

Crypto Assets for Wealth Management

**An Analysis of the Financial System and Private
Bankers' Clientele**

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<p>Abstract</p> <p>We have already started experiencing the transformations brought by the Fourth Industrial Revolution, characterized by breakthroughs in the digital, physical and biological fields occurring in an exponential speed. This new chapter brings complex advances and innovations, which not only show evolution in the production system, but are merging in a promising way for maximizing our quality of life and creating opportunities of universal impact for authorities, managers, leaders, and citizens of all backgrounds.</p> <p>In the set of key technological innovations, projects challenging the traditional economic model are emerging fast, with their essence being Bitcoin and its underlying network, blockchain. The objective was to analyze the feasibility of their implementation, investment ideas and consumer adoption, based on their performance, reliability, risks, and legal compliance.</p> <p>A qualitative approach was conducted as a mono method. Data was collected through archival research, action research and grounded theory, aimed at finding definitions for the Bitcoin and blockchain related concepts, as well as their industry, latest updates, and policy making. The same strategies were followed for describing the market demand and consumer approaching dynamics.</p> <p>The outcome reflects mostly upsides on the performance of Bitcoin in recent times, though indicating that it is not a safe haven asset and that immediate applicability is not a prospect, whereas future implementation could be practical in various levels of the financial system. The technologies' promising future suggests a positive scenario for investments now, being taken into account the contemplation of their high-risk nature. The discussion and future recommendations include exploring outside-in marketing approach strategies.</p>		
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1 Introduction

1.1 Background

There has been recent debate all over the world about mainstream society migrating from analogic technology to digital; children are born handling smart phones and tablets. All kinds of devices from artificial intelligence personal assistant, such as Amazon Alexa, and other daily tools integrated to our mobile phones and computers are becoming quickly friendly to all age groups and various social classes. For instance, an Alexa device is a wireless speaker or smart display that can answer queries and work with different services (music services, calendars, shopping, etc.) to help you with daily tasks (Rawes & McGrath 2019).

The premises of this thesis are to evaluate a very important aspect of the digitalizing era: how money as we know is going online through the advent of blockchain system of decentralized ledger and new concepts such as proof-of-work for crypto currencies.

Blockchain is an operational system, a technology that enables the existence of various applications, cryptocurrency being one of them. A few others include: smart property applications for personal assets, smart contracts for receipts and ownership rights, and self-management platforms for public information exchange. Blockchain was invented for operating the most well-known cryptocurrency, Bitcoin. Originally written under the pseudonym Satoshi Nakamoto, the title of Bitcoin's white paper is deceptively simple. *Bitcoin: A Peer-to-Peer Electronic Cash System* is unassuming, yet the content of this 9-page document incited what can only be described as a revolution in the world of fintech. (Liebkind 2018.) Bitcoin offers the promise of lower transaction fees than traditional online payment mechanisms and is operated by a decentralized authority, unlike government-issued currencies (Frankenfield 2019).

The purpose of this research is to showcase how capital markets are interpreting and onboarding such new technologies to their day to day activities and product offers, as well as the integration of back office compliance in terms of how the process merge into banking, not only for the administration, but also for client experience and benefit.

This thesis will go into regulatory framework, central bank interpretations and financial institutions' perception on this innovative financial asset. The topics take a deep dive into how the currencies work, the algorithm behind them, which are the high-quality currencies versus what has failed and given, up to a certain extent, a difficult reputation to the beginning of this process, which is now getting a stable second wind.

The aim of this research is to discuss the integration steps of crypto currencies into the economy. Well established institutional investors are already preparing to get exposure into diversified crypto assets and many banks already have an approach into their wealth management clientele, mostly not due to banking philosophy, but given the demand such high net worth individuals and family offices have for the new class of financial value safekeeping.

These are what the plan of this thesis seeks to clarify, sustain and propose marketing solutions for, in a responsible non-speculative manner. Last but not the least, there are also a few new projects and interesting discussions on crypto currency prioritizing financial institutions born with digital economy on their DNA, which show great relevance for the introduction of this research.

Such projects involve regulatory framework and cross-border taxes. A regulatory framework is composed by laws, permissions, codes of conduct, standards, and other policies for legal and effective practices. According to Singh (2019), for enterprises, permissions are essential. For them, blockchain needs to ensure that private intellectual property sharing clearance works through the system, protecting data and intellectual property at all times. Blockchain has changed how enterprises work. It has improved the network's transparency, immutability, and efficiency – bringing benefits to the enterprise

setups. (ibid.) Led by IBM, an example of an enterprise blockchain framework platform is Hyperledger Fabric, which is open-source and suitable for any kind of business. Hyperledger Fabric is intended as a foundation for developing applications or solutions with a modular architecture (Hyperledger Fabric N.d.). It protects enterprise data by keeping it check with regulations and various laws (Singh 2019). There are other emerging framework projects as well, such as Quorum and R3 Corda.

Cross-border value added tax (VAT) regards citizens that work or invest in one country but live in another, having to clarify where they make declarations. A digitalized registry could prevent frauds as well as poorly allocated double taxation. VAT is vulnerable to fraud because it relies on self-reporting and a disjointed system of rules and enforcement among European Union member countries (Dulaney 2019). Operating with a blockchain system, citizens would upload their invoices digitally to a certain country's declaration platform. The payments would be seen and verified, being added to the blockchain based network. Such a system could allow VAT payments to be automated and would also create a history of transactions that authorities across the EU could easily access if they suspect fraud or errors (ibid.). The European Commission's Directorate General for Taxation and Customs (DG TAXUD) was organizing on 6 December 2019 an event on "VAT in the Digital Age" in Brussels, Belgium. This event brought together stakeholders working in the field of VAT to reflect on the opportunities and challenges that new technologies bring in the area of VAT. (VAT in the Digital Age N.d.) Blockchain's implementation and supporting structures were discussed. Furthermore, some European countries already started exploring blockchain for tax reasons and other public services, such as Finland, Sweden, Estonia, Netherlands and Germany. In Finland, tax authorities began working with banks on a blockchain system to track taxes on real estate deals (Dulaney 2019).

Other discussions on crypto revolves around the belief in digital economy from now on and how digital our current economy actually is already. According to Armstrong (2020), the digital economy is a term that captures the impact of

digital technology on patterns of production and consumption. This includes how goods and services are marketed, traded and paid for (ibid.). The expansion of the digital economy creates many new economic opportunities (Digital Economy Report 2019, 3).

Reduced fuel emissions from more efficient cars, using mobile data to track malaria and even farming that remains one step ahead of climate change; the digital economy is already having a massive impact on society, and there is more to come. (Espinel 2016.) In the future, the international competitiveness of individual economies will depend crucially on how quickly digital technologies are used in production processes. The digital transformation of one's own economy thus become a prerequisite for securing and improving a country's prosperity. (Petersen 2019.)

The greatest potential may lie in digital products that are hard to be replicated elsewhere, that are needed locally, and that can be transported or duplicated in a certain location at relatively low cost (Digital Economy Report 2019, 9). The digital economy will, soon, become the ordinary economy as the uptake – and application – of digital technologies in every sector in the world grows. We all need to understand the nature of this change to be able to respond at every level: society, corporate and personal. (Armstrong 2020.) Therefore, this thesis seeks to clarify the systems behind blockchain and bitcoin, pointing the current applicability according to existing frameworks and suggesting marketing approaches for adopting the digital economy innovation, aimed at: high net worth individuals, banks, regulators and governmental authorities.

1.2 Motivation

The professional market in Europe focused on finances is bringing out the crypto currency phenomena, with focus on the Bitcoin (BTC). The World Economic Forum, committed to improving the state of the world, is the International Organization for Public-Private Cooperation. The Forum engages the foremost political, business and other leaders of society to shape global,

regional and industry agendas. (HR4.0: Shaping People Strategies in the Fourth Industrial Revolution 2019, 38.) At the beginning of 2019, the main theme of the forum was Globalization 4.0. We are entering into a Fourth Industrial Revolution shaped by advanced technologies from the physical, digital and biological worlds that combine to create innovations at a speed and scale unparalleled in human history. Collectively, these transformations are changing how individuals, governments and companies relate to each other and the world at large. In short, we are fast approaching a new phase of global cooperation: Globalization 4.0. (World Economic Forum Annual Meeting 2019 - Overview 2019, 1.)

The theme appoints the internet of things, digital money management solution and new credit protection setup as chief topics of interest. Crypto currencies play a significant role in this process, and so does its base of operations, the impressive distributed ledger system, known as Blockchain, which could be particularly effective in solving the most prominent issues faced by the banking and financial services (Acimovic 2019).

The focus areas also included: a global dialogue on the future of the economy to review principles for economic and social decision-making that need to be redefined to better reflect the structural changes inherent in the Fourth Industrial Revolution along with a global dialogue on financial and monetary systems to jointly shape our monetary and financial systems by not only leveraging new technologies, such as cryptocurrencies and blockchain, but also making the systems more resilient for achieving sustainable growth and long-term societal well-being (World Economic Forum Annual Meeting 2019 - Overview 2019, 2).

With cryptography being used to link records data to one another, blockchain technologies can be used as public means of transactions as well as private ledgers for inter-company transactions and record keeping (Liu 2019). The person or people who created the Bitcoin system under the pseudonym Satoshi Nakamoto solved a problem central to any currency — preventing

counterfeiting — and did it without relying on a government’s authority (Kharif & Leising 2018).

It is possible to perceive how widely advertised and debated crypto currencies are, from the legal stand point but also about various investors and institutions looking forward to having exposure to these digital assets in order to be part of the new trend within capital markets. With more and more voters demanding to “take back control” from “global forces,” the challenge is to restore sovereignty in a world that requires cooperation (Schwab 2018).

Managing a successful transition to a new world of work will require significant and well-coordinated efforts by both the public and private sectors. How business leaders manage this transition will help to define a new contract between workers and companies, and determine whether the Fourth Industrial Revolution (4IR) leads to a positive outcome for society. (HR4.0: Shaping People Strategies in the Fourth Industrial Revolution 2019, 9.)

New technologies make it easier for money to reach everybody, and that means that essentially what we are talking about is sending money from one cell phone to another real time (Lee & Wessel 2018). It is important to understand that while it is still in the very early stages of adoption, crypto is much more than just a speculative asset, but it also has the ability to be used in the same way as any currency (Yeoh 2020). With the inclusion of cryptocurrencies, people would be more connected and integrated to the economy. That is at some level a really transformative power in the new technologies (Lee & Wessel 2018). As a monetary revolution, it motivates the study of arising platforms and services, such as the digital banks, for faster public acceptance and higher positive impacts.

1.3 Research Questions

The readiness of employees to embrace changes to technology will be essential to leaders’ ability to use this knowledge to inform their execution strategy. One recent study on the future of the Chief Human Resource Officers (CHROs)

found that only 36% of CHROs are prepared to work out how technology is changing work in the future. Furthermore, only 26% said they have the technical acumen to evaluate new technology. Reassuringly, participants plan to avoid working in silos and partner with Chief Information Officers (CIOs) and data and tech teams to understand how to best use technology and achieve the optimal combinations of humans and machines. (HR4.0: Shaping People Strategies in the Fourth Industrial Revolution 2019, 11.) Likewise, citizens, when well informed in a targeted and personalized manner, about the risks and opportunities that blockchain and cryptocurrency technologies bring, will understand their great value.

Therefore, the following step is raising awareness about the vantage points of these technologies and related services, driving interest from the societies, businesses, financial institutions and authorities. However, mass adoption, accuracy and reliability of trends remain a challenge to be overcome cautiously. From this research problem and deeply investigation of the literature review, these research questions were raised:

1. Have Bitcoin events and performance clearly been exposing valuable insights on human capital investments when compared to traditional methods?
2. Are crypto related assets a guaranteed wealth preservation tool?
3. What are the roles of policy making and global scale economic data for the appeal of Bitcoin as a safe haven asset?
4. Which sets of information are key for private bankers to approach the targeted investors in order to influence purchase of such unsought product?

It is meaningful to present, according to Saleem (N.d.), a clear understanding of how research topic is important in current and historical events. In order to answer the research questions, data was collected from various sources, being then analysed in the search for arguments that allow logical conclusions and formulations of appropriate hypothesis. The processes of choice of methods

and appliance of information and analysis are detailed in the methodology chapter.

1.4 Structure of the Thesis

The background of the research and the motivation introduce facts proving the relevance of blockchain, explaining them, while introducing current topics of discussion and development. With the goal of increasing awareness and, consequently, the adoption of blockchain and related technologies, research questions were formulated.

Chapter 2 describes in detail the concepts of blockchain system, crypto currencies, other technologies associated, their creation, and history of industrial revolutions and technology ascension. Following, comes clarifications about the unsought products industry, marketing strategies, and customer behaviour analysis, focusing on the affluent clientele, pointing similar interests and making comparisons towards blockchain services in general. The literature review is followed by chapter 3, which provides the research approach, information about the sources used for data collection and methods for conduction of the study.

Chapter 4 proposes results for approaching the target investors, discussing Bitcoin as a wealth preservation tool, the positive scenario around it, and the complications. It includes suggestions for appliance into services with focus in banking perspectives. The discussion then concludes pointing which information to consider for following the future steps for an effective marketing aimed at crypto investments for wealth management.

2 Theoretical Framework and Literature Review

2.1 The Blockchain System

The term has been increasingly adopted by various lines of business; however, at basic level, its comprehension is that an allocation of digital information for

specific purpose, such as recording data on financial transactions amongst parties, consists of the “Block”, while the global users of such system, being connected to this platform, which is kept online by decentralized userbase, result on the “Chain” through which the blocks of information transit and, therefore, are validated.

