the same purpose. As the transactions of the users take place among their electronic wallets the process is quick, safe and cheaper, compared to the fees the banks impose. The same benefits can be found at the fintech companies that trade fiat and crypto currency, as they offer best exchange rates and lower fees, compared to the ones the traditional banks ask.

The risks associated with this service (apart from the general risks of fintech that will be analyzed in the following chapters) are regulatory risks in relation to the AML/CFT crimes: criminals who launder money can benefit from the on line onboarding of clients, and launder money through “money mules” who would pose as legitimate clients.

3.3.2 Advice and Planning

Artificial Intelligence technology has revolutionized the field of financial advice and planning. Fintech companies offer these services through applications that first profile the clients with the use of algorithms and then specially designed robots authorize transactions or provide advice to the customers on products and services. These applications can be found at investment fintech firms and insurance platforms that also use robots and chat boxes to promote their products.

The possible risk of this technological applications is the danger that the algorithms that are designed to profile customers are not sensitive enough to read the data correctly and in case of an unclear outcome they reject the application of the customer without asking him for further clarifications as a human employee most likely would have done. Algorithms have been found to make incorrect decisions and exclude people instead of including them as we stated at the beginning of the essay. Another risk is that the

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software application code can be manipulated by the owners of the platform so that the financial advice that is offered is not as independent and trustworthy as advertised but, on the contrary, directed by the company according to its interests much like the conflict of interest that human employees may have.

3.3.3 Investment, Trading and Post Trading Settlements.

Stocks, currencies and commodities are no longer solely traded on the traditional stock markets, but on digital multilateral trading facilities as well. In addition, a variety of financial instruments can also be traded on digital platforms and forex platforms. Examples of these investment products are derivatives like contracts for difference (CFDs) futures contracts, forward contracts, options, swaps and warrants, binary options, currency pairs etc. These trading platforms are not accessed only via websites, but even through mobile applications. They offer the users the ability to trade 24 hours a day/ 7 days a week, with minimum or even zero fees and they also provide leverage to help customers perform a bigger volume of trading. In many cases the users of the trading applications are young and inexperienced so the firms provide a demo account which can be used to train and familiarize the inexperienced investors with trading. Moreover, the relevant websites provide a lot of information and insight of the market through newsletters that they forward to customers.

Frequently these platforms execute high frequency trading: With the use of algorithms the computer program automatically monitors the stock prices and places the buy and sell orders. The programmer has already defined in the code of the program the terms of time, price, volume, speed etc. under which the trades should be executed. This leads to a trading activity with high speed and volume that no human trader would have been able to make.

3.3.4 Lending and Funding

Digital platforms offer lending and investment solutions to consumers users who have been deemed eligible to receive credit, after they were profiled by software applications that use artificial intelligence technology and smart contracts. The process requires

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minimal human intervention, unlike perhaps the traditional banks, and reduces the risks of error, preferential treatment, conflict of interest, or bias.

Another fintech application of this sort is the crowdfunding with the use of the abovementioned technological innovations and especially the blockchain technology. The idea behind the crowdfunding is not new: collecting small amounts of money from many donators to give to a charity or to deal with a disaster is an ancient practice. The same stands for the various cooperative projects where participants with limited resources funded a common project to which they had equal status in profits and losses. Although the concept is the same, crowdfunding is done quite differently nowadays. Specialized companies like GoFundMe and Kickstarter use digital platforms to attract and match potential investors to the proposed charities or businesses. The promotion of the fundraising is usually achieved through the advertisement of the project to the social media.

Another form of crowdfunding is the Initial Coin Offering (ICO) that was discussed above. Moreover

3.3.5 The Insurance Industry

This industry has also been transformed by technological innovation. Nowadays many insurance companies have incorporated digital platforms where the clients get registered and then with the use of the artificial intelligence and deep learning innovations, the best insurance packages are being offered to them. In this way time and money are saved as the insurance companies do not have to maintain a physical office or hire employees. Chat bots offer clients customer support 24/7 and the smart contract technology is applied. When documents are submitted to the insurance platforms the smart contracts are activated and services are rendered automatically, without the need of human intervention, or authorization. With these innovations, the operations of the insurance company run seamlessly, with less cost than the traditional company, and with minimum possibility of error or fraud.

