A PESTLE Analysis of the Cryptocurrency Industry: An Investment Perspective

Shaoxia Li
5717192025

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Author: Shaoxia Li
ID No: 5717192025
Degree: International Master of Business Administration (IMBA)
Major: Financial & Banking Management

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Supervisor:.....

Assoc. Prof. Dr. Jomphong Mongkolvanich
(Dean of Faculty of International Master of Business Administration)

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Abstract

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(Assoc. Prof. Dr. Jomphong Mongkolvanich)

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Cryptocurrency is a form of digital currency based on a decentralized peer-to-peer exchange, that utilizes cryptography techniques to make online transaction secure without a centralized entity (Crytpcurrencyfacts). Bitcoin, the first and best-known cryptocurrency, surged more than 1,300 percent in value throughout the year of 2017, just to lose over half of its value in the first month of 2018. Early investors have made a considerable profit, despite its high price volatility, the market still attracts many retail investors, with some, have very limited knowledge about the market. This paper examines attractiveness of cryptocurrency investment by analyzing the different elements that impact its growth and adoption using PESTLE model, namely its Political, Economic, Social-cultural, Technological, Legal, and Environmental impacts, it aims to help investors make better investment decisions and the general public who's interested in understanding the different aspects of cryptocurrencies. The result of the findings of this paper suggests that government regulation can reduce market manipulation and price volatility of the cryptocurrency market, and gradually give investors the confidence to ensure investment protection from price fluctuation and scams. By integrating blockchain technology into the global banking system, it has the potential to reduce massive amount of cost, improve efficiency and transparency. Cryptocurrency plays an important role for those in less developed countries as a real currency and store of value. Many popular features of blockchain technology could be revolutionary for sectors such as finance, e-commerce, health, logistics, real estate and etc., in creating

efficiency, confidence, and reliability. However, the anonymous nature of cryptocurrency transactions also attracts a host of illicit activities, such as money laundering, terrorist financing and tax evasion. Cryptocurrency mining consumes an enormous amount of energy and requires specialized hardware, ultimately leave a massive carbon footprint and cause global warming. Media presence, market participation, and policy changes by the government all play crucial roles in causing major cryptocurrency price volatilities. For the cryptocurrency market to thrive and become revolutionary, growth and massive adoptions are essential. Challenges remain in the government's attempt to regulate the industry and to prevent dangerous practices that come along, the ability of the various exchange platforms to improve their cyber securities and to promote the network to be more energy efficient and environmentally friendly. Due to its volatile nature, investors should study thoroughly when investing in cryptocurrencies, knowing their own risk profile, diversify the investment, stay update with the market and find ways to secure the coins from hacking. In the meantime, the cryptocurrency market remains in its discovery phase, investors should always remain vigilant as more regulation and adoption is on the horizon, as to how the market may evolve due to these affords.

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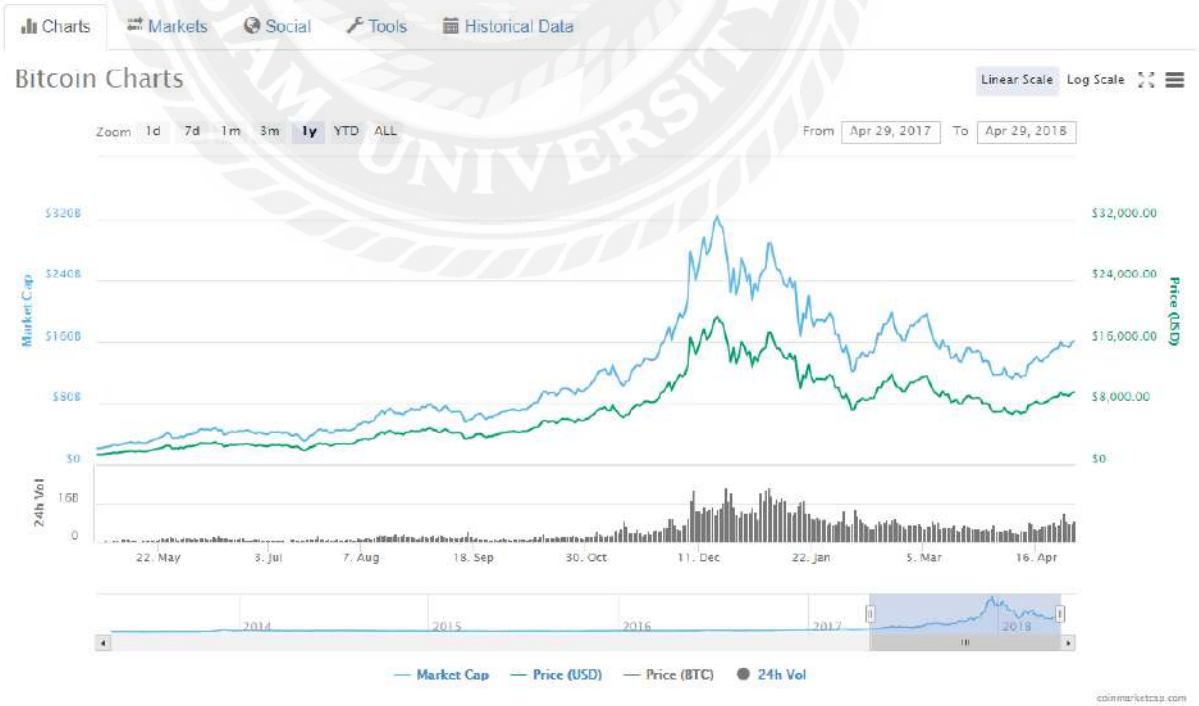
Chapter one: Introduction