Blockchain, an alternative operational system, differs to the clouds of storage due to not being privately owned, hence the term *distributed ledger*, which contributes to the transparency and safety of the overall context (see Figure 1). Instead of Bitcoin being hosted on one computer or one company’s computers, Bitcoin is hosted on many computers by many different entities (Cryptocurrency for Beginners N.d.). According to Chandler (2019), private ledgers still generally have the advantage of being controlled by the companies that use them – and for big multinational banks that want to have control over their processes, this is obviously a big plus. As stated by Reiff (2020), blockchain works by spreading the information across a network, rather than storing it in one central database, a relevant characteristic which impedes interferences.

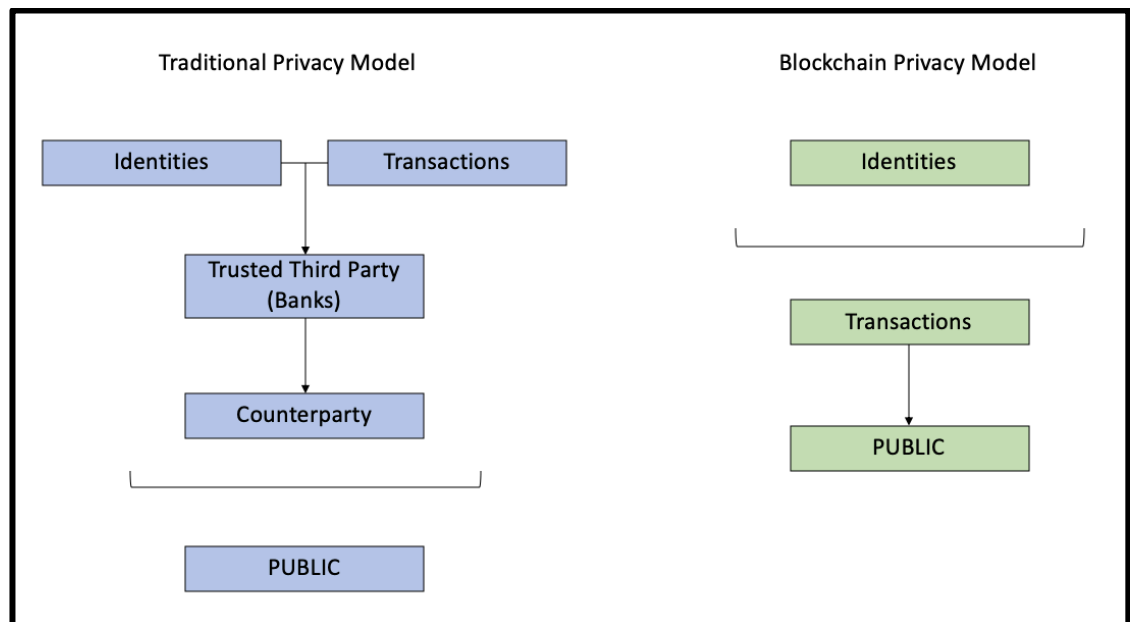


Figure 1. Satoshi Nakamoto’s new privacy model (created by author, adapted from Nakamoto 2008)

Each “product” built onto such logic, as payment solution Bitcoin Blockchain, has a different type of encryption, to make sure the system recognizes each individual user and keeps record of respective transactions.

Each block, on the Bitcoin network (see Figure 2), carries 1 megabyte (MB) of financial data amongst parties, being able to host various transactions and its confirmations, which means a single block can house a few thousand transactions under one roof (Reiff 2020). Real names are not used for the accounts. Each user is given codes instead. This is where we get the *crypto* of the cryptocurrency definition. (What is a Cryptocurrency? Explaining Crypto for Beginners 2020.)

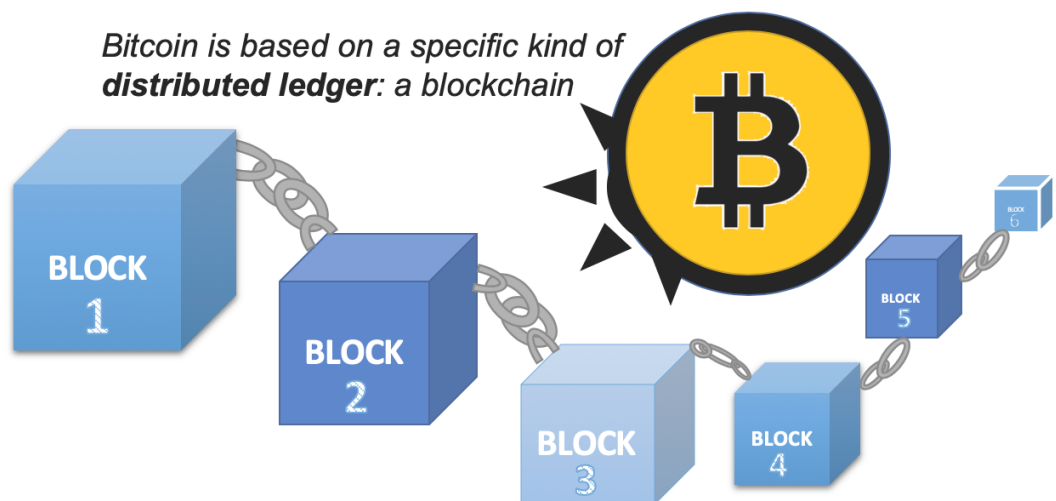


Figure 2. Bitcoin chronology logic (created by author, adapted from Reiff 2020)

The Bitcoin blockchain is digitally safeguarded by a long-standing cybersecurity protocol developed by the American National Security Agency (NSA) in 2001, named SHA-256. SHA stands for the Secure Hashing Algorithm, which is a fundamental part of Bitcoin’s structure. It is a one-way hashing function that encrypts any input, generating a compressed cryptographic output (hash), with the value of 256-bit. This value is always the same no matter how large is the

original data. The hash can be used as a fingerprint for the original data because it is impossible to guess what the output will be for any value before running it through SHA-256 (Messamore 2019). This means the protocol guarantees integrity by ensuring there are no message modifications during transmission. Each transaction on the Bitcoin blockchain relies on this function. The mathematical operations in these steps and the values they use as operands cannot be done in reverse to find the input using the hash (ibid.). These features make it computationally impossible to reproduce and reuse the same transaction (Kotow 2019). This eliminates the problem of double-spending. In addition, another preventive measure is the implementation of a confirmation mechanism.

As transactions take place and fill blocks of information around every 10 minutes, the next allocation is “mined”, meaning the term of decentralized encrypted production of 1-megabyte sequences, and such stands in a timeline-like logic, creating what is designated as “Bitcoin Timestamp”, so that it is possible to track transactions by knowing on which number block the remittance happened, all the way to reach its receiver.

The settlements occur via the open ledger chain, enabling users to offer different fees to the broad network depending on how rushed they are to complete the payment. All data is visible to parties involved, making trackability and proof of funds easier. It differs from the traditional banking model, as, explained by Satoshi Nakamoto (2008), privacy can still be maintained by breaking the flow of information in another place: by keeping public keys anonymous. The public can see that someone is sending an amount to someone else, but without information linking the transaction to anyone. (6.)

Other data, non-financial, can be transmitted through a blockchain amongst its userbase, however, another application or solution would be utilized, as Bitcoin itself was built for the notion of storage and transfer of capital value. Such application is Ethereum, further explained in 2.1.3. The Bitcoin blockchain can be seen as a database of accounts, represented by wallets which store

currency, whereas the Ethereum network is more “sophisticated”, capable of storing computer code – applications – that can use the central processing unit (CPU) power going into the network to execute (Marr 2018).

To send Bitcoin to pay for something, the transaction is transmitted to the network as an unconfirmed transaction (Kotow 2019). The advantage of the timestamp it offers is related to an audited chronology factor, meaning a vast amount of unbiased, random online users will confirm the transactions automatically. The protocol needs a means to transfer value from the users of the network to its operators. A decentralized blockchain protocol cannot print government-issued currencies – this is where cryptocurrencies enter the picture. (Huber N.d.) The incentive can also be funded with transaction fees (Nakamoto 2008, 4). The ones who confirm the transactions receive small fractions of the fee offered by the sender, and the block through which the remittance gets confirmed stays recorded on the transaction code and on the chain of information embedded in the text code of the given settlement, for as long as the system remains online. This results in immutable evidence that the terms agreed between users were executed successfully, a system which does not depend on a centralized private intermediary. Hence, cryptocurrencies were created as an incentive system that secures the ledger under the game-theoretical assumption that all network participants act in their self-interest (Huber N.d.).

Some companies that have already adopted blockchain are:

- FedEx: inclusion in the supply chain management, tracking high-value cargo and planning extensions to all their shipments;
- IBM: partnering with big companies dealing with logistics, such as Walmart, Bank of Montreal (BMO), and United Bank of Switzerland (UBS). IBM is shaping up to be one of the giants in the cryptocurrency space by providing the backbone of Blockchain related services to businesses. Using the Hyperledger Blockchain creator tool, they can

help the organisations to create their own distributed ledger and smart contract systems; (Sharma 2018.)

- Microsoft: secured some 40 patents related to the use of Blockchains as payment gateways and for secure storage (ibid.);
- Mastercard: exploring their own Blockchain alternatives for payment gateways;
- Bank of America: applying for blockchain related patents. Combined with Ripple's XRP token, Bank of America could save billions of dollars every year in cross-border payments (ibid.).

2.1.1 Comprehending Industrial Revolution 4.0

The story goes that humanity has industrialized human production through three fundamental shifts, and is presently entering the fourth major era (Fursman & King 2019). From optimizing and expanding the resources available at each point in time, the concept of industrial revolution was set.

The first industrial revolution began in Britain around 1765. The biggest changes came in the industries in the form of mechanization (Pouspourika 2019). The invention of the steam engine was the most significant factor in that period, influencing productivity and transportation. The steam engine dramatically reduced the time it took to manufacture products (Chen 2019). Producing cloth became faster and required less time and far less human labor (Industrial Revolution 2009).

The focus of the second Industrial Revolution was on steel production, the automobile and advances in electricity (Invention of the Telephone 2019). Such advances led to the invention of the telephone by Graham Bell, a leap in the communication technology, as well as others, like the internal combustion engine and the light bulb.

The third industrial revolution began in the 1950s, perceived as the digital revolution. The mechanical devices moved to digital technology, completely changing industries, communications and global power distribution. Electronics

and information technology began to automate production and take supply chains global (Meet the Three Industrial revolutions N.d.). At this stage, there is no need for three workers to do a job, when only one employee could be there just to operate the machine, if it was really essential. This meant a societal transformation, impacting labor and generating new opportunities and human living standards.

The Fourth Industrial Revolution is a breakthrough of the Third, coming in as a call to action. This revolution is not just happening to us – we are not its victims – but rather we have the opportunity and even responsibility to give it structure and purpose (Schwab 2018). It is characterized by the integration of advances such as Artificial Intelligence (AI), blockchain, Internet of Things (IoT), robotics, genome editing, 3D printing, augmented reality, quantum computing, among others. The invention of technologies such as the telephone and the internet revolutionized how people store and communicate information (Zervoudi 2020, 16). Now, these are bringing infinite possibilities in connectivity, storage, safety, privacy, business operations, experiences, transportation, and access to information (see Figure 3).

With the movement in full-swing, the impact the Fourth Industrial Revolution will have on business will center on four areas: on customer expectations, on product enhancement, on collaborative innovation, and on organizational forms (Klein 2019). Adapting to the new systems and integrating them to the industries diminishes the divisions between physical and digital worlds. This is also setting the base for new emerging technologies.

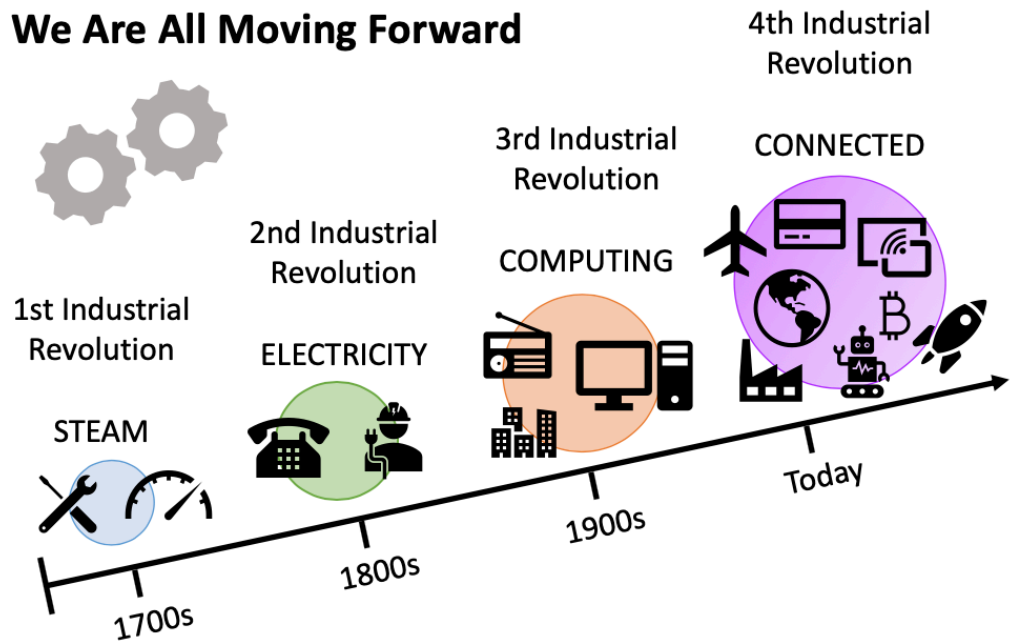


Figure 3. Breakthrough of technologies during the industrial revolutions (created by author, adapted from Klein 2019)

2.1.2 Bitcoin and other Crypto Currencies

In 1992, Timothy May and other crypto asset defenders have founded a group and its mailing list, claiming feverously that cryptography-based technology would eventually take over global finance completely, turning common payments obsolete. They believed in bringing forth the tokenized economies, or *tokenomics*, in which digital asset virtual tokens are exchanged amongst parties in a transaction, as opposed to commonly sovereign nation issued currencies. Just a few months later, Eric Hughes published “A Cypherpunk’s Manifesto” (Lopp 2016). All such claims escalated through *Cypherpunk movements* known as *crypto anarchism*. The original *Cypherpunks* mailing list no longer exists, but there are more *Cypherpunks* now than ever before (ibid.).