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3.3.6 Cyber Security

Cybersecurity is a necessary aspect of our everyday life, although the average man does not think a lot about it. In the modern digitalized and interconnected world, having our data and digital devices protected from malicious attempts is critical for our wellbeing.

In the same way cybersecurity is a necessary part of the fintech industry. Specialized companies offer products and services to ensure that no data breach occurs. Artificial Intelligence and Deep Learning technologies are used to track down the suspicious activities in the companies' digital ecosystem. The cryptographic methods that have been developed and tested on the blockchain platforms help the companies safeguard their assets and the personal data of their clients.

3.4. THE RISKS OF FINTECH

Fintech companies bear not only the risks that are relevant to their financial function but also, they face challenges that are closely associated to their dependency on technology.

3.4.1 Compliance Risk

The fintech industry is nowadays a heavily regulated sector, especially in Europe. The European Commission and other European supervisory bodies like European Banking Authority (EBA), European Securities and Markets Authority (ESMA) and European Data Protection Board (EDPB) have issued many Directives and Regulations to harmonize the legal framework that apply to these companies. Nevertheless, the regulatory fragmentation still exists, especially when we refer to digital fintech platforms that operate all over the world where laws from different jurisdiction may apply.

Another related risk is the prudential risk, as these companies have reporting obligations that must be met, otherwise they may get fined or sanctioned by the regulating authorities.

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3.4.2 Lack of consumer understanding:

As it was stated above, fintech companies promote inclusivity by making financial services easily accessible and affordable to consumers, competing in this way traditional financial institutions, including banks. On the other hand, some of the services offered by fintech companies can be very specialized and they are addressed exclusively to clients with economic knowledge and trading experience.

It is hard for the companies that issue trading and investment applications to balance their efforts among marketing their product as easy and cheap to use and avoiding the attraction of inexperienced users who do not have the necessary expertise in trading and thus perceive the application as a game.

3.4.3 The gamification features

The gamification of the fintech applications has been a matter of great discussion lately. This term refers to *“adding game mechanics into nongame environments, like a website, online community, learning management system or business' intranet to increase participation and engagement of the users”*.¹³ By giving the investment app gaming features like “virtual confetti” when a trade is placed, or video game graphics and soundtrack makes the customer experience less stressful and more familiar to the younger users. This affects their decisions and financial exposure because they have a false perception that they “play” a video game rather than that they trade complicated financial instruments with high volatility.

Nevertheless, gamification can be a valuable educational tool. It could help companies and other fintech stakeholders like universities, governments, regulatory authorities etc. to train responsible and specialized investors from a young age.

3.4.4 Mis- selling of products and services.

¹³ BI Worldwide, “What Is Gamification” <https://www.biworldwide.com/gamification/what-is-gamification/>

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As it was discussed above, although fintech is supposed to be inclusive, it can also be very dangerous for the inexperienced customers. Many times, users who are not well informed on the high volatility of the financial instruments are easily misled by the marketing policy of certain companies and end up investing in products that are not suitable for their financial position, or the level of their trading expertise or their risk appetite.

3.4.5 Fraud and Criminal Activity

Investing or transferring funds using a digital platform instead of visiting an actual branch of a bank or a brokerage firm, bears the risk for the consumer of being victim to fraud. There have been incidents that investors were defrauded and robbed of their assets by platforms that were not authorized or regulated by the competent authorities to provide the services they advertised.

Additionally, the Fintech companies bear the risk of acting as a vehicle for money laundering or terrorism financing, either willingly or unwillingly. Criminals posing as clients may use the financial services to hide the trail of illegal funds or even worse, they may be aided by accomplices that work in these platforms. The governments and the international legal entities have acknowledged this risk and they have enforced strict laws and regulations.