In 2008, the idea for an open, distributed ledger called 'blockchain' emerged, it also enabled the digital currency that came with it, Bitcoin, the first decentralized cryptocurrency, it eliminates the third party and preserves the anonymity of user exchanges, without requiring one's identity be directly tied to the exchange of Bitcoins (Wikipedia). 10 years later, the cryptocurrency market has evolved erratically and at unprecedented speed, more than 1,500 cryptocurrencies have emerged by April 2018, according to coinmarketcap.com. Cryptocurrencies other than Bitcoin are often referred to as Altcoin, or alternative coins, they exist either to fix Bitcoin's perceived flaws with better features and technology, or to pursue different goals and properties, such as Ethereum, Ripple, Litecoin, EOS, and etc (Farell, 2015). As of April 29, 2018, the total cryptocurrency market capital is worth US$433Billion in total, with Bitcoin boasts 37% market share at the price $9,419 a coin after falling as low as $5921 in early February 2018, followed by Ethereum with 16% market share and price at $689 a coin, according to coinmarketcap.com.

Bitcoin, the world's most heavily traded cryptocurrency, has ignited presence in media and intense discussions in late 2017. While it has made strides as a payment method but still not an option yet in most businesses due to its instability in value and complexity in use, it is rather perceived as a commodity asset like gold and silver, that one trades, in hopes that its value will rise and yield a trading profit (Dorfman, 2017). A research by Baur, Hong & Lee (2017) also shows that Bitcoins are mainly used as a speculative investment and not as an alternative currency and medium of exchange. Hugh numbers of investors have been pouring their money into the market more than ever in history, these retail investors have emerged as a major force in bitcoin's spectacular rally (Sano, 2017). Bitcoin price skyrocketed from $786 a coin in early January 2017, to a new high of nearly $20,000 a coin in December 2017, and then falling briefly below $10,000 on January 17, 2018. The digital currency has suffered from dramatic wild swings the past year. Is Bitcoin a good investment with such high price volatility? What should investors consider when deciding on the investment of cryptocurrency? What has contributed the price hike and drop? This paper is going to address on these problems by analyzing the different aspects of the cryptocurrency market.

Cryptocurrencies continue to experience massive growth in price, market capitalization, and mainstream adoption, they are providing features and functions that are changing the way we do things (FundYourselfNow, 2018). The increase online transaction, less transaction fees, easy and faster transaction, changing consumer and business landscape have lead the demand for the market growth (WiseGuyReports, 2018).More and more entrepreneurs and investors are turning their interests into cryptocurrencies, whether it's for investing in cryptocurrencies and ICOs for personal wealth gain, or even just to catch up with the latest market trend, a thorough understanding and evaluation of the cryptocurrency industry is necessary. This paper provides a concise yet comprehensive analysis of the cryptocurrency industry using the PESTLE model, by looking at its Political, Economy, Social-cultural, Technology, Legal, and Environment impacts, with a particular focus on Bitcoin and its investment, readers will have a better understanding of cryptocurrencies. Furthermore, this research seeks to answer the questions on how will regulation impact the cryptocurrency industry? How cryptocurrencies may change the global economy, and what challenges it faces?