The *Cypherpunks* are groups of IT enthusiasts who believe cryptography and other digital means are much more efficient when coding solutions for cross border payment and value storage when compared to the traditional economy.

They are, according to Ganne (2018, 3), activists advocating for the widespread use of robust cryptography and privacy-enhancing technologies as a route to social and political change.

Many other crypto currencies emerged after the release of Bitcoin, with most of them trying to optimize its performance by, for example, increasing the speed of transactions, or improving the security or anonymity of transactions (Marr 2018). The elementary difference amongst digital currencies are its targeted application: some solutions are heavier, offering more resources, though less amply utilized, while Bitcoin is the most simple, scalable and easy access payment solution.

According to open source statistics provider Coin Market Cap's webpage, Bitcoin had 18,298,125 tokens in circulation as of March 31st 2020, priced at around US\$6,323.17 per full unit, having more than thirty-three million US Dollars' worth of Bitcoin traded for cross border payments and individual asset holding in 24 hours.

Due to its safe and complex algorithmic base, the aforementioned SHA-256 cybersecurity protocol, a Bitcoin token has never been cloned or destroyed. If an attacker were able to capture 51% of the hash power of the network, double spending is possible. This is referred to as a 51% attack. In that case, the attackers would conceivably get a hold of at least 50% of the hash power of the network. (Kotow 2019.) However, its network of users maintaining this blockchain online is so wide that obtaining more than 51% confirmations for a fraudulent transaction is virtually impossible. In addition there is the vantage point of nodes receiving an incentive for supporting the network: if the output value of a transaction is less than its input value, the difference is a transaction fee that is added to the incentive value of the block containing the transaction (Nakamoto 2008, 4). Being the first crypto currency, Bitcoin is certainly the most popular and also trend defining for price, influencing most alternative currencies, the ALT Coins.

The proof-of-work concept is introduced: the steady addition of a constant amount of new coins is analogous to gold miners expending resources to add gold to circulation. In our case, it is CPU time and electricity that is expended. (ibid., 4.) Although its digital weight is very light, just a few bytes, hence the name *Bitcoin*, each block of information in its sequenced chain carries 1-megabyte of information, which creates a long-standing record of transactions. Therefore, as market applicability grows, it becomes more complex for the distributed ledger network of computers to process all the necessary information within the 10 minutes long cycle of each SHA-256 block of data.

After every 210,000 blocks gets mined, the mining reward is cut in half; and since it takes around ten minutes to solve a block, it takes around 4 years to reach the halving point (Rosic 2020). The protocol follows this structure until it reaches maximum supply. Just like gold, the number of Bitcoins possible to mine is limited, and this controlled supply tends to continuously drive price increases. The maximum is 21 million Bitcoins in total, and as of April 1st 2020, over 18 million were in existence. Once all the bitcoins are mined, the compensations will follow a different approach: a larger percentage of the retribution will be due to transaction fees (Franco 2015, 108).

Originally, Bitcoin's creator intended for Bitcoin to be mined on CPUs. However, Bitcoin miners discovered they could get more hashing power from graphic cards. Graphic cards were then surpassed by ASICs (Application Specific Integrated Circuits). (Tuwiner 2019.) This means nowadays Bitcoin supporters no longer find it profitable to utilize a common domestic computer to sustain the network and earn transaction fees or Bitcoin rewards; a new type of high-performance processor is required, the SHA-256 ASIC.

Bitcoin dedicated ASICs have been developed around 2014, when the network was 5 years old and already growing; currently, vast majority of users plugged to this system utilize different generations of these machines, manufactured by various industrialists, ranging from Samsung to Chinese crypto-native Bitmain,

mostly being based out of Asia. Because ASICs require a lot of energy, data centers for mining are mostly located in areas where electricity is cheap (Hsue 2018). This facilitates compromising to the proof-of-work network, because coordinating a few mining pools is easier than coordinating thousands of individual users around the world (ibid.) (see Figure 4).

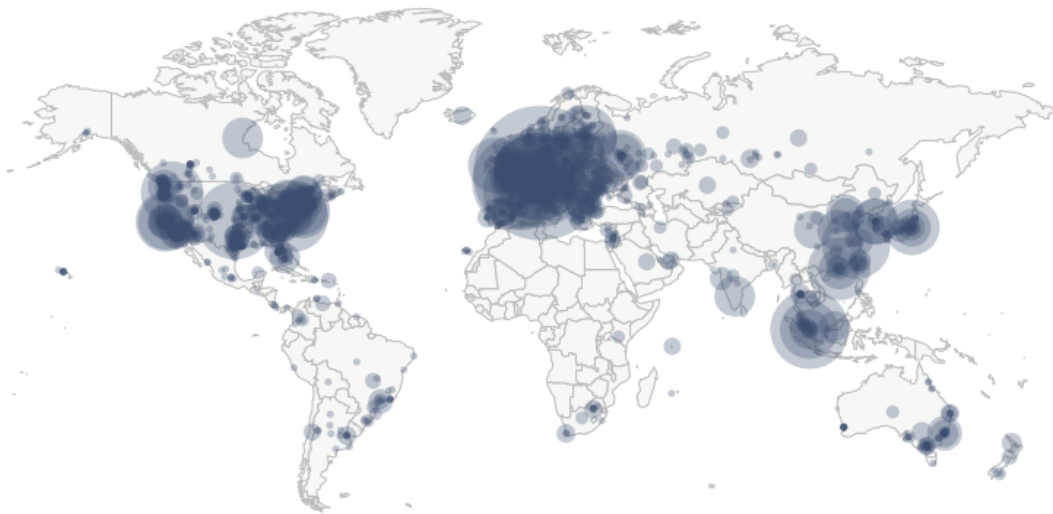


Figure 4. Global Bitcoin network online footprint (retrieved from BitNodes 2020)

The Bitcoin mining ASICs' development, according to Wong (2017), escalated the race to devote greater amounts of processing power to bitcoin mining. This is the key difference between Bitcoin and other crypto currencies, since the first became safer and more complex, being the only that requires such advanced technology to be a part of the establishment. The large mining companies, by having more means to develop a competitive ASIC, are the only ones to control the supply of this hardware to consumers (Hsue 2018). It is possible to produce other non-Bitcoin based currencies utilizing ASICs, though considering

equipment price and maintenance needs, it is simply more profitable to focus on Bitcoin, at least for now.

2.1.3 The ALT Coins

The term “altcoins” refers to all cryptocurrencies other than Bitcoin (Frankenfield 2020). According to official statistics from Coin Market Cap’s webpage, it is estimated that more than 5,000 alternative digital currencies to traditional Bitcoin exist. The token economic models of many altcoins also still have to prove themselves. Often enough, tokens in Initial Coin Offerings (ICOs) were issued with the primary goal of fundraising and establishing an initial userbase, and how the network value would affect the value of the tokens was an afterthought. (Huber, Hays & Valek 2019, 1-2.) It is possible to analyse the ranking of such ALT coins in detail, comprehending userbase size, average value and transactional volumes per period.

Although the market capitalization positioning fluctuates daily, the most well-known alternative digital assets are:

- Ethereum (ETH): the most famous alternative to Bitcoin, and also heavier in terms of data amount per block, Ethereum is a slower but more multi-functional solution, having its network fuel called Ether. When Ethereum debuted in 2015, it was hailed as the more savvy successor to Bitcoin because it offered tools that allowed programmers to create apps that could perform transactions automatically rather than just serving as a means of exchange (Kharif 2019). While Bitcoin works similar to a debit card payment, Ethereum has full banking functions, such as escrow guarantee until the beneficiary fulfils specific terms and documental proof regarding tasks proposed by the sender side, for example, all the way to complex contracts amongst parties digitally annexed to the transaction’s public record. The technical term for such feature is known as “Ethereum smart contracts”. At first, assets and contract terms are coded and put into the block of a Blockchain. This contract is distributed and copied multiple times between the nodes of the platform; (Tar 2017.)

- Litecoin: created by Charlie Lee and similar to Bitcoin, it was designed to perform payments as a solution. However, Litecoin stores a lot less data per block, which makes the transactions lighter and faster, but also reduce the credibility and recording of settlement information when compared to classic Bitcoin. With substantial industry support, trade volume and liquidity, Litecoin is a proven medium of commerce complementary to Bitcoin (What Is Litecoin N.d.);
- Monero: similar to Bitcoin, however, does not operate on fully public ledger work frame, being much more anonymous and at the same time attracting less users, because as regulations come, institutional players are cornered to operate through clearer tokens, such as Bitcoin. The creator Nicolas van Saberhagen (2013, 5) explains that a verifier is concerned that the real signer is a member of the group, but cannot exclusively identify the signer. Anonymity still continues to appeal to small ticket retail users, which means the overall market capitalization of ALT coin Monero is still low, but daily transaction volume is growing steadily, as shown in the Bit Info Charts' webpage;
- Ripple: is at once a company, a digital-payment processing system and a cryptocurrency, which is also known as XRP (Fiorillo 2018). The system was proposed by David Schwartz and the currency is owned by Ripple, whereas Bitcoin is mined. It is more connected to private equity world, in which buyers of the Ripple token own a small share of profit distribution rights of Ripple Labs, the holding which creates solutions for global financial systems to integrate blockchain software to its standard dynamics. The infrastructure of Ripple is designed to make transactions quicker and more convenient for banks, so it is a more popular cryptocurrency option for larger financial institutions. Because so much XRP is owned by Ripple and isn't really used as a currency, some have alleged that it should be considered a security (ibid.). This proves the potential to eventually revolutionize slower means of remittance such as the privately centralized SWIFT/SEPA system: Society for the Worldwide

Interbank Financial Telecommunication and Single Europe Payments Area.

While analysing ALT coins, it is important to mention Bitcoin Cash and Bitcoin Satoshi Version (SV). Bitcoin Cash (BCH) is a hard fork (a community-activated update to the protocol or code) of Bitcoin that took effect on August 1st, 2017 that increased the block size to 8 MB, to help the scale of the underlying technology of Bitcoin (Bitcoin Cash N.d.). These alternatives are customized versions of the original currency, however modified to attend to compliance needs of specific markets and regions, such as, respectively, China and Southeast Asia. Bitcoin Cash came as a proposition to achieve the primary promise of Bitcoin: digital cash with high transaction throughput and low fees (Bitcoin Cash vs. Bitcoin SV: Six Months after the Hash War 2019). This is where China's moves against ICOs and Bitcoin could backfire. In that system, developers can monetize new decentralized applications and profit from collaboration rather than rely on restrictive, litigated intellectual property protection. (Casey 2017.)

In November 2018, the network of BCH split in two, deriving the creation of Bitcoin Satoshi Vision, or Bitcoin SV (Bitcoin Cash vs. Bitcoin SV: Six Months after the Hash War 2019). These altered versions may be produced through SHA-256 ASICs, although it might be not the most economically sensitive decision, especially because many of such new variations suffer from slower adoption by general public. Although BCH can support more transactions per block having lower fees, there is no high demand for a blockchain-based cash system yet. It is competing with credit cards and centralized payment systems like PayPal, which are likely the more convenient option for most people. (ibid.)

Most ALT coins are unique and idealized by a single source, such as EOS currency, making them appeal less to the common investor seeking a decade long proven solution such as Bitcoin. In 70% of cases, cryptocurrencies such as Ether, Litecoin, EOS, XRP, Bitcoin Cash (BCH), Binance Coin (BNB) and others grew and fell simultaneously. Therefore, using them to diversify the

investment portfolio might not make sense. (Magas 2020.) ALT coins, however, are very profitable if a buyer follows the market statistics and knows when to purchase some of these lesser known tokens. Altcoins can be analysed much like a stock can. Early investors in the best altcoins are like venture capitalists backing the next Microsoft, Apple, or Google. (McCall 2020.)

Although it seems positive to venture into ALT coins, especially due to its early stage character and optimistic perspective for applicability and value growth, the mainstream crypto currency continues to be the Bitcoin. According to Martinez (2020), not only is it seen as a safe haven asset, but it's also the original cryptocurrency and continually leads blockchain development. It has the largest network effect, the most supporting infrastructure built out around it, and the best trade-offs for self sovereignty (ibid.).

2.2 Regulatory Framework

According to congress hearing presented to the American Securities Exchange Commission (SEC) on February 2018, new rules are being implemented for anyone performing transactions related to Bitcoin when it is sold or swapped for US Dollars or other centrally issued financial asset. As Chairman Jay Clayton (2018) states, for those who seek to raise capital to fund an enterprise, as many in the ICO space have sought to do, a primary entry into the SEC's jurisdiction is the offer and sale of securities, as set forth in the Securities Act of 1933. Financial products that are linked to underlying digital assets, including cryptocurrencies, may be structured as securities products subject to the federal securities laws even if the underlying cryptocurrencies are not themselves securities (ibid.).