3.4.6 Liquidity risk:

As we examined earlier the fintech companies have taken over areas where the traditional banks used to operate such as digital wallets, or platform trading. In these cases, companies bear the same risks that are relevant to the banking activities. Unlike the traditional banks, the fintech companies have relatively recently been regulated in order, among other, to mitigate liquidity risk. Moreover, as they can sell their products and services all over the world, it is common that they go through “jurisdiction shopping” to find the country that has less legal and regulatory requirements to operate. This poses a risk for customers who may have less protection of their assets than they have at the traditional financial institutions.

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3.4.7 Financial exclusion and bias

Although fintech have been advertised as the industry that promotes inclusion, there have been instances when some categories of consumers are excluded from their services. The increased use of Data Analytics and algorithms in customer profiling and decision making, may lead to discrimination among clients who would not be granted access to the services because they could not successfully pass through the automated software selection process. The lack of the human factor makes the decision process fully automated in companies that deal with financing, mortgages etc, and this may lead to refusal of customer acceptance to otherwise eligible clients.

Another aspect of this risk has to do with usually older or uneducated people, who are not familiar with modern technology and therefore are excluded from the fintech services. In an attempt to mitigate that risk many fintech companies create a digital environment that is user friendly and easy to access even without special IT knowledge.

3.4.8 Data privacy, security, and protection.

The personal data are assets for the fintech industry and the risk that these data are exploited without the permission of the subjects or disseminated by negligence or on purpose is significant. Most jurisdictions have taken regulatory measures on the protection of data, and data protection authorities have been established worldwide to safeguard them. The fintech companies employ specialized personnel on data protection and data security to mitigate the risk and avoid regulatory sanctions.

3.4.9. Reduced competition

It is very common in the fintech industry to have a new company entry once a new idea or innovation is found. At the same time, older established fintech companies try to stay afloat to the competition by buying over startups and additionally traditional financial institutions incorporate digital platforms and offer fintech services as well. The fintech competition landscape has also the barriers of high operational costs due to the advanced technological infrastructure that has to be maintained and upgraded, the prudential and compliance costs as well as the constant need to attract and retain highly specialized, talented employees. All these pose the risk that the fintech market would

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be concentrated to few big participants and that it would be difficult for new entrants with innovative ideas to overcome the barriers and join the competition.

The risks for the fintech companies themselves are:

3.5.1 The risks against the viability of their business models:

Fintech companies operate in an environment that changes constantly. They must always keep up with the technological evolution and the various innovations. That means that they must invest on new technology infrastructure and specialized personnel. In addition, the regulatory landscape is evolving all the time in various jurisdictions. It is common that new compliance obligations are added, and the already existing ones become stricter. That imposes a weight to companies due to compliance monitoring and implementation costs. A recent example is the decision of the People's Bank of China to ban all cryptocurrency transactions as well as cryptocurrency mining. As a result crypto exchange and crypto wallet companies like Huobi Global , Binance and Token Pocket, announced that they have stopped accepting clients from China. Even the e market giant Ali-Baba announced that from now on it would not sell crypto mining equipment.

3.5.2 The attraction and retention of talented employees and competent BoD members.

Attracting talented employees and members of the Board with the necessary experience, skills and qualifications is challenging for every company. In the fintech industry, highly specialized personnel is needed and the same stands for the Directors who must also understand the risks that are associated with the company's dependence on technology. It is true that traditionally the members of the Board can be experienced executives in sectors like compliance, audit, accounting etc. but sometimes they may not be very keen on digital innovations like the blockchain technology, the Artificial Intelligence, Cryptocurrencies etc. as they should be. The scarcity of talents and directors pose a significant challenge on the fintech companies, and it forces them to resort to international recruiting. This industry is perhaps one of the most diverse and multicultural in human resources. Managing people from different national and cultural backgrounds is very challenging for the HR departments of these firms, in terms of communication, team bonding, conflict resolution, training etc. Companies invest on

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providing a welcoming workplace for everyone as well as migration incentives when this is necessary.

3.5.3 THIRD PARTY RELIANCE

It is very common for Fintech companies to outsource or delegate some of their functions to third party companies. Cybersecurity services, the compliance function, the screening of customers for AML/CFT purposes, market reporting companies, cloud computing services, data protection services, all these operations can be performed by third parties.