Chart 1.1.Bitcoin 1-year price chart from Apr 29, 2017 to Apr 29, 2018

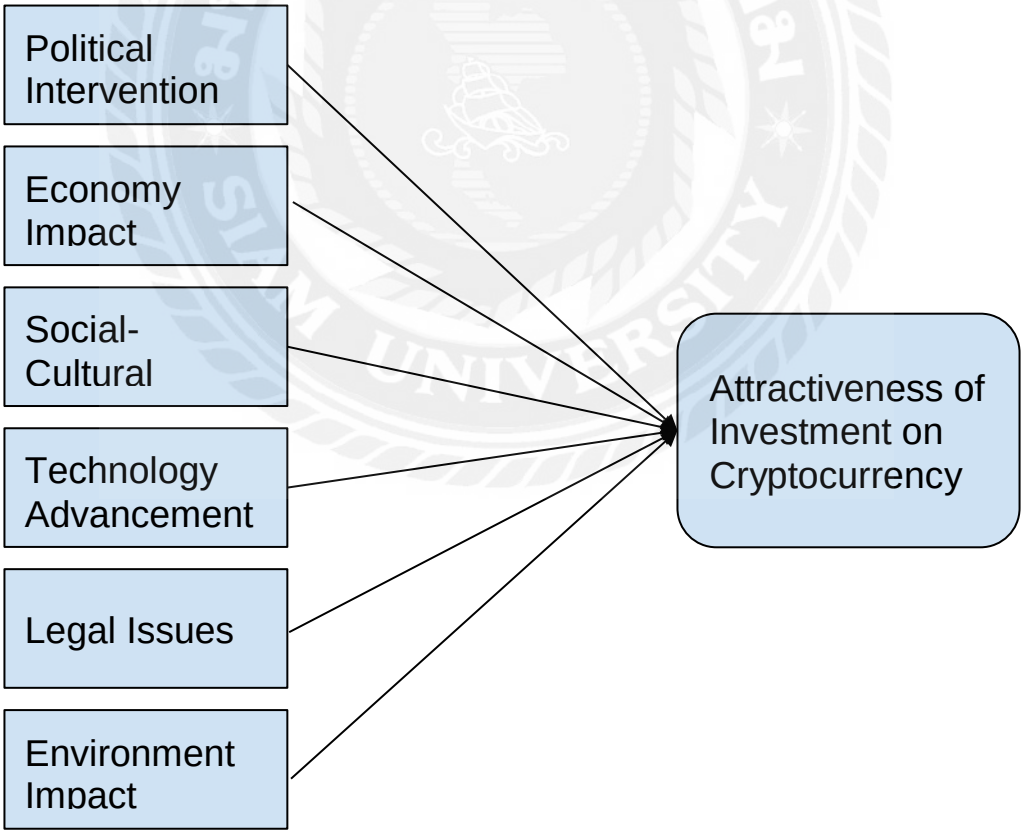


Source: https://coinmarketcap.com/currencies/bitcoin/

1.1 Statement of problem

The term Cryptocurrency has become widely spread among the investment news due to its increasingly fast growth in value, it is mostly related to the case of Bitcoin, which has been alleged that the value of Bitcoin had seen a 1,300% gain within the year of 2017, Despite receiving extensive public attention, it's is still new to the market, to a lot of people, theoretical understanding is still limited regarding how it works, yet so many people are interested in investing in Bitcoin and other cryptocurrencies. Strong growth of cryptocurrency is still expected in the current market, Is cryptocurrency an attractive investment? How will blockchain technology revolutionize the entire market? This paper will help interested individuals answer these questions.

1.2 Conceptual Framework



1.3 Objectives

- To understand the cryptocurrency market and how it influences the economy.
- To understand blockchain technology and its potential to revolutionize the way business operates especially the financial market.
- Understand the risk on cryptocurrency investment and help investors in their investment decisions
- To determine the major challenges it faces.

1.4 Scope of the study

This paper examines the cryptocurrency industry by looking into its impact on political, economy, social cultural, technology, legal and environment, with particular focus on Bitcoin. Furthermore, this research seeks to answer the questions on how cryptocurrencies may change the global economy, what future holds for blockchain technology, and finally it provides an analysis on the investment outlook of cryptocurrencies.

1.5 Importance of the study

Due to its infancy to the market and the increasing interest consumers have placed on cryptocurrencies and its investment, whether it's for starting a new business in the fast-changing world or invest in ICOs in the hope to gain wealth, or even just to catch up with the latest market trend, a thorough understanding of the cryptocurrency industry is necessary. This paper provides a concise yet comprehensive analysis of the cryptocurrency industry using the PESTLE model with a focus on Bitcoin and its investment.

1.6 Research Methods

This paper is based on a descriptive study focuses on secondary data, the majority of information comes from journal articles, news, opinions from cryptocurrency enthusiasts, face to face interviews in crypto meetups and cryptocurrency seminars. Sample size in quantitative method in cryptocurrency would be low due to its infancy stage and little is known about the subject. Method was chosen since it helps to understand many aspects of the cryptocurrency market using words rather than numbers. For these reasons, the researcher chose qualitative research method.

1.7 Limitation

Due to regulations on the cryptocurrency is still on its evaluation and evolving stage, factors that impact it are changing on a daily basis, and the limited knowledge by the general public. Therefore it is challenging to gather data for the research of cryptocurrency, the availability of information obtained at the time of this paper is based on secondary sources and is limited subject to the current market condition, and should be left for the discretion of reader. This research is limited to explaining technical details, and more focused on exploring theoretical use case. It is not a financial advice, but rather provides a comprehensive understanding of the cryptocurrency market, in order to help investors on their investment decisions.