The rules were quickly followed by the Eurozone through the European Securities and Markets Authority (ESMA), and mostly relate to obliging digital wallet holders – where crypto currencies are kept – to fulfil stricter policies of the Markets in Financial Instruments Directive (MiFID). “For crypto-assets that qualify as financial instruments under MiFID, there are areas that require

potential interpretation or re-consideration of specific requirements to allow for an effective application of existing regulations. ESMA will continue to actively monitor market developments around crypto-assets while cooperating with NCAs and global regulators”. (Crypto-assets Need Common EU-Wide Approach to Ensure Investor Protection 2019.)

Concerns were raised about investor protection and avoidance of fraud and manipulation. The ability of bad actors to commit age-old frauds with new technologies coupled with the significant amount of capital – particularly from retail investors – that has poured into cryptocurrencies and ICOs in recent months and the offshore footprint of many of these activities have only heightened these concerns (Clayton 2018).

Therefore, the policies of anti-money laundering (AML) and know your client (KYC or identity declaration), were reinforced in order to avoid blacklisting and facilitate regulators duties when keeping track on settlement volumes. The complex rules reflected on countries linking userbases to personal surveillance, which upsets some of the early adopters of Bitcoin, at the same time as attracts longer term buy-ins and pass on more confidence to the users. The European Union also developed the Fifth Anti-Money Laundering Directive (5AMLD), which implies that crypto-assets and their related services are recognized as *obliged entities*, and therefore must collect proof of beneficial ownership registrations. Banks, payment processing providers and gaming businesses are part of this designation. 5AMDL represents a positive development for the crypto technology, making its standards more clarified and increasing the familiarity among businesses and governments. As stated by Kuskowski (2020), “it is incumbent on those of us developing solutions based on this technology to work constructively with governments and regulators as well as financial institutions to build, over time, a regulatory and business framework that recognizes the fundamentally new reality of crypto”. The practice can influence wider adoption and drive opportunities for mainstream economy.

South Korea's National Assembly passed on an amendment that provides a regulatory framework for crypto assets management. It imposes AML obligations on cryptocurrency exchanges and service providers, in compliance with the standards set by the Financial Action Task Force (FATF), the global money-laundering watchdog (Helms 2020). Hence, anyone making use of cryptocurrencies, according to Clayton (2018), should exercise particular caution, including ensuring that their cryptocurrency activities are not undermining their anti-money laundering and know-your-customer obligations.

Most Northern hemisphere countries are close to have Bitcoin clearly regulated, receptive to its custody in traditional banks, as well as comprehending clearly the use cases and how to apply taxes on wealth generated or increased through Bitcoin and ALT coins. "From 1 November 2019, only virtual currency providers who fulfil the requirements provided by legislation may practice activities in Finland. The provision of virtual currencies is international and cross-border activity". (The Financial Supervisory Authority granted five registrations as virtual currency provider – scope of supervision is the prevention of money laundering 2019.) Sales of cryptocurrencies are exempt from Norwegian value-added tax (VAT) (Hofverberg 2019). Moreover, Sweden's central bank, Riksbank, is investigating options on issuing their digital currency for promoting a safer and efficient payment system. The Riksbank sees potential problems with the marginalisation of cash and has therefore initiated a pilot project to develop a proposal for a technical solution for Swedish kronor in electronic form, an e-krona (E-krona 2019). However this movement takes shape, it will drive Bitcoin especially to become a financial asset covered by an ever improving legal setup, so that being accepted even by banks, its liquidity rate tends to only rise.

2.3 Banking Perspective

The conventional financial system gives the banks the power to supply or deduct money from the market, controlling the purchasing power, inflation and economic conditions along with it (Rosic 2020). Nakamoto (2008, 1) stated in

the BTC's white paper that "what is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party". The concept of Bitcoin does not allow entities to influence the supply and creates automatic adjustments to the market through *diminishing* rewards.

As regulations become clearer, banks and credit card providers are increasingly more interested in having allocations in crypto currencies; be it to satisfy clientele demand, or to actively invest in the best performing tokens as a risk asset class, part of the institution's investment portfolios. For instance, in Switzerland, the banks SEBA and Sygnum, which are licensed and supervised under the guidelines of the Swiss Financial Market Supervisory Authority (FINMA), offer management of such assets. Sygnum, headquartered in Zurich, has teamed up with the German stock exchange, telecoms operator Swisscom and other partners to list and trade tokenised securities on a distributed ledger technology platform (Allen 2019).

The demand initially came from clients, who had Bitcoins from past occasions when the complexity of a SHA-256 based block was a lot lower, and saw the asset gain more than 300% value simply by keeping the tokens aside and waiting. For this reason, it became important for banks to develop analytic parameters in order to deal with such demands, be it storing Bitcoin or ALT coins, all the way to comprehending the wealth appreciation curve that someone holding this kind of asset deserves. Some, such as Bitcoin Suisse, Crypto Finance and Lykke have also applied for licenses from FINMA (ibid.).

Bitcoin Suisse, based in Zug, Switzerland, was regulated and started providing crypto-financial solutions in 2014, being further developed and having their current team operating in Zug, Copenhagen and Liechtenstein. In 2017, the Canton of Zug declared the acceptance of Bitcoin for local citizens' payments of municipal services, and Bitcoin Suisse was the first entity to enable the exchanges and transfers. The city of Chiasso, in the Swiss Canton of Ticino, followed the steps and started to allow tax payments in Bitcoin in 2018.

The Parliament of Liechtenstein also took steps to allow tokenizing any assets or rights, by approving the Blockchain Act. Bank Frick is the first financial institution in Liechtenstein to offer professional market participants and intermediaries the trading of leading cryptocurrencies and secure custody via offline storage (Crypto trading services N.d.). With the goal of anchoring blockchain banking in the market, Bank Frick and Bitcoin Suisse linked to develop an innovative product, the crypto certificate. Bank Frick is issuing an active BTC-ETH tracker, with Bitcoin Suisse acting as the blockchain service provider and prime crypto broker (Crypto certificate as a token and classic security 2019).

The recently-enacted Blockchain Act formally entitled the “Tokens and Trustworthy Technologies Law (TVTG)” – is another significant step forward as it is the first law in the world to specifically address the governance of the token economy and is set to come into force at the beginning of January 2020 (The Opportunities of Liechtenstein’s New Blockchain Act N.d.). The Bitcoin Suisse team believes that the EU will take a closer look at the TVTG and will use several parts or even the whole law as an inspiration for a European legislation (ibid.). Although some institutions are already including these technologies and related services in their operations and others might follow the trend, saying that the only way to the future of banking is with blockchain and crypto is short sighted (Pollock 2019). By now banks understood that crypto currencies have no intention, nor capacity, to substitute banking platforms in full, at least right now, within the municipality unclear period in which such transaction sources are not broadly regulated, creating a challenging dynamic for client admission and comprehension of assets under management volume-wise.

2.4 Unsought Products Industry

Unsought products typically are products that the consumers are not aware and don’t have any knowledge about it. Consumers have no desire and intention to buy unsought goods under normal circumstances. Another point of no desire to purchase is lack of tangible benefits at the time of purchase, so people think of

fraud, waste of money and time. (Farooq 2018.) Unsought goods often satisfy a genuine need that the consumer had not actively considered, for example, a life-insurance policy, or the need for a funeral arrangement (Lancaster & Reynolds 2005, 105).

Breakthrough products fulfil a consumer's need to a greater degree than existing products, while being more technologically advanced and innovative (Breakthrough Products N.d.). They are examples of unsought products. Typically, creating a breakthrough product requires meeting the needs of a customer that they were not initially aware of (ibid.).

The basic concept of insurance is that one party, the insurer, will guarantee payment for an uncertain future event. Meanwhile, another party, the insured or the policyholder, pays a smaller premium to the insurer in exchange for that protection on that uncertain future occurrence. (Beers 2019.)

General insurance (e.g. insuring risks to property and possessions), health insurance and life assurance are effective means of enabling individuals and organisations alike to take on risks associated with economic advancement. For example, a bank will be unwilling to lend money to a small business owner who wants to invest in additional manufacturing capacity without some form of security. A common type of security is some form of life insurance that will enable the bank loan to be repaid in the event of the death of the borrower. (Ennew & Waite 2013, 11.) Life insurance policies may be sold as term life, which is less expensive and expires at the end of the term or permanent (typically whole life or universal life), which is more expensive but lasts a lifetime and carries a cash accumulation component (Beers 2019). This attracts the high net worth individuals (HNWIs), who have more at risk and monetary conditions to finance such service, being a fundamental policy for their wealth planning.

By offering tax benefits, wealth accumulation, liquidity, and protection against financial disasters, life insurance should play a role in every affluent client's financial plan (Jarvis & Mandell 2008, 62).

The pricing is important, since this lot work hard for what they have and take care of maintaining it. But, according to Oechsli (2014, 228), the real issue is not finding the lowest possible price; it's getting the highest possible value for the price that they pay. They should understand this value and the upcoming benefits already through the advertising information they are targeted at.

2.5 Marketing Strategies

Consumers naturally tend to resist buying 'unsought products' (Lambin, Chumpitaz & Schuiling 2007, 19). The reason is lack of desire and fear that product will not give you the exact value of your money (Farooq 2018). How do you sell something that no one's ever seen before? Because such breakthrough products don't connect easily with buyers' existing needs and expectations, traditional marketing programs such as in-store promotions, direct marketing, and print and broadcast advertising often don't do much good. After all, those programs assume that customers understand the usefulness of the product and know how to evaluate its features. (Waite, Cohen & Buday 1999.)

The consumer is often at disadvantage when confronted with unsought goods because there might have been no opportunity for evaluation and comparison, so such goods should be marketed sensitively (Lancaster & Reynolds 2005, 105).

For example, in 1996, WebTV started to sell its Web surfing device for TVs. Supported by the marketing muscle of Microsoft, its parent company, WebTV launched a traditional marketing program that included heavy investments in advertising and dealer training. But sales didn't skyrocket, they fizzled. It wasn't until Philips Magnavox entered the picture that things changed. Through research, Philips determined that its target consumers stayed away from WebTV because they didn't understand what the device — or more generally, what the Internet — could do for them. And so Philips launched an initiative to educate customers. It developed infomercials featuring customers who explained the benefits of the Internet overall and WebTV in particular. (Waite, Cohen & Buday 1999.)

The marketer's task is to organise the marketing mix in such a way as to present consumers with an assortment of 'satisfactions' identified as being appropriate to their needs. The marketing mix creates the 'product' in this wider sense, and all its efforts are devoted to delivering something that most exactly matches defined consumer wants or needs. (Lancaster & Reynolds 2005, 101.) The Philips campaign succeeded because it eschewed traditional product marketing for what we call "concept marketing." The first goal of concept marketing is to explain the concept underlying the product — to precondition the market. Only then does the focus shift to sales. (Waite, Cohen & Buday 1999.)

Education-based marketing is about sharing educational messages with the potential consumers in order to nurture the company's capacity and credibility in meeting their needs and solving their problems. According to Olenski (2015), it is "the sharing of knowledge with the purpose of building trust".

The typical concept marketing process has three stages: educating customers so they understand and buy into the need; helping consumers understand the different types of products and services that satisfy the need; and giving them evidence that your company and its offerings best fill that need (Waite, Cohen & Buday 1999). Whereas education-based marketing generates further information and curiosity, traditional marketing is done through selling-based messages (Olenski 2015). The use of books, infomercials, public mentions by credible individuals, and presentations at conferences and forums, for example, will get the word across more persuasively (Waite, Cohen & Buday 1999). This reinforces the relevance of educational events, such as the World Economic Forum.

When educational, the marketing strategies of financial services tend to be highly effective. Olenski (2015) explains the Financial Services industry as "an industry that is faced with some of the greatest hurdles when it comes to trust in the eyes of the consumer". Therefore, the consumers do not get greatly attracted to become customers in the face of traditional marketing approaches. Their level of understanding in this industry is much lower in comparison with the professionals;

and in order to fill this gap, the marketing strategies should be conducted through education, through information, through knowledge (ibid.).

Most of these strategies, nowadays, are followed through in the digital space, and this approach may be followed even when the circumstance shows a consumer-generated marketing communication (CGMC). After analysing the message and understanding the points of view of those “marketing” in favour of the product, there is room to offer a response adding educational content on their missing – or poorly explored – gaps, possibly transforming some “click-throughs” into “conversions”.

According to Saleem (2019, 35), digitalization has enabled us to communicate across the national and cultural boundaries. Digitalization is merely providing us tools that open up the opportunity to interact in many different ways, such Business-to-Business, Business-to-Consumer and consumer-to-consumer, by using a wide array of digital media such as online forums, social media networks, blogs, videos, photos, and news sharing on the Internet. (ibid., 35-36.)

A thorough understanding of the influence of culture on digital marketing communication might help the manager to determine how to react CGMC in digital space and what type firm-created marketing communication are useful to engage with the consumer in different cultures (ibid., 36). Cultural boundaries are very likely to influence pricing perspectives as well, reflected in the companies’ price setting processes and consumer purchase decisions. Although price might appear to be the determining factor in making a major purchase, most of these decisions are determined by a careful examination of the features (Oechsli 2014, 228). Therefore, the marketing strategy should include informing every aspect and conditions of the deal in detail to the clients, especially to the HNWIs. To sum up, international digital marketing communication should take into account the receiver’s cognitive, social, and cultural background (Saleem 2019, 36).