The abovementioned outsourcing and delegation, even though it is useful for the fintech companies because they can operate more efficiently with less costs, bear the risk of third-party dependency. That means that the company cannot operate autonomously and in case any of these third party fails to perform its services, that could lead to disruption of operations, financial damages, and regulatory sanctions

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4.THE CORPORATE GOVERNANCE OF THE FINTECH INDUSTRY AND THE CHALLENGES OF THE COMPLIANCE FUNCTION.

All the above-mentioned risks and challenges of the fintech companies must be addressed and mitigated through solid and risk based Corporate Governance Practices. In this way the Board of directors would be able to run the company effectively by mitigating the risks, satisfying the stakeholders, and achieving the company's objectives.

The risks are addressed by the company's three lines of defense.¹⁴ In the first line there are the operational functions that own and manage the risks. In the second line there are the risk management and compliance functions which oversee the risks. This line has limited independence and reports to the senior management. In the third line we find the Internal Audit function that provides independent assurance and reports to the governing body of the company.

The compliance officers ensure that the operations of the company are executed within the current legal and regulatory framework. They are trained and specialized employees that provide daily consultation on managerial decisions and operations. Additionally, compliance addresses any action or behavior at any company level, that may pose a regulatory or legal risk. If we consider the size of the legal and regulatory provisions that must be implemented to companies nowadays, we can easily acknowledge the importance of that function in risk mitigation.

Another very important aspect of this department is the monitoring of whether the company aligns to the code of conduct, or the code of ethics that is being implemented. If such policies are not in place, the compliance function can advise against any behavior that although not strictly illegal, it could pose a reputational risk to the company. It is in the compliance's risk management duties to propose the drafting of a code of conduct and if this is not accepted by management, the compliance officers can

¹⁴ IIA Position Paper:THE THREE LINES OF DEFENSEIN EFFECTIVE RISK MANAGEMENTAND CONTROL JANUARY 2013 https://na.theiia.org/standards_guidance/Public%20Documents/PP%20The%20Three%20Lines%20of%20Defense%20in%20Effective%20Risk%20Management%20and%20Control.pdf

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issue policies and best practices for the employees to follow and thus reduce the exposure of the company to errors and defamation.

On an everyday basis the compliance function performs the following duties:

- Identifies the company's risks and ensures that it operates according to the regulatory standards as explained above.
- Draft, reviews and monitors the implementation of company policies.
- Reviews all company documents that are forwarded to a public or regulatory authority.
- Designs and performs training programs for the employees to promote their compliance awareness.
- Performs legal and regulatory research, stays up to date with the regulatory developments, informs the management of the company on any upcoming regulatory changes, receives training on any new development on its function.
- Acts as a liaison between the company, the regulator, and other stakeholders.
-

The compliance function in Fintech has many challenges to overcome:

1)At first, it must mitigate the risks of noncompliance and the prudential risks. The regulatory environment of the European Union for the fintech companies is quite complex.

The European Union has adopted financial innovation and it is always its priority to try to regulate its function via the various transnational entities like ESMA and EBA. On September 2020 the European Commission released its “Digital Finance Strategy (DFS)” paper which proposes certain actions to tackle the cross-border evolution of innovation technology, while ensuring at the same time the protection of consumer's rights and the resilience of the financial sector. One of the main problems that countries and their regulatory authorities need to address is the absence of uniform regulatory approaches to fintech products that exceed national borders and are offered all over the world. The European Commission and the European Parliament have issued

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regulations and directives that apply either solely to fintech companies or fintech and traditional financial institutions alike:.