1.8 Research Questions

What is cryptocurrency?
How will regulation impact the cryptocurrency industry?
What is the impact of cryptocurrency on the global financial market?
How blockchain technology may revolutionize the way we conduct business?
Can cryptocurrency improve the way of our life?
What the legal issue with cryptocurrency?
What's the impact of coin mining have on the environment?
What determines the price volatility of Bitcoin?
What does the future hold and its challenges?
What should investors take into account when investing in cryptocurrencies?

1.9 Definition terms

Cryptocurrency: a digital currency designed to work as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of funds, operating independently of a third party. (Wikipedia)

Blockchain technology: a distributed ledger technology underlying cryptocurrency, it is a digitized, decentralized, distributed public ledger of all cryptocurrency transaction. Constantly growing a "completed" blocks are recorded and added to it in chronological order, it allows market participants to keep track of digital currency transaction without central recordkeeping. (Investopedia)

Initial Coin Offering (ICO): a means of crowdfunding centered around cryptocurrency, which can be a source of capital for startup companies. In an ICO, a quantity of the crowdfunded cryptocurrency is sold to investors in the form of "token", in exchange for legal tender or other cryptocurrencies. These tokens supposedly become functional units of currency if or when the ICO's funding goal is met and the project launches. (Wikipedia)

Cryptocurrency mining: the process by which transactions are verified and added to the public ledger, and also the means through which new coins are released. Users who wish to mine for Bitcoin must solve puzzles, which are part of a network of pending Bitcoin transactions, once puzzles are solved, miners are awarded new Bitcoins that are generated. Anyone with access to the internet and suitable hardware can participate in mining. (Investopedia)

Bitcoin: the first decentralized digital currency, the system works without a central bank or single administrator. The network is peer-to-peer and transactions take place between users directly, without an intermediary. Bitcoin was invented by an unknown person or group of people under the name Satoshi Nakamoto and released as open-source software in 2009. Bitcoin is one of the most volatile, discussed and popular instruments among all cryptocurrencies. (Wikipedia)

Chapter two: Literature Review

2.1 What is cryptocurrency?

A cryptocurrency is a digital or virtual currency that uses cryptography for security (Investopedia). Cryptocurrency is anonymous, no need for 'trust', it can be used to purchase goods and/or services, that allows people to carry out digital transaction without the need for a middle man such as a bank, underlying the use of blockchain technology. It is typically shared over a peer-to-peer system, which means the exchange of digital currency occurs between individuals, rather than an individual to a banking institution. Cryptography is used to secure the creation of new coins.

Blockchain is a digital-ledger technology underlying cryptocurrency, it is a digitized, decentralized, distributed public ledger of all cryptocurrency transaction. Constantly growing a "completed" blocks are recorded and added to it in chronological order, it allows market participants to keep track of digital currency transaction without central recordkeeping. Blockchain creates transparency and trust due to its open source and decentralized network.

Decentralized Blockchain allows transactions to be completed on a peer-to-peer basis between two parties without the use of a middleman. Blocks are accessible by all parties involved in a transaction, therefore eliminates the need for analyzing and communication with a third party, such as banks to authenticate the transaction, results in simplified process and makes transactions nearly instant.

Distributed Blockchain allows a wide variety of computers to take part in a network, distributed the computing power. Distributing helps to reduce risk in tampering, fraud and cybercrime.

Open sourced Its publicly accessible open-source code, which is similar to a banking ledge that stores all peer-to-peer bitcoin transactions that allows authorities to track organizations or individual in participation.

Anonymous Preserving the anonymity of those exchanging bitcoins across the P2P network reflects the similar anonymity in cash exchanges, individuals can exchange

currency for a product without having to reveal their identity. Cryptocurrency transactions are facilitated through public and private keys for security purpose. Individuals are able to search for bitcoin transactions history for a particular recipient by entering the recipient's public-key. The private key is used to generate a signature for each blockchain transaction a use sends out.

Trustless Blockchain allows digital transaction to happen between parties who do not need to trust each other. By distributing the ledger to many nodes, and synchronizing this Ledger via Consensus, blockchain allows parties who don't trust each other, to believe that the transaction is real and not worthless. Over time, trust can be increased further, via shared processes and immutable records of transactions.

Limited supply Most cryptocurrencies limit the supply of the tokens. All cryptocurrencies control the supply of the token by a schedule written in the code. Bitcoin has a total supply of 21,000,000coins, the supply decreases in time and will reach its final number somewhere in around 2140.

The phenomenon began in 2008 with the creation of Bitcoin by Satoshi Nakamoto. Bitcoins are not issued from a centralized banking institution, and are not associated with national currencies, the accumulations of Bitcoins on the network is effectively secured by the decentralized nature of P2P networking. By 2018, more than 1,600 cryptocurrencies have established their presence in the market, such as Ethereum, Ripple and Litecoin, reaching massive market values with thousands of investors purchasing coins on a daily basis.