2.6 Consumer Behaviour Analysis

Consumer behaviour, after all, embraces all of the activities of buyers, ex-buyers and potential buyers from pre purchase to post purchase, consumption to discontinuance. It extends from the awareness of a want, through the search and evaluation of possible means of satisfying it, and the act of purchase itself, to the evaluation of the purchased item in use, which directly impacts upon the probability of repurchase. (Foxall 2002, 3-4.)

The application of consumer behaviour analysis for marketing strategies leads to more efficient marketing campaigns. According to Perner (N.d.), for example, by understanding that consumers are more receptive to food advertising when they are hungry, we learn to schedule snack advertisements late in the afternoon. Marketing management consists in the qualification of consumer behaviour setting scope and the management of reinforces. The fact that marketing takes place within a competitive context – at least in affluent societies that ensure high levels of discretionary income, an excess of marketing capacity over demand, and thus consumer choice – means that closure strategies are limited by firms' resources and the actions of their rivals. (Foxall 2002, 93.)

The affluent consumers will pay fees, according to Oechsli (2014), as long as they're fully disclosed. Problems arise, though, when they discover a fee that was never disclosed – a discovery that immediately earns their distrust. (229.) Whether it was an innocent missing information or an attempt to maliciously earn higher profits, the trust between the client and business is shaken. Regarding insurances and other unsought products and services, the scenario is the same. The Savvy Affluent also looks for agents of the highest moral character who are experienced and successful enough not to be influenced by slightly higher commissions or other incentives insurance companies offer (Jarvis & Mandell 2008, 63).

The affluent seek new experiences and new products, and they tend to be early adopters of emerging innovation, technology and services. This early adoption

naturally influences their peer group and network – and trickles down through a broader demographic. (Minnium 2017.) By seeking to obtain a first-hand experience, the HNWI's tend to approach the businesses showing their demand and curiosity.

Demand analysis is a key item for intelligent product positioning in the age when information and advertisement may come to an excessive degree. In the past, most companies created products, which they therefore promoted through various methods, hoping to fall into consumers' graces. According to Day and Moorman (2010, 5), inside-out companies narrowly frame their strategic thinking by asking, "What can the market do for us?" rather than, "What can we do for the market?". As marketing channels were limited and, consequently, targeted to an extreme, it was a lot more likely that someone would become slowly interested, genuinely or through repetition pressure. While this approach can create short-term shareholder gains, an internal focus limits a company's ability to notice and adapt to market changes (Tarkoff 2010).

Nowadays, people expect the brands with whom they interact to embody human qualities – be steadfast and transparent in their beliefs, consistent in their actions and authentic in their intentions. Today's consumers often identify with a brand's purpose, seeking to connect at a deeper level even as the brand reciprocally aligns with who they are and who they want to be. (O'Brien, Main, Kounkel & Stephan 2019, 3-7.)

3 Methodology

3.1 Research Objective

According to Saleem (N.d.), research need is to challenge the conventional. Following this principle, this study aims to evaluate the applicability and efficiency of innovative projects; these being: blockchain and crypto currencies, with focus on Bitcoin, as well as their facilitators and implications for integration into the traditional, but evolving, economy. The main task of this research is to

find sources that contain descriptive and justified information on the literature review topics, conducting a creative activity of merging the data collected and producing new knowledge about these specific fields.

This thesis proposes to investigate the essential technical matters behind the blockchain and crypto currency technologies – not diving in too deep in this matter in order to keep the research nature inductive. Following, it explores existing uses and applications of both worldwide, including compliance rules and legislations already created, and ideas for future implementation, designed by banks, governments, and companies, demonstrating their current performance.

The objective of the research, then, revolves around comprehending these factors together with analysing the existing consumer demands and behaviour, allowing a debate about the effectiveness of crypto assets, and leading to a proposal of marketing approach measures. The ideal outcome is to reach a deep interpretation of these facts, which will allow formulating new theories that might not have been proposed before, after considering the relevance of the latest concepts and the understanding of the historical background.

3.2 Research Methods

According to Myers (2013, 6), Kaplan and Maxwell (1994) say that the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context is largely lost when textual data are quantified. Due to the nature of this research, the qualitative, or inductive, approach was chosen as a mono method, since some aspects of the blockchain data are not visible by design, not allowing precise figures. It would seem, on the face of it, that simply taking the number of wallets created (a number, in simple terms, that comes from new unique addresses with private keys generated) would provide us with the answer we are looking for. Alas, that is not the case. (Deane 2020.)

Qualitative research methods are designed to help researchers understand people and what they say and do, as well as the social and cultural contexts within which people live (Myers 2013, 5). Such approach tends to be effective in establishing relationships among the studied variables, not focusing on the analytical point of view, but the context in which they rely, the influence they have and the impacts they might cause, a method which supports this research. The qualitative approach facilitates proposing the context in which the adoption of blockchain, crypto currencies and related technologies would be promising. Through understanding thoughts, motivations, reasons and needs of people, businesses, banks and governmental authorities, it is possible to explain current scenarios and suggest future actions.

The owners of wallets are a fundamental aspect of the blockchain subject; although precise and accurate information on who they are is impossible to achieve. The total number of wallets existent holding Bitcoin is available directly from the blockchain, however, these numbers are still addresses, not actual users; some wallets are inactive, which might have been forgotten, plus one person might hold many different wallets. According to Deane (2020), it may never be possible to know how many people are actually using it at any particular time, even with all the precise, detailed and real-time information available from the blockchain itself. Therefore, it would be unfeasible to use a deductive, or quantitative, method, as it would be pointing questionable data, not effectively answering the research questions.

The strategy of the research falls under comprehending the behaviour of all parties, looking for the benefits, interests and added values to them, while investigating the necessary and current measures for applicability and adoption of such technologies.

3.3 Data Collection and Analysis

The research of blockchain and related technologies is very limited today, due to its own “mysterious” aspects of creation – which can lead to skepticism – and

to being an innovative, constantly speculating, development. Therefore, it is difficult to find precise information on its performance and legal matters backing its applicability. For this reason, in an attempt to answer the research questions, the data collection process consisted of utilizing various sources of secondary data available, with the data being retrieved through archival research, action research and grounded theory on the internet. This is especially applicable for the process of answering the first and second research questions:

- *Have Bitcoin events and performance clearly been exposing valuable insights on human capital investments when compared to traditional methods?*
- *Are crypto related assets a guaranteed wealth preservation tool?*

Firstly, the study required a setup on how to evaluate the credibility behind facts and figures, given in the event of excessive online content it is harder to find reliable sources of information, so this process is very diligent in bibliographic aspects as well. The criteria adopted for examining the credibility of online literature about blockchain and crypto currencies consisted of:

- Checking timeliness, opting for the most recent publications in order to ensure accuracy, since the topic is innovative and constantly showing fluctuations;
- Prioritizing authoritative sources: unlike popular sources, the authoritative are those written by *experts* of the blockchain subject, meaning they are able to explain facts and propose ideas backed by evidence-based arguments. They are also the oldest and most well-established sources for crypto market facts, trends, and news. In this research case, the definition of *experts* can have different senses, such as: a) people holding crypto assets themselves in a long term investing style, being aware of the speculative matters and the functioning of both the blockchain system and the market; b) investors and owners of mining facilities, or data centres; c) people with technical and programming

knowledge of distributed ledger platforms and software applications for businesses; d) market analysts of high risk investments; e) enthusiasts and educated writers invited to contribute to the most reputable websites;

- Establishing comparisons about an idea among different websites, looking for their pursue of similar logics, aiming to reach a concept validation;
- Paying attention to substantial data that contradicts the facilitators and positive aspects of blockchain implementation in today's economy – despite having the relevance of this thesis' topic strongly highlighted – in order to acquire diverse perspectives.

Secondly, the exploration for credible publishers included a careful selection of the key words used in the online search engine, in order to find definitions and ideas on the very targeted aspects, avoiding finding general content, making this process more efficient. The main credible open sources of obtaining knowledge used were the websites of: *Cointelegraph*, *Coin Desk*, *Coin Market Cap*, *Bitcoinist*, *Quartz*, and *BitDegree*.

For more specific and theory-based data on the functionality of the crypto currencies, their “white paper” documents and official webpages were studied, mainly the Bitcoin one. Moreover, for increasing the collection of reputable data, now leaning towards the meaning of digital economy, articles published by the World Economic Forum page were analysed, as well as different websites for news, such as *Forbes* and *Bloomberg*. The strategy included, as Saleem (N.d.) suggested, re-organisation of old and new information in a way that it may provide new interpretations – which then partially backed the answers for the other two research questions:

- *What are the roles of policy making and global scale economic data for the appeal of Bitcoin as a safe haven asset?*

- *Which sets of information are key for private bankers to approach the targeted investors in order to influence purchase of such unsought product?*

The data collection for attempting to answer them completely was based on archival research and grounded theory, researching for online publications, as well as books, for definitions of the unsought products industry, insurance business, and consumer behaviour analysis focused marketing strategy. The objective of theories and frameworks is to make findings meaningful and to give a new direction to research (Saleem N.d.). Therefore, to conclude the positioning of such new findings and establish relationship among the concepts, the financial system and existing legal frameworks were studied.

This step was conducted by researching for new banks and central banks which have adopted or are analyzing adopting blockchain technologies, in an attempt to prove implementation possibilities. At the same time, this was followed by accessing the webpages of the European Commission, United Nations, and other supervisory authorities, as well as credit ratings experts such as *Fitch Ratings*, investigating their positioning, and implications of legal measures. Governmental authorities' standards must be recognized and followed for compliance with laws, regulations and rules, once these are requirements for any implementations and conduction of projects.

4 Results

4.1 Crypto Currencies Integration to the Financial System

According to Ennew and Waite (2013, 4), economic development that combines the positive aspects of the market economy (particularly innovation and resource efficiency) with the collectivist instincts and community focus of State legislatures is, arguably, most likely to serve the common good.

The peer to peer confirmed network of Bitcoin, chiefly the most de-centralized of all crypto assets, has proven the concept suggested above, creating a cross border integrated web of users and supporters, who maintain the transactional data base online on an open source public ledger setup, allowing full transparency and much deeper analytics than any financial system in place to date.

It made Bitcoin attractive but also moved other developers away from it, alleging interest in other deeply private applications of digital currency concept and underlying technology assets, such as the Alt coins. The first in this series looks at Monero – referred to as a privacy coin because it allows users to conceal nearly all details of transactions.

Bitcoin and the other open source, very visible currencies or financial tools, remain the mainstream adoption choice, given majority of retail investors and curious parties now begin to realize these technologies bring visibility and traceability to cross border remittance, while it was thought before to be anonymous. As stated by Wilson (2019), Bitcoin was initially seen as opaque, as the identity of the owners of digital wallets used to send and receive bitcoin is not public. However, the permanent details on the recordings of transactions on the blockchain can work to identify the users.

Governments also slowly begin to comprehend that the top *cryptos* are actually much more trackable than cash or many types of bank to bank payment, due to the incorruptible character of over 51% mandatory global confirmation of any transaction or string of information produced through the networks; meaning what was once mistakenly thought to be shady and anonymous, is now proven to become the banking or tax compliance officer's best friend slowly but steadily.

While the logic to integrating crypto assets into financial systems globally begins to make sense in regulators' line of thought, there is still a long way to go and one must study the matters harder before choosing to go into one of the attractive crypto currencies.

It may be tempting to come into investment or transacting in Economy 4.0 methodology, fully digital, however, this gap that is still being filled by forthcoming technologies, is, at the same time, a very broad and young offering still, struggling to gain relevance amongst consolidated fintech players.

The financial services industry has an increasingly essential role to play in providing the wide range of products and services that are necessary to smooth income and expenditure flows throughout one's working life (Ennew & Waite 2013, 11). This means where there is exhaustion of public focused means of wealth generation or preservation, such as government centred currencies; there are opportunities for private and decentralized players to develop a way to generate value to communities and facilitate transactions in more efficient manners.

The claims of the crypto asset defenders, *Cypherpunks*, are not entirely false; however, sovereign nations are sustained by its resources, reserves, population, patriotism, military capacities and other tangible variables far more important than a choice of currency.

It is possible to comprehend why digital revolution proponents might get caught in their own excitement as a type of self-fulfilling prophecy when digital assets start to gain centre-stage on global regulatory debate and many of such early adopters made fortunes simply by holding or mining (coding in large scale) these digital assets.

Still, there are increasing safeguards and policy making precautions which surround traditional economic dynamics, which crypto assets are still far from satisfying. For this reason, the integration of Bitcoin and similar solutions to international financial system as a fully compliant financial tool, may still take a very long time, especially when considering the immense volume of payments the global economic network is capable to process, such as thousands of payments per second with solutions like credit cards or bank based electronic payment providers.

The capacity of payment per second handled by networks like the Bitcoin is still extremely tiny when compared. This means the long road ahead is not only paved by legal discussions, compliance and regulatory framework still to come into play, but also technological advancements required to make it possible.

4.2 Private Banking Approach

4.2.1 Wealth Management

The Savvy Affluent never give a second thought to any financial or legal suggestion that isn't offered by someone who is intimately familiar with their situation and goals (Jarvis & Mandell 2008, 24), which emphasizes the necessity of a potential explorer of digital assets as reliable financial solution. This includes, though is not limited to, asset preservation, investment, remittance tool, diversification, simple curiosity, and needs for being a disciplined self-learner. In our litigious society, asset protection planning is an integral part of any comprehensive financial plan (ibid., 82). It also revolves around counting on reliable advice from a trusted source, be it a knowledgeable private banker, business mentor, academic expert or another figure of influence.