The most important European Union Laws are the following:

- i. Investment Firms Regulation (Regulations (EU) No 1093/2010, (EU) No 575/2013, (EU) No 600/2014 and (EU) No 806/2014) and Investment Firms Directive (IFD)2. Directive of the European Parliament and of the Council on the prudential supervision of investment firms and amending Directives 2002/87/EC, 2009/65/EC, 2011/61/EU, 2013/36/EU, 2014/59/EU and 2014/65/EU
- ii. E-Money Directive or the electronic money directive (2009/110/EC, originally 2000/46/EC) Securities and Exchange Commission Law
- iii. Revised Payment Services Directive (PSD2, Directive (EU) 2015/2366
- iv. MiFID II Directive (2014/65/EU)
- v. MiFIR Regulation (600/2014)
- vi. Market Abuse Regulation (EU 596/2014)
- vii. Regulation on Short Selling (EU 236/2012)
- viii. Council Regulation on Statute for a European Company (EC 2157/2001)
- ix. Direction on admission of securities to official stock exchange listing and on information to be published on those securities 2001/34/EC
- x. Prospectus Regulation (EU) 2017/1129 (PR)
- xi. Transparency Directive (2004/109/EC)
- xii. Takeover Bids Directive 2004/25/EC
- xiii. Directive on Markets in Financial Instruments (MiFID II)
- xiv. Undertakings for the collective investment in transferable securities (UCITS) - Directive 2009/65/EC Alternative Investment Fund Managers Law

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- xv. Alternative investment fund managers (AIFM) - Directive 2011/61/EU.
- xvi. Anti-money laundering (AMLD IV) - Directive (EU) 2015/849 artificial intelligence, & Regulation (EU) 2015/847 of the European Parliament and of the Council of 20 May 2015 on information accompanying transfers of funds and repealing Regulation (EC) No 1781/2006.

The above legislation incorporates to a great extent the basic corporate governance principles. In these laws there are provisions about customer protection, marketing restrictions, client categorization, remuneration and qualifications of the Board Members etc.

2) The compliance officer must understand the nature of the products and services the fintech company provides. To do so, the officer should understand the technological innovations the company applies as well as the various laws and regulations. In this way he will be able to identify all the relevant regulatory issues and provisions that exist.

A great aid for the companies and their compliance function is “Regtech”:

It is very common for the fintech companies to outsource or delegate their compliance tasks to consultancy firms that specialize to the provision of relevant services. Some of these consultancy firms use advanced technology, like the technology used by fintech (Artificial Intelligence, Smart Contracts, Algorithms, cloud computing, blockchain, application program interface, machine learning, big data, data mining and analytics, predictive analysis, visualization solutions etc) which is called “Regtech”.

“Regtech” can be used for the following tasks replacing up to a point the role of a compliance function:

1) In duties regarding the AML and CFT controls for customers which are mandatory in most countries. Regtech can perform sanction – screening and identity checks to new users, and verifications as to whether the user is a politically exposed person (PEP).

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- 2) Fraud Prevention: the software can detect any change in the financial behavior of clients or employees by monitoring their transactions.
- 3) Prudential reporting: financial institutions have daily reporting obligations to the regulatory authorities and Regtech can perform this function accurately and timely.
- 4) Information Communication Technology security: detection mechanisms can evaluate the compliance of the company with the cybersecurity standards.
- 5) Creditworthiness assessment: Regtech platforms assess the financial capacities and trading experience of clients to draw their profile and categorize them as professional or retail customers.

Regtech technology is very important for the safety, transparency and fairness of the money transactions and the evolution of the fintech sector. By using it, fintech companies the following advantages:

- better sampling, monitoring and risk management capabilities,
 - Minimization of human error
 - Reduction of the risk of the company falling victim to fraudulent and other criminal activity
 - Better monitoring of the regulatory changes.

For these reasons Regtech is favored by regulatory bodies like ESMA which promote its use.

Nevertheless, the adoption of the regtech solutions can have potential risks for the companies as the companies rely a lot to these outsourced technology providers which in case they are unable to render their services they affect the fintech company negatively.

Additionally, the small and middle-sized companies must bear the financial burden of these solutions, and there is always the possibility of a cybersecurity attack against the third party provider that could lead to loss of valuable data.