The primary definition of a currency- "Money", is that it serves a society as the generally accepted, routinely used medium of exchange. Neither Bitcoin nor any other cryptocurrencies does that or is capable of that in that in its current stage of development (Hendrickson, 2018). Since the price of cryptocurrencies are based on many factors, the rate at which a cryptocurrency can be exchange for another currency can fluctuate widely within a single day. Many detractors have argued that Bitcoin's volatile prices will mean it can never be a truly viable alternative currency as the values fluctuate so much. Adding to that, the service charges for processing small transaction can nearly double the cost of an item purchased; the time it takes to process a

transaction varies unpredictably, thereby making transactions cumbersome and inconvenient; and since few vendors use the real-time dollar-Bitcoin exchange ratio, the dollar price of a transaction may be far different from what one things one is paying. In a statement by ex-Goldman President Gary Cohn, he said "I do think we will have a global cryptocurrency at some point where the world understands it and it's not based on mining costs or cost of electricity or things like that" (Kim, 2018). For Bitcoin or altcoins to become a currency, the future lies on whether they can achieve their widespread adoption and demand, its access to numerous market, the cost and ease of transactions across borders (D'Alfonson, Langer & Vandelis, 2016).

Due to its limited supply and deflationary nature, many compare bitcoin to gold as a store of value as for hedging again capital market volatility. The similarity of the two are that both are scarce and can be transferred between people without going through traditional financial institution. The difference is that cryptocurrency have no intrinsic value, they derive and retain their worth from investor demand alone. Gold has 10,000 years of monetary history and is universally accepted, it also benefits from a wide range of hedging products, for example options and futures, while Bitcoin is still new and having existed for less than a decade (Bovaird, 2018). According to Parker, COO of IRA Bitcoin LLC, "Cryptocurrency certainly has some of the advantages of precious metals, it is a non-correlated asset that should be resistant to market volatility and may even benefit from a sentiment-based shift to alternative assets. A severe market downturn will put pressure on all highly appreciated assets as investors seek to offset market losses with cryptocurrency gains." Due to the limited supply of Bitcoin, this makes the coins scarce and greedy investors want in, the general price of Bitcoin has been on big swing since it came into existence, early investors have made a lot of money. Adding to price manipulation by the market and FUD (Fear, Uncertainty and Doubt) cause by government interventions , because the nature of supply-demand, it is possible that when more new players come to the market, supply will increase, thus price may drop, which contribute to the risk of investment.

In 2017, Initial Coin Offerings (ICOs) have become the leading crowd funding method for technology-based startups. Developers and entrepreneurs no longer want to spend time trying to convince banks, venture capitalists, and angel investors to put up equity in startups, once a tangible idea is conceptualized, they seemingly tokenized it and sell it to

the public, before the idea is delivered, millions of dollars in investment funding have already secured. The risk is now resting in the hands of these investors. Early February 2018, China's Internet Financial Awareness body called for greater awareness regarding the risks of ICOs, according to the article, most ICOs have nothing to do with technology development, instead, they were described as "fishing for capital"- a process draining good investment money into bad hands (Gray, 2018).

A research by Baur, Hong & Lee (2017) indicated that Bitcoin is uncorrelated with traditional asset classes such as stocks, bonds and commodities both in normal times and periods of financial turmoil. The analysis of transaction data of Bitcoin accounts shows that Bitcoins are mainly used as a speculative investment and not as an alternative currency and medium of exchange.

2.2 PESTLE Analysis

In this section, the researcher is looking into the different elements that impact the growth and adoption of cryptocurrency industry using PESTLE model, namely its Political, Economy, Social-cultural, Technology, Legal, and Environment impacts. It seeks to answer the following questions: How will regulation impact the cryptocurrency industry? What is the impact of cryptocurrency on the global financial market? How may blockchain technology revolutionize the way we conduct business? Can cryptocurrency improve the way of our life? What the legal issues with cryptocurrency? and What's the impact of coin mining have on the environment?

2.2.1 Political

With large growth forecasted by analysts worldwide, the use of cryptocurrency is still new to the market, it's facing many challenges especially government regulations. Government support or opposition are extremely influential for the future of cryptocurrency industry, both in terms of regulation and for public sector adoption of blockchain technology. The Government can support or oppose the implementation of cryptocurrency in the market, therefore regulations could have both positive and negative impact on its development and mass acceptance.

Regulators globally have raised the alarm over cryptocurrencies, saying they may aid money laundering and terrorist financing, hurt consumers and undermine trust in the global financial system. Such concerns over security as well as criminal use of cryptocurrencies lead to widespread government opposition and regulation. However, due to the decentralized nature and lack of power structures inherent in cryptocurrencies, many view regulations could stabilize the market in order to drive adoption and growth and reduce the volatility that has been a hallmark of the industry. Regulations will offer greater legitimacy and give users and institutional clients the confidence to invest. When Japan started regulating bitcoin, the market dropped initially, but it roses eventually. Same happened in Australia. On the other hand, government intervention is opposed to the original purpose of cryptocurrency as a decentralized mechanism, and regulations hinder investor profit on tax collections.