Clarifying how private banking is beginning to approach the crypto assets subject is far from easy, considering how discreet and cautious such market segment is. Digital economy begins to trickle down into wealth management mostly based on existing clientele requests: the customer base of high net worth asset management institutions are usually the earliest adopters, because they have broader savings to invest and do not feel threatened by losses which are perceived as minor; also tending to acquire innovative experiences. On the other hand, for a traditional investor it could represent an extremely high risk to a life savings portfolio.

This way, the clientele driven approach suggests that bankers are normally not taking initiative on offering crypto assets to clients, but are instead being asked to provide either solutions for safe custody of such digital valuables, or even legal clarification and assistance in finding reliable sources for purchasing such

crypto currencies. The target should be mostly the top 5 coins by market capitalization, namely Bitcoin, Ethereum, XRP, Tether, and Bitcoin Cash, because they show the highest liquidity level. This creates an interesting approach to a new asset class penetrating the private banking world: an “outside-in” dynamic, insinuating an innovation in wealth management. With the advent of digital media, there is a shift in the control of marketing communication from the company to the consumer (Saleem 2019, 35). Such indication comes from considering the fact that in the unsought products industry, which can be seen in private banking, most of the time, the sellers are the ones offering opportunities to their clientele, and not the other way around.

The primary difference is that retail customers only have access to standardized banking products, while private banking customers can access customized banking products (Retail Banking N.d.). According to Jarvis and Mandell (2008, 24), wealthy Americans must spend the time and money on a specially trained and experienced team of advisors to customize a plan that will help them most efficiently and effectively reach their specific personal goals. This also reflects the crypto asset investment reality, once it is possible to notice patterns in banking segment regarding how these high net worth individuals are shaping the product offering of a classic banking institution.

The proposed team ranges from the classic portfolio manager, to even unusual high-performance computing programmers and technology analysts posing as specialists when advising investors on how to allocate their funds, and where.

The widely unregulated aspect of many crypto assets and its distribution methods contribute to high-risk/high-return perspectives, in which the *high-risk* side deserves to be strongly highlighted.

Crypto assets are not precisely a wealth preservation tool just yet, although some market data may tempt analysts to argue to the contrary, such as how the first half of 2020 witnessed extremely volatile periods for the capital markets (see Figure 5), especially between mid to late first quarter, now into the first half of the second quarter of the year.



Figure 5. Bitcoin price index from February 10 to May 10, 2020 (adapted from Coin Desk 2020)

Although March showed a major crash in its value, the price of Bitcoin, in May, has risen by almost a third (Cuthbertson, 2020). The unusual year has seen even traditionally safe commodities and especially the oil index dropping to all-time lows, which generated a very unlikely scenario with Bitcoin on top rise so far (see Figure 6). The boost of Bitcoin, which surpassed gold, silver and crude oil, has driven it to be the top performing asset of 2020 (ibid.). This implies that Bitcoin is increasingly being viewed as a great alternative asset to store wealth, highlighted by its finite supply nature.

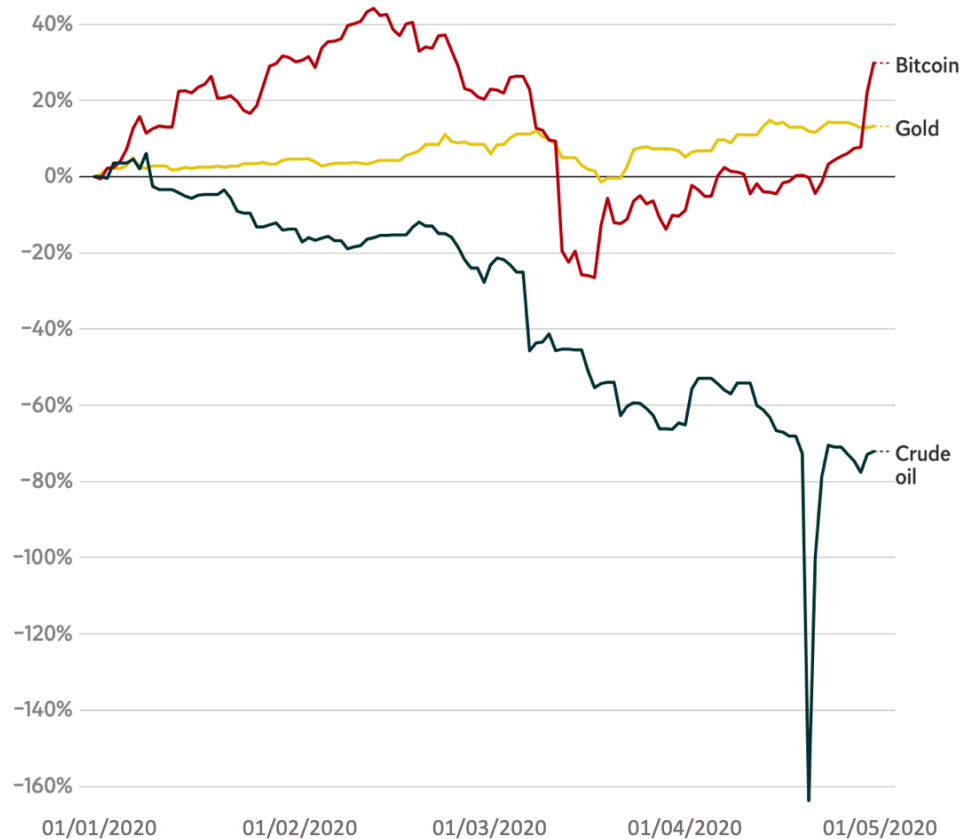


Figure 6. Changes in Bitcoin, gold and oil prices from January to May 2020 (adapted from Cuthbertson 2020, retrieved from Independent)

Both Bitcoin and gold have seen increasing values from March, when governments in the whole world announced lockdown rules, intending to decelerate the spread of Covid-19, the coronavirus pandemic. This resulted in a slowdown of the global economy, and led stock markets to crash, as investors looked to secure their holdings in safe haven assets (ibid.). Whereas traditionally, gold performs well in crisis periods, Cuthbertson (2020) says: “the finite supply of bitcoin means it is increasingly being viewed as a safe haven asset”.

The lockdowns in place around the world will result in substantial economic collateral damage (Chan & Marsh 2020). According to Cuthbertson (2020), Mahony (2020) highlights that the need to store wealth in alternative assets has

grown, in an urge to avoid the apparent depreciation that could be on the cards. The affluent tend to be in-market more often – which makes them more conversant and current on nearly every category, and more valuable to marketers (Minnium 2017). Crypto assets, however, still continue broadly unregulated and even not recognized as legal tender in many countries. This creates a sentiment of scepticism amongst sophisticated investors, especially when topics like custody, certainty of long-term reliability, and taxation are pondered, which overall influence as a safety net, though simultaneously a limiting factor, to the mass adoption of Bitcoin and similar opportunities as mainstream investment trends, even now.

Pricing complexity may lead to confusion, sometimes resulting in distrust. Neglecting to initiate a discussion about fees simply because your affluent client didn't ask is a huge *faux pas* (Oechsli 2014, 229). In these conditions, insurance agents, financial advisors and realtors must be extremely careful. Their fees are often complex, frequently high, and difficult to explain. As a result, there is a tendency to avoid fee discussions whenever possible. (ibid., 229.) This proves the importance of ensuring the clients have full comprehension of all fees, creating transparency.

The issue is far from being simple: not only transparency is needed throughout the process of a common investor accessing the digital asset, it is also important for education and clarifications on the crypto currency nature to join the movement in parallel, thus making sure the investor is aware of the risks and limitations this recent and tempting asset class offers.

On top of such challenges, come the lack of comprehensive global scale economic dynamics and broad enough trends to enable statistics measurement in an efficient manner to create laws and rules that make sense.

The policy making is an essential topic to pass reliability on to the investor, and comfort to the private banker offering, accepting or including such crypto assets as part of a financial institution's portfolio under management, even in a moment of crisis when alternative investments become more attractive. The financial

crisis seemed to mark a turning point in the spectacular growth of alternative investments in hedge funds, private equity, real estate, commodities, and infrastructure (How alternative investments are going mainstream 2012). Hence the fact Bitcoin was premiered to the public on January 2009, months after the global credit crunch crisis that severely affected North America, Europe and some parts of Asia.

Regulation is an essential part of making sure private banking professionals will be able to increasingly include risk-weighted assets (RWA), like crypto, in daily offerings, without legal complications. Over the next sub-items such suggested regulatory frameworks shall be discussed, proposing creative though responsible strategies to integrate the leading crypto assets aforementioned into wealth management portfolios in a conscious manner; at the same time as data on the current vanguardism in first incoming players to crypto asset friendly wealth management cases will be subsequently discussed over the topics ahead.

4.2.2 Compliance Aspects in KYC and AML

Not only Bitcoin and crypto assets for different utilities emerged after the global financial crisis that rocked the financial markets in 2008 and 2009: it was also the beginning of a decade or likely longer period when rules and protocols for client admittance and transaction behaviour monitoring throughout developed financial markets would become much more complex and automated.

Compliance functions are a key component of banks' second line of defence for managing risks. A strong, independent compliance function can mitigate risks related to misconduct, money laundering and other forms of non-compliance. (Strengthening banks' compliance frameworks 2020.) Being compliant to the rules meant that banks all around the world, while monitored by each country's central bank, would have to live up to much more demanding standards of investigation over clients life, source of funds, wealth generation and maintenance activities as well as legal and taxation aspects of individuals, legal

entities and all connections amongst such in the transaction environment around each bank account, domestically and globally.

Such dynamics created banking as we know it, where anti-money laundering protocols may be so exhausting and know your client forms so extensive that a bystander could wonder whether a bank still wants to do business or not. This situation, however, is actually forced upon banks by regulators, governments and risk rating agencies.

Fitch Ratings, an international provider of credit ratings, offers global perspectives on indications of potential risks and opportunities of investment. The platform analyses default probabilities and researches global capital markets, offering investors ways to assess credit risk and insights on what drives the ratings at all times. According to Fitch Ratings' online publication entitled *EU Banks Key Beneficiaries of Basel III Coronavirus Delay (2020)*, the final Basel III standards aim to restrict the benefits of model-based RWA estimates to reduce excessive variability between banks' capital calculations and improve the comparability of capital ratios.

The global scale, significant infrastructure required to comply with increasing regulatory standards and long history of investor acceptance serve as impediments to new entrants (Fitch Assigns 'BBB+' Rating to Moody's Senior Unsecured Notes Offering; Outlook Stable 2020).

According to the Banking Supervision of the European Central Bank (ECB) (2020), banks still need to strengthen the oversight of the compliance function. This imposes severe standards of business practices so that global economy may run less leveraged, more stable. They should enhance their testing, increase the involvement of the compliance function in product approval processes and improve the follow-up of compliance issues or incidents reported by the second and third lines of defence. ECB Banking Supervision will continue to press banks to enhance their compliance frameworks, taking into account the ever-changing banking landscape. (ibid.)

The increase in macroeconomic compliance standards also extends all the way into other mainstream capital markets tools, such as funds, collective investment schemes, legal entities of all kinds. They deal with financials and even some digital payment solutions providers, creating a vast network of meta data to be pondered by banks and supervisory entities, like the Basel regulations board, the International Financial Settlements Bank and national central banks, when considering a legal entity's or individual's activities through the financial avenues of the world.

Banks are in possession of unprecedented volumes of data of various types, and the only way to make sense of it all is with metadata – data that describes other data, thus allowing information to be identified, discovered and stored so that analysts can unlock meaning (Wright 2017).

Even though such bureaucratic requirements may slow ventures down and turn financial manager's lives into a much more complicated affair, the relevance for such rules is of noticeable necessity, keeping the capital markets' excessive impulses slightly tamed, while allowing safe pass for incoming professional investors, companies or curious individuals coming into this economic activity. It represents the speculative world of leveraging on your assets, somebody's else's assets, or even directly injecting capital into third party businesses and organizations, be it directly interacting with a tangible economic opportunity via such tools, or linking through various platforms all the way to an investment possibility. It can also be purely financial, such as foreign exchange rates trading of currency differences, and other factors that are various layers above the common economic activity as we know it on industry and processing of physical materials that compose the basis of most economies.

According to Wright (2017), Joss (2017) states that a comprehensive data management strategy will give businesses the insight they need to ensure that data is responsibly and securely handled, as well as the ability to provide customers with up-to-date information on request. In turn, this will help to build

stronger customer relationships, ultimately driving more revenue, as well as helping to appease the regulators (ibid.).

Considering the necessity for compliance protocols is proven effective and accepted by mainstream capital markets, it is important to bring such topics to a crypto currencies centred discussion, once the very weakest spot of digital financial assets are the low level of collective trust into the asset class, a direct result from distortions such as, though not limited to: excessive fraud, tax evasion, overly leveraged speculation and inconsistent investment schemes. All these factors contribute to crypto currencies being marginalized to a grey area category within most financiers' analysis; a problem which could be addressed by increase on standardized compliance efforts related to Bitcoin and other similar solutions.

The proposed solution contains the risk of perverting the very essence of a crypto currency, as its basic premise is the independence from any centralized power. Though increasing crypto asset userbase compliance requirements to near private banking levels of scrutiny has been revealed far from the very present, it is not entirely complex, considering there are few ways in and out of crypto assets, which mostly involve: either an exchange provider with significant liquidity to provide settlements, or an over the counter style marketplace in similar capacities. Such idea means the regulatory approach could come first through these players, to then approach users and eventually create associations, think tanks and forums where *how to improve crypto assets financial compliance* is an active and productive debate, recurring as the technology evolves, thus making it even more attractive, finally leading to the belief of mainstream adoption from the top-down.