4) Another challenge for the compliance officer of the fintech firm is to ensure that the customers' interests are protected, especially the interests of the vulnerable customers who are young, and inexperienced. The abovementioned European Legislation has

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many provisions on that matter, as fintech companies have the obligation to treat their clients with fairness and transparency, defining their risk appetite and tolerance and categorising them accordingly as retail or professional customers. Having all these as a minimum standard, the compliance officer should advise the company on keeping a promotional policy that is not misleading or too complicated for the average client. The young or inexperienced customers should be advised against using services that are addressed to more experienced clients and the gamification features is good to be used conservatively. In this way the reputational risk of the company will be mitigated.

5) In relation to the risk of fraud and criminal activity against the fintech company, the compliance function can contribute to their mitigation by carefully applying due diligence and KYC procedures to every client with no exception, and by being vigilant in case they notice or learn an information that indicates criminal activity by a company employee. The compliance officer must also promote a culture of awareness against criminal behaviour to the employees and to make sure that everyone is trained regularly on these issues.

6) In mitigating the third-party reliance risk, the compliance officer should perform due diligence to the companies that act as sub-contractors to the fintech and ensure that the contractual obligations of the third party cover every risk of the fintech company.

7) A risk imposed on the fintech industry is the data handling and the data protection. The Compliance officer should make sure that the personal data and sensitive personal data are treated under the provisions of the law and that a data protection culture and training are adopted by the company. The officer should design and execute training programs.

8) As for the abovementioned risk of attracting and retaining talented employees, the compliance function can help mitigating it by ensuring that any labor law and code of conduct is applied with no exceptions.

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5. CASE STUDIES

5.1 Robinhood Inc.

Robinhood is a digital investment mobile application owned by Robinhood Inc. headquartered in California USA. Robinhood was founded in April 2013 by Vladimir Tenev and Baihu Bhatt who until then worked as architects to high frequency algorithmic platforms for fin tech companies. The company is regulated under Financial Industry Regulatory Authority (FINRA), and it is a registered member of the U.S. Securities and Exchange Commission and the Securities Investor Protection Corporation. The moto of the company is “Investing is for Everyone” and the idea behind the company and the brand name is to make trading accessible and affordable for people that were somehow excluded from the traditional brokerage firms and banks. Through this app the user can buy shares, ETFs, options, gold, and cryptocurrencies easily, without any commission. This concept of inclusiveness made this application very popular among young people (some of them even in their early 20s) who would normally not think about going to a bank or a brokerage firm and deal with financial instruments. With a very simplistic and colorful graphic digital environment, this app (and many others that followed) introduced and trained young people to the difficult terminology and function of the stock market and the financial instruments in general. This applications has promoted the “gamification” approach that we explained earlier where the users invest in a digital environment that resembles a gaming platform.

The Robinhood company suffered great reputational damage and possible legal settlement costs when a 20-year-old user committed suicide after he thought he had lost approximately \$700.000.

Alex Kearns a college student from Illinois returned to his home from college in 2020 due to Covid -19 lockdown. He started trading with the Robinhood app and one day he received an e mail from the company that his account was closed because he had a negative account balance by -730.000\$. Kearns did not understand how he got exposed so much and tried to contact the company. As Robinhood Inc. does not have a telephone line support since 2018, the student sent 3 emails demanding explanations, but he received only automated answers. The young man was devastated as he believed that

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his future was destroyed, and he took his own life. In the same day the company responded that the notification about the \$730,000 was not valid, but it was too late.

Kearns family filed a lawsuit accusing the company of wrongful death, negligent infliction of emotional stress and unfair business practices. The lawsuit was settled a year later, but the US regulatory authority FINRA imposed Robinhood the largest penalty ever imposed. The company was ordered to pay \$70 million in fines and restitution to harmed customers for "systemic supervisory failures" and for giving customers "false or misleading information." FINRA also stated that since late 2017, Robinhood "failed to exercise due diligence" before approving customers to trade options and that it relied on algorithms that "often" approved customers to trade options based on "inconsistent or illogical information."

The company stated that it was "devastated" by Kearns' death and that hundreds of brokers were employed to provide better customer support and that a call – back option was added to the company's customer services, although a call center was not installed.

Additionally, Robinhood application may face a possible ban in the State of Massachusetts on the grounds that it has "continued a pattern of aggressively inducing and enticing trading among its customers -- including Massachusetts customers with little or no investment experience." This action was initiated by the Massachusetts' Securities Regulator, William Galvin.