Just like other recognizable assets such as stocks, commodity, or cryptocurrency are being affected by mainstream global trade tussles. Major cryptocurrencies went down 10% in a week in the early April 2018, due to the news on trade war between China and The U.S., which stem from the U.S. attempt to increase tariffs on China imports in order to curve trade deficit and intellectual property rights (Njui, 2018).

Governments in many countries are now working on tightening up on potential regulations in the new future, target from cryptocurrency exchanges to ICOs, in combating the possibility of fraudsters using the currency as a means of exchange and fighting with ICO scams. Due to the lack of global coordination among authorities, there are wide range of opinions on how to best regulate this space, thus the rules vary from country to country.

The U.S. Jolted by the global investment craze over bitcoin and other cryptocurrencies, U.S. lawmakers are considering new rules that could impose stricter federal oversight on the emerging asset class, as to address the risk posed by virtual currencies to investors and the financial system, aiming to push for digital assets to be regulated as securities and subject to SEC's investor protection rules. In the U.S., Digital assets currently fall into a jurisdictional gray area between the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), the Treasury Department, the Federal Reserve and individual states, as they all had different views on the matter (Morgan, 2018). While the CFTC defines cryptocurrencies as "commodities", SEC differs and defines ICOs and cryptocurrencies as "securities", and therefore illegal unless registered as a security. Recently, the US state of Wyoming declared cryptocurrencies as a type of "asset".

England In a recent speech by the Bank of England governor Mark Caney entitled "To Isolate, Regulate or Integrate", although arguing that cryptocurrencies are not a viable alternative to fiat currency in that they are poor stores of value, inefficient media of exchange, and virtually non-existent as a unit of account (Wilmoth, 2018). However, he pointed to a "better path", one that is comprised of regulation for components of the cryptocurrency market to fight fraud and support market integrity and security for the financial system at large. He also acknowledged that crypto assets have become part of

the mainstream financial system, and cryptocurrency should be held the same standard as the rest of the financial system" (Terzo, 2018a).

China where the majority of Bitcoin mining took place, was once considered to be a global hub for cryptocurrency trading. In 2017, the country gradually banned exchanges, banks, payment providers and online connectivity to foreign trading platforms from any crypto-related activities. However, the Chinese acknowledged the blockchain technology, and are rapidly working on implementing and revolutionizing on industries such as logistics. Despite its drastic bans, four out of the five largest bitcoin "mining pool" in the world are Chinese.

South Korea which has rumored with a ban of cryptocurrency trade in January 2018, has softened its stance recently. Due to the ban in China, South Korea has emerged to become a hub of cryptocurrency. The South Korean finance market is relatively small in comparison to other major countries such as Japan and the US. Given that the cryptocurrency exchange market processes more trades on a daily basis than KOSDAQ, South Korea's main stock market, a closure of the cryptocurrency market is the same scale as closing down the stock market, which could damage the economy of South Korea. On January 30, 2018, South Korea banned the use of anonymous bank accounts for virtual coin trading as of to stop cryptocurrencies being used in money laundering and other crimes. In February 2018, the government said it hopes to normalize the virtual coin business in a self-regulatory environment, which signals a positive sign for the market. The country's electronics giant Samsung has already started production of cryptocurrency mining technologies, local media reported in January.

Thailand In a news reported by Nikkei Asian Review late March 2018, Thailand has announced that all crypto trades will be taxed with a 7 percent added tax (VAT), and return taxed with a 15 percent capital gains tax. This would create uncertainty in the country, driving prospect Thai startup to move their registration for ICOs fundraising to more investment-friendly Singapore (Zuckerman, 2018).

G20 The issue of crypto security and regulation have been among the main discussions on 2018's G20 Summit. It has been agreed that the Financial Action Task Force (FATF), which is an intergovernmental organization created to counter money

laundering and terrorist financing, will apply its standard to cryptocurrency policy (BlockchainDaily, 2018). The meeting has also set a July 2018 deadline for a unilateral approach to regulation, although still unclear on its direction, a worldwide regulation could push the cryptocurrency market to be more stable, there provide investors more confidence.