4.2.3 The Independent Financial Companies

There are various approaches to crypto assets in the world, most of which gravitate around independent or so-called "self-regulated" financial companies.

The level of reliability of such provider depends on ownership ethics, jurisdiction rule of law and accountability level to clientele and supervisory boards, which means an organization, even when self-regulated, may also be subject to auditing, legal requirements for clarification of management decisions and other facts, all the way to subpoenas and other common tools to investigate its activities.

From this angle, no financial company is fully independent, because companies are normally registered according to the legal framework of a nation or economic block, in which ultimate beneficiary owners or legal representatives are liable in responding for the company's actions, making it all very clear. In some cases, however, incorporation structures may be hard to tackle, especially in mixed-jurisdiction setups; alas at least there is a specific route through which one can legally come to terms when dealing with such business vehicles.

On the other hand, when it is about crypto economy, the term "independent financial companies" implies a broader meaning, because crypto assets normally have a cross border nature, existing all over the internet, which is not owned by one specific player or territory, as its very concept is the worldwide web of data exchange.

When companies are not traditionally registered to a domestic database within a sovereign recognized nation, but instead fully independent and quite free, the whole matter becomes much more complex, being much harder to hold ownership accountable for its management, or mismanagement, of funds. For instance, in 2017, the ICO projects began to boom, known as the ICO bubble. At the start, public token sales were a revolutionary way of raising funds and appeared to be an equalizer that gave the average unaccredited investor access to investment opportunities typically reserved for venture capitalists and institutional investors. The drawback was this unconventional method of fundraising left investors with little legal resource for making a claim on projects that proved to be fraudulent or mismanaged. (Cryptus 2019.)

Doing business with unregistered financial companies related to crypto currencies is not recommended, and especially considering this dissertation targets private banking advice on wealth management merging with digital economy, it was essential to take the dive into such specifics aforementioned, as reference for *what not to do* when venturing into digital assets.

The lack of regulatory framework, however, may corner a few rare but strong legitimate business concepts to informality, where compliance protocols are followed in its own way, but at the same time coexist harmoniously with traditional economy, adding value to it, and vice versa.

In such rare cases, which are hard to spot, a business idea typically develops from concept to execution smoothly and becomes larger, managed by a competent and honest team, which takes it to a level high enough to inspire spontaneous peer to peer communication about it, generate broad positive reviews and lead to other key points of passing on reliability to userbase and investors, or clientele, depending on an enterprises' *modus operandi*.

There are various ways to bring an idea or activity that is promising out of the grey area when related to crypto assets, by independent auditing hire from credible companies, all the way to constant and transparent reporting and even the attachment of insurances and hedge dynamics to the interaction a crypto based business has with real economy.

It is clear bitcoin is still a risky asset on a peripheral investment frontier, and not a safe haven at all (Shah 2020). Risks continue to exist, while simultaneously it emerges an increase in wish for the mainstream wealth management segment to dedicate efforts targeted on comprehending such novelty, as well as assessing the capacities of the execution teams behind proposed innovations, which tend to be one of the few collaterals in these cases, while the global economy awaits more countries and large organizations to create, shape and accept the applicability of better KYC, AML and other compliance protocols to crypto currencies and its proponents, regardless whether such are classic corporations, individuals, or digital based organizations.

4.3 Leading Jurisdictions

The competition to become a crypto currency Eldorado - a state of great wealth and opportunity - has motivated many countries and territories to shape its legal approach to digital economy faster and more flexible, trying to establish a situation in which the rules are not fully elaborated from the bureaucrat segment down to the users, but actually vice versa, or, at least, meeting half way; considering traditional regulators tend to have a hard time comprehending crypto assets.

Some countries that have been most welcoming to Bitcoin and other crypto assets are listed ahead. It is important to highlight that the rules are constantly changing anytime a nation or regulatory board feels the degree of crypto currency penetration into a target market's environment is becoming excessively invasive or speculative enough to pose major systemic risk. For example, the domino effect triggered by highly leveraged financial losses or other issues common to poorly regulated markets. The ecosystem around bitcoin is limiting its own long-term prosperity. Topping the list of ailments is bitcoin volatility, which is artificially created by high-leverage. (Shah 2020.)

The crypto asset friendly group of countries comprehends, although not limiting itself to, the list below:

- Estonia,
- Kazakhstan,
- Lichtenstein,
- Luxembourg,
- Monaco,
- Republic of Georgia,
- Republic of San Marino,
- South Korea,
- Switzerland (through the state of Zug and few broader Confederation Laws),

- USA (through regional State Laws and generic federal guidance).

Based on the first list, there are various debates in progress and partial regulations or comprehension of crypto assets in the following countries:

- Andorra,
- Bahrain,
- Canada,
- Denmark,
- England,
- Hong Kong,
- Iceland,
- Japan,
- Malta,
- Norway,
- Russia,
- Taiwan,
- Thailand.

The friendly jurisdictions tend to have either strong economies, where savings and consumption levels are high enough to experiment with new asset classes; or weak but not poor domestic economies, which demand foreign investment to survive at the same time as a stable overall condition is shown. It is rare for a very poor country to venture into setting up regulatory framework for crypto assets, once such normally have more urgent priorities to deal with.

4.4 Crypto Assets Related Marketing Aspects

Marketing intended publications on Bitcoin pre-date the launch of the digital asset as an operational tool: various enthusiasts followed the Satoshi think tank's progress in setting up SHA-256 encryption based financial settlements protocol towards resolving the double spending issue which haunts from

publishers to credit card providers, the breakthroughs were numerous, though at the time very few paid any attention.

When the protocol went live, early first quarter of 2009, the world had just been hit by one of the worst recent financial crises, as aforementioned, and even though open discussion and promotion online attempted drawing userbase and investors, both through financial acquisition and time dedication, into the topic, it was still rather sparsely taken seriously.

The dynamics changed after late third quarter of 2015 when price started picking up to open market awareness heights, and in came speculators, taking advantage of the seriousness and heavyweight developer interest Bitcoin brought around, to try and ride along the blockchain business progress trend by launching all kinds of different “tokens” or assets that claimed to represent some type of real world collateral, which in the end were creative attempts to repeat the success of Bitcoin, some of the endeavours being even ill intended.

Repeating the success case was not possible until present date, mostly due to Bitcoin being the only really open source digital asset, the unique technology which has been openly shared with the community by its creators, who promptly stepped aside and became passive, trusting the broad developer interest and usage extent increase. Bitcoin does not have consolidated control, and given its network complexity expansion over the past few years, most likely will continue decentralized, a tool for credibility that perpetrators tried to pervert in vain.

Anyway, such attempts have scarred retail market trust on digital assets: as interest on “tokenizing” economic aspects of any given business grew, and even became mainstream between 2016 and 2017, the market got flooded with “whatever-coin”, an expression to mock excessive attaching of business propositions to digital economy, sometimes even those which do not make sense to be taken online, and still get exploited by a background interest to “surf the wave”.

The novelty was such back then, that on the last quarter of 2017 Bitcoin started to gain traction as the inlet to other digital assets, speculation reached levels unparalleled to date and it pulled along tenths of other *coins* and *tokens*, which means, respectively: a representation of financial value, and the digital manifestation of something tangible which, isolated, can lend apparent value to the tokenized statement.

The inflated valuations of many digital assets formed a market bubble that lured countless players in, mostly retail, buying into unregulated investment opportunities which presented various unclear risks, and Bitcoin, being frequently utilized as headlines to draw interest, when in reality many of the opportunities were related to lower quality tier assets, or even none, ended up producing negative pressure on the overall panorama in discussion, bursting the speculative bubble as soon as mid-January 2018, leading to a 10x crash on most currency prices, many bankruptcies and massive financial losses to various companies and even more individuals. Confidence in Bitcoin was shaken: hacks and scams dominated the news cycle, and merchant adoption failed to grow at forecasted rates (Malwa 2018).

As recently as 2016, positive articles far exceeded negative ones, both in terms of volume and intensity. As coverage surged in mid-2017, however, articles expressing negative sentiment grew more common. (Mainstream Media's Sentiment Toward Cryptocurrency 2018.) This irrational enthusiasm, coupled with large players manipulating largely unregulated markets, has resulted in a weekly cycle of rallies and crashes across just about every crypto asset (Malwa 2018). The result was generalized concern originating from financial stability protection organizations, trickling down to politicians, regulators, and, ultimately, business associations; the fears were such that instead of dissecting the issue, a broader restrictive approach was chosen: Bitcoin and all its derivatives, interpreted by regulators as similar although may be quite diverse in reality, were all of a sudden banned from all mainstream media: it was either forbidden or perceived as unserious to publish about it. In 2018, Google announced an update to its financial services policy restricting advertising for

“cryptocurrencies and related content” (Rooney 2018). Facebook announced ban measures as well. The social media giant said it would prohibit ads for financial products and services “that are frequently associated with misleading or deceptive promotional practices” (ibid.).

Regulatory impact went way further, from reasonable preventive measures such as forbidding individuals to acquire Bitcoins and other crypto currencies utilizing credit cards, seeking to avoid speculative pressure; all the way to sets of norms and regulations ironed out by a few countries and regions quite hastily, and often inaccurately. In 2017, the State bank of Vietnam has announced that from 1 January 2018, “the act of issuing, supplying and using illegal means of payment (including bitcoin and other similar virtual currencies) may be subject to prosecution” (McIntosh 2017). The People’s Bank of China (PBOC) which is the central regulatory authority that regulates financial institutions and drafts the monetary policy of the country, issued a statement that “it would block access to all domestic and foreign cryptocurrency exchanges and ICO websites.” (Seth 2019). Shortly after the Chinese regulations had been put into effect, South Korea announced that it, too, would be banning ICOs (McIntosh 2017).

The bans, either partial or full, and even exaggerate state driven campaign against digital assets, giving it a bad name, condemned some technologies to taboo factor. Despite these events, huge sums of venture capital continued to pour into fresh cryptocurrency companies backed only by buzzword-laden websites and lacking any discernible business model (Malwa 2018). This movement was tamed towards the end of the first quarter of 2018, when during an American Congress hearing, directors from the Securities and Exchange Commission, as well as members of the Commodities Trading Committee and other institutions, gathered and concluded that Bitcoin and some other legitimate blockchain based or inspired technologies were not only legitimate, but useful and very attractive, bringing additional policy making pressure on board, though on a brighter light from that moment onwards.

It would be the reopening of an era, more mature and stable, upon which in the United States it became strictly defined that crypto currencies may only be traded and promoted amongst securities commission accredited and trained professional investors. The Americans paved the way to what became a slow but serious cross border movement for understanding crypto currencies and going through complex studies on how to manage its relation with emerging fintech driven economic dynamics.

There is still a long way to go, but it can be said that the regulatory impact on crypto assets is overall positive: it brings perspective of seriousness and clarity, making it more attractive for seasoned investors, who look for reliability.

In terms of the private sector, the opportunities are plentiful but must be conducted cautiously: many governments start putting in practice ambitions to tokenize the economies as a whole, seeing the transparency and trackability benefits behind blockchain timestamp system. This brings popularity and mainstream curiosity towards digital assets, but also limits how entrepreneurial a specific venture may grow out of an initial idea, considering territory, public guidelines impact and other unpredicted factors, from excessive taxation to lack of taxation and, therefore, insecurity.

The results of the research also show it is important for private sector players to firstly consult specialized legal advice, which is increasingly available, especially for remote consultation given the best ones tend to appear in jurisdictions where there is already clear regulatory framework; that tend to differ from places where there is still ample opportunity for developing something entirely new at ease.

Besides counsel and support, experienced legal analysis may setup convenient contract apperals and strategic precautions when dealing with the volatility of such crypto currencies and similar digital assets: a well-prepared investment portfolio opportunity, covering as many risks as possible towards investor side, at the same time as the operator and proponent on the banking side is also not

held fully liable nor underlying responsible for the profitability and performance is ideal. A mixture of tech driven attorneys and traditional providers is advisable.

As final calculated plausibly applicable interference, there comes the educational aspect aforementioned from different perspectives. Not only banking segment activities, but also any private sector businesses interested in growing up to date with fourth industrial revolution economic trends, are advised to invest in having team members who are familiar with programming, cybersecurity, e-commerce, network typology placement and administration of data centres, as well as user interface builders, so that the company is ready to face such dynamic landscape.

These were some of the countless possibilities through which the private sector may heavily deploy economic pressure significant enough to motivate, or at least indirectly steer, broader regulations: the outside-in concept applied again, though now focused on the psyche of bridging old school regulators with innovative fintech trends, paving a financial avenue that makes sense.

An important step when considering how to innovate is looking at past reference; *digitalization* requires a return to first principles (Beatty 2020). In crypto currency process of merging into traditional economy, becoming the new normal, a long learning curve is still to be appreciated, though most experienced financiers claim we currently lay past the point of no return. As explained by Head of Global Next Generation Banking FIS Andrew Beatty (2020), real-time digital banking, virtual wallets and contactless payments came to the fore. On the face of it, banking has changed forever, and the future belongs to digital banks (ibid.).

Regarding benchmark point of reference, Switzerland has greatly advanced at least as far as wealth management approach concerns, matched only by Lichtenstein so far. In the states of Zug, Zurich, Ticino, Valais and Bern, all part of the Swiss Confederation, Bitcoin and even some other digital assets are considered legal tender, even accepted as means for tax payment.