The Company answered to the Securities Regulator that its Massachusetts' customers are not as naïve as the Regulator perceives them to be, and that the complaint "reflects the old way of thinking: that new, younger, and more diverse investors don't have a place in the markets."

Robinhood Inc. did not estimate properly the risks that were involved in the product it launched. The company did not invest in live customer support function as being useless perhaps because the management perceived that in a fintech company there is no room for the human factor. If an email or a chat bot does the job, then there is no need to hire employees.

Additionally, the company did not embrace the culture of protecting young adults without trading experience or knowledge of the financial instruments. Alex Kearns

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suicide exposed the gaps in the corporations' risk management framework and brought it to the attention of the regulating authorities. The record fine that was imposed on the company underlies that the compliance function of the company also did not work properly.¹⁵¹⁶

5.2 DAO

The DAO acronym stands for the “Decentralized Autonomous Organization” which was a short-lived experiment in fintech and organizational governance. People who launched DAO wanted to run an immutable, decentralized and potentially unstoppable public blockchain that would rationalize governance because its rules would be encoded in “smart contracts” that would run automatically on the platform, without human intervention. The founders envisaged that the forms of sociality that would emerge from the operation of the DAO would be transparent, efficient, fair, and democratic.

In 2015 through the company Slock.It a blockchain framework was built through on the Ethereum blockchain and a relevant whitepaper was released. The DAO was intended to allow cryptocurrency “investors” to directly fund and manage new enterprises – all to be run on the Ethereum blockchain. These enterprises would be financed directly by the investors according to the extent of their financial contribution, denominated in tokens. The interference of the human factor was deemed unnecessary, as the blockchain platform, the smart contracts and the algorithms would perform the corporate governance tasks.

The DAO was launched on 30th April 2018, having already a community formed around it, and by the end of the funding period approximately the equivalent of 250 million USD was raised. However, in 17th of June 2018 the DAO code was exploited by unknown individuals. This exploit used an irregularity to the program's code and ended up draining the fund of 3.6 million ETH, worth about \$50 million at the time.

¹⁵ CBS News, Alex Kearns died thinking he owed hundreds of thousands for stock market losses on Robinhood. His parents have sued over his suicide. (8/2021) <https://www.cbsnews.com/news/alex-kearns-robinhood-trader-suicide-wrongful-death-suit/>

¹⁶ CNN Business, 4/2021, Massachusetts wants to pull the plug on Robinhood <https://edition.cnn.com/2021/04/15/investing/robinhood-app-license-massachusetts/index.html>

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The DAO investors argued about the way they would address the attack, as some of them wanted the DAO to continue operating despite the vulnerabilities, while others voted for the permanent closure of the platform.

Following this argument several digital currencies exchanges de – listed the DAO token bringing the end to this project of self -regulating governance.

At the DAO project the human factor was again marginalized as being useless. We will probably never know if the existence of a traditional corporate governance function would have detected the vulnerabilities of the platform or the attack as soon as it was launched. It just seems that the attempt of the innovators of these platforms to replace the human factor with the Artificial Intelligence and Deep Learning has not yet been a total success.¹⁷

5.3 Polkadot (DOT) .

A recent project towards a platform that is self-regulated is the altcoin Polkadot (DOT). This altcoin is hosted on the Ethereum platform and it was launched by the co-founder of Ethereum Dr. Gavin Wood. It advertises itself as a system where token holders not just miners, have complete control over the protocol. The decisions about the governance of the platform are taken by voting bodies like the administrators and the council and by referenda where all token holders can participate. Polkadot can be upgraded without hard forks to integrate new features or fix bugs. This capability enables Polkadot to easily adapt to changes and upgrade itself as better technologies become available.¹⁸¹⁹

¹⁷ Quinn DuPont “*Experiments in algorithmic governance A history and ethnography of “The DAO,” a failed decentralized autonomous organization*” < https://www.researchgate.net/publication/319529311_Experiments_in_Algorithmic_Governance_A_history_and_ethnography_of_The_DAO_a_failed_Decentralized_Autonomous_Organization> [Accessed 8 October 2021].