With a market dominated by retail players, regulation can reduce market manipulation and volatility, and gradually attract more institutional investors such as asset managers and private banks, an increase in the trading volume will, in turn, encourage the growth and adoption of cryptocurrencies. According to an article by Sharma R. (2018) on Investopedia, regulations would have a positive effect on the cryptocurrency market in reducing volatility in crypto markets and make ICOs a viable investment option. As clarity regarding rules for reporting requirements and audit trails on cryptocurrency exchanges and ICOs fundraising set in place, institutional investors will have more confidence in pouring their money into the market, as the market is mainly dominated by retail investors and accounted for a relatively small portion of the global financial ecosystem. The entrance of institutional investors could be a game changer in that it provides a much-needed liquidity to the cryptocurrency market, and at the same time prevents individual actors from manipulating crypto prices, thus bringing in more stability to the cryptocurrency market. Regulation could make ICOs a viable investment option for investors by ensuring accountability and disclosure, by standardizing requirements on financial reports and business conduct standards, a more stringent ICOs listing process could help to avoid scams.

Furthermore, if government were to ban fundraising via ICOs, the activity could go underground, creating more serious economic problems like a widespread underground lottery and Thai business would go abroad to raise funds. Furthermore, a registration of exchanges would allow the Anti-Money-Laundering Office to follow the trail of the money.

Even after its most violent price swings, Bitcoin prices have self-corrected, as do most other cryptocurrencies. The long-term impact of regulations across the globe will have on the cryptocurrency market will become clearer over time.

2.2.2 Economy

Banks are significant institutions in financial and political framework of modern economies. The global financial crisis spread distrust in financial markets and their governance. Unleashed in the wake of the great Recession, of those who was to blame: the middleman, the bankers, the "trusted" third parties who actually couldn't be trusted, of those who simply got in the way of other humans, skimming profits and complicating transactions. Bitcoin's unofficial catchphrase, "In cryptography we trust", undoubtedly trust is the single most important element in the banking industry, and thus why they exist.

Amid G20 summit 2018, the ministers and central bank governors were warned that, cryptocurrency could threaten international financial stability with greater use and interconnections with the rest of the financial sectors. Crypto assets raise a host of issues around consumer and investor protection. Cryptocurrency dangers also come from their use to shield illicit activity and for money laundering and terrorist financing. With the above mentioned concerns, Financial Stability Board Chair Mark Carney urged the finance ministers to lesson the risks by working together to improve conduct, market integrity and cyber resilience in the cryptocurrency sector (Terzo, 2018(a)). Without these improvements, the G20 advisory unit chief cautioned confidence in the global financial system could shrink if cryptocurrency use and interconnectedness become commonplace and threats appear (Knutson, 2018). Will cryptocurrency eventually substitute the current financial market, or will it work out to improve the system? What impacts will it have on the global economy?

Cutting out the Middleman. Many concerns over its peer-to-peer nature, that it processed a threat to the elimination of centralized banking or the need of brokers in the capital market. Allowing peers to transact with no requirement for trust disrupt the current business practices of organizations who facilitate trust - Banks. With the birth of cryptocurrency, the middleman is no longer required, transaction can be done in minutes even seconds, fees are minimal, not to mention its anonymity and privacy. Cryptocurrencies could present investors with a viable alternative given the uncertainty from banking's lack of transparency. However, while enjoying these features that come

with cryptocurrency, some argue that by cutting out the middleman in the payment processing market, cryptocurrencies are causing a huge disruption on the global payment system in that it will be a challenge for a decentralized payment processing protocol to prevent funding for money laundering, terrorist activities, and illicit trade in drugs and ammunition, it will become harder to trace transactions and ascertain the identities of participants.

In a seminar hosted in the Stock market exchange of Thailand (SET) on 26 April 2018, Mr. Pongpiti Ekktianchai from Live FinCorp pointed out that, middleman is still needed in the integration of blockchain technology into the financial system, due to the complexity of its technology, general users tend not to have the knowledge to facilitate payment on their own, at the same time investors still needs advices from professionals.

Consumer's demands are changing and they are looking for the best and less time-consuming services to make their life easier. The industry players started moving towards the online business services and are adopting mobile-based technology in their business units to reach their customer demands. The rise of online transactions has led the demand for the cryptocurrency and blockchain technology market. Many e-commerce merchants will likely gravitate the most popular cryptocurrency as a means of payment, in that it eliminates the need for time-consuming verification procedures and substantially reduce the transaction cost. However, Bitcoin is deemed both a digital currency and a store of value, and while it has made strides as a payment method it's still not an option as most US and UK e-commerce business or brick-and-mortar retail locations.

Integration of blockchain into the banking system. On the other hand, distributed ledger technology has incredible promise for the financial industry in cost saving and efficiency. In a statement in the G20 meeting, the bank chiefs said: "We acknowledge that technology innovation, including that underlying crypto-assets, has to potential to improve the efficiency and inclusiveness of the financial system and economy more broadly" (Hopps, 2018).