Be it Swiss or global, the examples from such regulated and compliant crypto world giants is to be followed: conservative targeted marketing, through which the prospects are invited into a sensation of curiosity, rather than taken aback by speculative harassment.

Anchoring on many aspects discussed throughout the all the subheadings of the results chapter and 2.6 of this research, it is imperative to clarify that marketing strategy for crypto assets is an ever-changing game, in which live variables out of private sector direct sphere of influence frequently play a broader role.

Instead of trying to predict scenarios in which something works properly or, perhaps, goes wrong, the proposed route considers challenges as realistic as they could become, and slim downturn possibilities as active threats; not preparing for problems, but in fact suggesting a way in which such problems are already contemplated as inflicted, and the marketing strategy can work, regardless.

For such exercise to come into practice, firstly the private banking side shall map out regional challenges within jurisdictions to which its operations, and/or clientele, are exposed to. Following, should come the strict enumeration of “safe alternatives” either to repositioning the message, or the actual business model, when it comes to marketing the digital assets aspect of wealth management.

When the broader set of field challenges are understood, and safe passage is achieved, the marketing plan is considered safe: i.e. the banking professional and/or a target client are based out of a region where law forbids open promotion about crypto assets, and there are talks about restricting any media on the subject – the adequate route is to ignore the odds and admit directly that common marketing is ruled out, leaving space for carefully idealized events, for example, either seminars for private audience or even a cocktail party, in which the subject is casually and one on one debated with interested prospects, for example.

The ideal level of marketing determination will be reached as soon as the mapping is concluded and the “tools” at an organization’s disposal are clear, be it: event-wise or social media, direct interaction at commercial establishments or even aspirational media, such as placing well thought communication in specialized magazines for HNWIs and ultra HNWIs, or even private aviation terminals and joint actions with premium service providers, ranging from corporate concierge services and associations all the way to facilitating vacation planning or lending operations through or collateralized by crypto currency reserves, at the same time as such are professionally accounted and tax policy compliant.

Marketing routes and creative approaches are relatively straightforward for identification, especially considering the discussion is on private banking angle to wealth management, which already comprises of deep research, relationship bonding and trust-based practices, always considering complex analysis of the clientele background. A great factor remaining to optimize the equation is the “outside-in” aspect aforementioned.

For such, the private banking institution must first set up a situation which allows interaction with clientele, not by sending direct mail to a list of prospects, but by planning a personable approach, because in crypto currency area, not only many people became wealthy, but also various already HNWIs succeeded and gained an appetite into the digital asset class.

Considering how recent the market is, and how regulations only came about in the past 3 years, the array of wealth management functionalities within such industry is still primitive, incipient and even unreliable, when compared to the large capital gains achieved by many potential clients.

Such prospects need to feel special, understood and believed in, as well as guided, because they tend to look up to financial institutions, wishing their approval and connection.

Finally, upon realizing strategy, target group, and where to find them, the wealth manager shall self-educate as much as possible on the topic, preferably together with the support team, to then approach, in knowledgeable though initially spectator manner, the topic together with a prospect, so that the banking side may hear the urges, needs, fears and out-of-the-box ideas from various potential clients in a row. After some time, the wealth management segment could start being able to track patterns from statistics crossing such as net worth, age, exposure to crypto currency and which specifically, main concerns and challenges of the desired clientele. Lastly, after this process, it could bring the template savviness from banking, package it in adequate message to correspond to a target's ideas, and indirectly, but curiously accurately, provide the private banker with the tools for bigger success likelihood, when conquering the trust and interest of crypto asset inclined individuals, bringing them wealth management. Moreover, the segment should be continuously re-inventing the communication approach, being always up to date in current fast paced economic rollercoaster.

5 Discussion

The dissertation proposes a journey all the way from comprehending what the advent of blockchain technology represents to the new economic reality the world finds itself in, all the way through the birth and applicability of crypto currencies of all kinds, chiefly Bitcoin, and navigating through how this financial market segment took shape over the years, always in parallel analysis to traditional economy, its mentality, pros/cons and what to make of it for re-inventing how to approach high net worth individuals within this trend.

5.1 Answer to Research Questions

The major discussion bases itself on whether an industry so consolidated, long term thinking and traditional like private banking for the top end of the financial food chain is actually ready, psychologically but also functionally, to enter the economic dynamics of the Fourth Industrial Revolution; and the answer is yes.

Dissecting the matter, there are four criteria through which such positive consideration takes shape:

- a) Risk management – it is discussed through this thesis how investors, especially on the wealthy top of the pyramid, are keen on diversifying asset class exposure. Blockchain enables various crypto currencies, essentially Bitcoin, to be independent of borders and country systemic risks, which attracts high net worth individuals regardless of belief in the underlying technology;
- b) Cultural approach to banking – subliminal across the text, in order to not overthink a basic premise of capitalism, it is known that in most countries nowadays the classic route of money when an individual or institution achieves high profitability is placing the surplus partially, or fully, under custody of one or more safe banking institutions, or even, under extreme cases, buying equity in a financial company, or establishing one. The old “take it to the bank” mentality is a strong support pillar to popularizing wealth management dynamics focused on crypto driven fortune, which is underexplored as of now;
- c) Regulatory framework strengthening – unlike other speculative assets, crypto currencies are hard to fit into a specific set, because there are so many differences amongst each of the technologies coming with diverse coins and tokens; however, as regulators seem to grow more interested and savvy, investors and userbase should feel safer, promoting real applicability and accountability, which could ultimately attract long term attention and mentality to the crypto space: another key driving factor for wealth management services;
- d) Novelty advantage – all that it takes, from a banking perspective, is being open minded to the challenge of increasing compliance requirements, and understanding a whole new KYC methodology, which is much more based on digital due diligence, public-ledger-based statistics and further online variables, than the traditional banking. Once the wealth management professionals become open to such learning curve, the rest

could come relatively easier, at least for now, when there is demand and unsophisticated crypto-rich HNWI, or clients who are successful already and wish to test the temperature of digital assets waters; while all that the private banker needs to do is listen. Crypto currency is a line of business and solutions that turns out promising, and not competing, but complimentary to banking services, meaning the bankers who become more open to listening, understanding and shaping offer around demand expectations, and not the other way around, are very likely to succeed and achieve significant profitability, especially in the current moment of crisis, when HNWI wish to diversify and mitigate financial exposure risk.

Having discussed and comprehended the background of the crypto currency revolution, paired with the needs of potential clients within wealth management sphere, connected to how regulators are increasingly keen on open model structuring for regional protocols, and last though not the least, having analysed deeply the wealth management culture pairing onto this ever-changing technology segment landscape, it was possible to achieve some optimistic insights on the research questions.

Although a few players went in too deep too quick, and generated market distortions, there have been a few others, encountered through data collection, that remained true to a public benefit purpose and voted to follow compliance, improving regulatory comprehension of the assets, bringing seriousness to the market. Such are companies as, though not limited to, Bitcoin Suisse, Bitcoin ATMs, Ethereum Foundation, Shapeshift, and even 2015 Swisscom Start-up Challenge funded Monetas, a blockchain approach into notary services.

These notable public relations cases frequently employ aspirational marketing: narratives and storytelling engage consumers' subconscious and create an emotional connection with the brand and the story (Smilovitz 2020). Banks with advanced digitalization strategies can, according to Beatty (2020), harness the power of advanced analytics to achieve a 360-degree customer view and deliver products that align with customer needs; never motivating potential

users to buy Bitcoins, but instead providing clientele with a solution, and ways to study into comprehending its potential, as well as risks.

Not only the prospect clientele for wealth management through crypto assets is currently showing high demand, there is also a suggested set of marketing concepts that could be implemented, beyond aspirational marketing, which differ in many ways from those employed in the financial market so far, for being much more bilateral and tailor planned, though at the same time relying on the core values, ideologies and reputation of classic private banking. Such proposal, described below, bonds digital asset novelty with the sensation of heritage, acceptance, compliance, safety, and, ultimately, belonging.

Currently, in times of vast though superficial knowledge and rapidly bored audience, it is important to plan marketing in the opposing route to traditional: if it is perceived as traditional practice to place a product, publicize and hope for adhering clientele, in crypto currency and banking, a clash of two parallel universes, the suggestion is to try the alternative route, which could be referred to as “outside-in marketing”. The inside-out view is that “solutions are bundles of products and services that help us sell more”. The outside-in view is that “the purpose of a solution is to help our customers find value and make money – to our mutual benefit”. (Day & Moorman 2010, 5.)

The concept is relatively straightforward: no longer focusing on an idea to be marketed, this research proposes that Bitcoins or similar digital assets are not pitched to the clientele of a financially sophisticated banking business; but instead, that the business first prepares itself to be sought by existing portfolio clients, by educating frontline professionals (i.e. account managers, assistants, private bankers and so on), so that when the demand comes, they are ready. It takes smart investments in market intelligence and an organization-wide commitment to sensing and acting on the resulting market insights (ibid., 11).

The proposed strategy is not passive: being ready could represent a significant vantage point in wealth management, given majority of clientele has natural curiosity into new asset classes and risk mitigation through allocation

diversification. In present reality, when even classic commodities are underperforming, Bitcoin became an alternative to secure funds in uncorrelated manner, hedging otherwise stable markets' volatility into something new.

Besides being ready, it is suggested the private banker takes a step further towards the "outside-in approach": not pitching to clients about Bitcoin or similar opportunities, though accessing the open minded, more active clients or prospects, and inquiring what is their appetite for digital assets; working hard to tap into the demand not by pure obvious marketing, which can sound appellative and *excessively retail oriented* to the HNWIs' seasoned ears, but instead hearing from them what are their perspectives, interests and inclinations into the subject, be it knowledge driven or directly into investment topic. Customers buy the expectation of benefits (ibid., 11).

Through this line of thought the banker holds higher success chance, first learning about the topic, then hearing more from the clientele, to finally shape the product and close deals, bringing more and more trustworthiness onboard. An outside-in approach to strategy is a clear necessity (ibid., 11). It represents the most prone to success marketing for businesses: when you already know what your buyer craves for.

In order to bring the potential clients closer, private banks are suggested to plan laid back events, or even send young, comprehensive bankers, to attend existing specialized conferences well known in the community. Although the spaces have risks of being overly exploited, be it showing large commercial intentions or exclusively technical gatherings for developers, they could bring ideas to flourish, while the scalability pressure is not present yet. Standing as more basic social grounds, high end and non-franchised co-working spaces, these could be the untapped havens of unaware clientele, who could benefit so much from well-planned wealth management. They would likely be much more open and inclined to contracting private banking services than excessively harassed, existing multi market portfolio investors, or risk-taking hedge funders, who can bargain too much, but may actually invest too little, or perhaps become

deeply controlling after funds switched into a bank's custody. This would mean losing the freedom character of crypto asset, previously not attached to a specific nation's territorial limits, given blockchain is a cross-border platform.

The dual strategy of being open to crypto currencies and simultaneously contacting the target clients for assessing the temperature and character of their speculations into the subject could represent enough ammunition for a powerful marketing combo: the trick being the almost subliminal angle which is mostly appreciated by those high up in the capital markets food chain, who are not vulnerable to classic direct promotion, and need instead to be *seduced* into a concept of belief, savviness and support; financial gain coming as a consequence.

5.2 Limitations and Recommendation for Future Research

The crypto currency market has an overload of media all around internet and printed press, as well as excessive presence on financial driven debate events and similar occasions. It is notable, however, how little the traditional media actually evaluates and dives deep into crypto currency and the evolution of digital assets in general – from the currencies themselves all the way to regulatory interpretation and market indexes. As recommendation for future research, it would be relevant to suggest how peer reviewed think tanks could be established as study hubs for optimizing crypto currency applicability and raising awareness in responsible, non-commercially biased way.

The most frequent issue when researching about crypto currencies are the repetitive investor marketing-oriented overload of harassing information, which is an uncomfortable approach and beyond unacceptable for HNWI's, seasoned investors or professional financiers, meaning it could become intimidating for the common, curious individual or leader, who may grow fearful due to the current backstage benefitting "disinformation campaign" and lack of unbiased sources of crypto economy facts.

It would also be interesting, beyond more think tanks and study groups, to see future coordinated public-private effort, non-territorial bound, to create Bitcoin friendly economic blocks as a whole, employing broader, standardized policies, which makes it safer, more reliable and easier to evaluate. Currently, not only there are limited friendly jurisdictions and private sector players, but on top of that there are no openly defined protocols or clear statements, possibly implying a negligent manner, which could empower the feeling of insecurity and reduce the capacity of a potentially interested party to dive deep enough into the matter to develop comfort.

Such lack of orientation barrier plays against scalability and is in favour of niche segments such as wealth management, counselling, innovation and analytics, given the market remains inaccessible to the masses and withstands the generic trends of the financial markets. This could be optimistic when everything else is doing well, but also a safe hedge when capital markets collapse: a situation which has been battletested successfully for Bitcoin and some of its constellation of similar solutions over the recent past.

On the research matter, however, it is urgent to standardize regulatory framework and create reliable news outlets, because blockchain is cross-border, and trying to hold it down to physical territory has been proven harder by the day.

When such few milestones come into play, not only researching and publishing about it tend to be clearer and safer, but also building and promoting services, as well as offering quicker solutions onto this market platform should be more efficient. Then, these would be *en-route* to stabilizing many of such innovations, a delicate paradox ranging from current uncertainty and high stakes opportunities, towards balance and predictability, which also brings mainstream interest on with it, but removes some of the spicy edge of novelty: a delicate balance up to themes like this dissertation to disrupt and inspire leadership.

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