¹⁸ Gavin Wood - A Walkthrough of Polkadot's Governance
<https://www.youtube.com/watch?v=o8sAhDY6lyY>

¹⁹ Polkadot, All systems go, The wait is over. Parachain launch is here.
<https://polkadot.network/>

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5.4 The Korean Credit Bureau

In 2014, 3 Korean credit card companies (KB Kookmin Card, Lotte Card, and NH Nonghyup Card) operations were suspended for 3 months, by the Korean regulatory authority, due to a massive data breach that affected millions of Korean consumers. The data that leaked were unencrypted and it consisted of the names, social security numbers and credit card details of about 20 million credit card holders. The data breach was not initiated by any of these companies, but by a third-party provider, the company Korean Credit Bureau that produced credit scores. A temporary consultant of this firm extracted the data at a USB stick and sold it to marketing executives of rival companies.

This case study underlies the risk that technology companies face when they rely on third parties to outsource some of their functions. The firm that hires the contractor cannot be 100% sure that the outsourced activity will be executed safely and effectively. Additionally in this case the cybersecurity issue arises. Fintech companies cannot operate without investing on IT risk management, compliance, and audit.²⁰

²⁰ BBC News, 1/2014 Credit card details on 20 million South Koreans stolen
<https://www.bbc.com/news/technology-25808189>

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6. Conclusion

The compliance function of the Fintech firms plays a vital role in these companies as their second line of defense. It helps at the mitigation of certain risks and offers to the management highly specialized services. The officer who performs these tasks has many challenges to address like the understanding of the highly sophisticated products of the company, the familiarity with the innovative technology that underlies them and most importantly the knowledge of the legal and regulatory framework of this industry which is complicated fragmented and ever evolving like the industry itself.

The executive in this position should enjoy a relative independent status towards management, in order to perform his duties effectively and should also receive training on every new development on his field of expertise.

In order to be able to address the abovementioned risks successfully he should not just monitor the operations of the company on a daily basis, but also think and act proactively by advising the management function on better ways of performing its duties to align with the laws and regulations.

This need for a more integrated compliance function in the managerial decisions was highlighted by the case studies. In the Robinhood Inc. case, the company made no effort to mitigate the reputational risk that once it occurred led to sanctions and the possible ban of the company in the state of Massachusetts. The company failed to perform “product governance” that would protect the vulnerable users and evidently the company itself. In the European Union these financial products and applications are regulated, and the relative laws aim at safeguarding the investors interests, by limiting for example the percentage of leverage a customer may use or by requiring transparent reporting. An effective compliant officer can study the evolution of the legislation in other jurisdictions, and he can propose to the management additional solutions that would mitigate the risk.

In the second case of the DAO and Polkadot we see the attempt of the fintech industry to regulate itself through innovations like “smart- contracts” without the intervention of the human factor. The DAO example showcases that once a vulnerability is discovered in the system, it is exploited immediately, making the dream of the DAO community look like a utopia. Although the Polkadot project is still running I believe

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that the second and third line of defense of the companies cannot be completely replaced by the artificial intelligence and other innovations, at least not yet.

The third case study of the Korean Credit Bureau, highlights the problem that arises when companies cannot operate without relying on third parties. Fintech companies can rarely operate all their functions (like the European Market Infrastructure Regulation reporting obligations, or the Liquidity provider function) on their own. They usually outsource them to third parties bearing the risk that this party may fail. It is in the duties of the compliance officer to perform due diligence to the company's subcontractors and to express freely any reservations.

As for the case of the fraudulent acquisition of the personal data of the clients by extracting them with a USB stick, it is again in the duties of the Data Protection Officer to ensure there are policies in place to safeguard the company's data assets for example by providing to the employees limited access to data, by applying encryption techniques or by training the personnel to avoid connecting to the company's network using personal devices.

The overall conclusion of the above is that in the evolutionary fintech landscape the compliance function has become indispensable for the risk mitigation of the companies.

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