Multiple global banks, including Union Bank of Switzerland (UBS), Goldman Sachs, and Morgan Stanley, have published research on blockchain technology through in-

house efforts. A handful of large global banks with the necessary resources to research and build large-scale projects have started to patent their own blockchain-based systems or their underlying tech. The benefits of integrating blockchain into the banking system are that it helps to reduce costs and improve efficiency. Banks are dealing with rising costs for maintaining or replacing their aging infrastructure, blockchain-based solutions could generate cost saving of up to $20 billion per year, according to a report by Santander. Moreover, a blockchain-based banking solution would be able to compete with Fintech companies in offering services at lower costs and faster speed. Lastly, banks could potentially develop these systems to create brand new business models that disrupt the financial ecosystem (Meola, 2018). South Korea's largest commercial bank Shinhan, has entered into a strategic partnership with OmiseGo, an Ethereum based banking and payment platform. Shinhan, who has begun the development of a bitcoin wallet and vault system with which bank users can safely store bitcoin in a cold wallet. Shinhan will closely work with Omise to integrate its blockchain in various areas of the bank's operation, in an attempt to develop new business models and key application opportunities, leveraging Omise's broad portfolio of payment technology and solutions. Shinhuacard, is expected to become the first major credit card in Asia to apply blockchain technology (Young, 2018).

By implementing a distributed network in the banking system faces problem as well, such as allowing participants from all over the world to share a blockchain network raises privacy concerns. One way to avoid it would include creating a partially distributed network where "data is only shared between those participants directly involved in each transaction". However, this would prove to work against the idea of distributed systems.

By cutting out the middleman, the cost of remittance can be drastically reduced as well as the hassle required to receive international money transfer. This eases the life of those in the developed world, at the same time it provides a platform for illicit uses of money transfer. In the real world, it is possible to use cryptocurrency such as bitcoin as a means of exchange only when it doesn't experience huge price volatility as it does at the time of this research, given how rapidly bitcoin has surged in value it has made a lot of people realized the potential in Bitcoin as a store of value or digital equivalent to gold. The challenge lies on how regulations may come up with solutions to combat with

these problems, and how banks are fast enough to catch on the wave to integrate blockchain technology to its system to compete with the fast-growing cryptocurrency market as a medium of exchanges. The fact that crypto is perceived as an asset rather than currency by the G20 leaders, suggest that it is unlikely there will be any great use for a crypto coin other than as a speculative asset. Indeed, cryptocurrencies' extreme volatility stems from the fact that they remain in a price discovery phase, as the market attempts to sort out what role they will play in the financial system over the long-term.

2.2.3 Social-Culture

Cryptocurrencies seem to work out for those living in less developed world countries where the purest ideas that underlie cryptocurrency as a means of currency transfer and equal access to everyone is on display.

Cryptocurrency seems to be driven into the mainstream as a currency and a means of exchange by economies that are failing rather than thriving. Places lacking in financial infrastructure or highly inflated currencies are more likely to identify Bitcoin as an alternative measure for transaction. In the US and most developed countries, bitcoin is primarily a speculative investment. But in some fail states, years of political instability and poor governance has plunged some nations into devastating economic crisis, bitcoin thrives as both a real currency and a viable means of storing value. In Venezuela, where inflation topped 2,616 percent in 2017, cryptocurrency is a way around restrictions on holding foreign currency, and in some cases, a means of survival. People with jobs that pay them in US dollars or other foreign or cryptocurrency live in a different reality than those who are paid in bolivars (Voge, 2018).

On 20th February 2018, the Venezuela government officially launched the pre-sale of its first oil-backed cryptocurrency Petro (PTR), as a form of legal tender that can be used to pay taxes, fees and other public needs, it can be purchased with fiat currencies and other cryptocurrencies. The petro's price would depend on the price of a barrel of Venezuelan oil from the previous day. According to the government's announcement, "Petro is born and we are going to have a total success for the welfare of Venezuela", as extreme inflation drags the bolivar down, the country is facing its deepest recessions ever seen, which result in food, sanitary and medical shortage, increased crimes, and essential public services have buckled under the strain. The country's citizens currently use cryptocurrencies to survive the government's failures. However, the token has attracted its share of opponents, including members of the opposition-controlled Congress in Venezuela, stated the token as "illegal and unconstitutional" and accused it of serving as a vehicle for corruption and "effort to illegally mortgage". In the U.S., some senior lawmakers have expressed concern about the use of the petro to avoid economic sanctions that have been imposed on the country. According to Chinese credit rating giant, Dagong Global Credit Rating, it points out the insurance of an oil-backed

cryptocurrency is significant as it differentiates it from other cryptocurrencies like bitcoin that aren't backed by any assets. Being backed by the country's oil reserves means the Petro is protected from speculation and volatility. However, Petro's backup reserves aren't renewable, the cryptocurrency's success, as such, will depend on Venezuela's ability to create wealth, Dagong reports (Memoria, 2018).

Reduce Remittance cost and protect own asset The case of Bitcoin in Africa highlights several interesting elements, cryptocurrencies and mobile transfers have created an opportunity for people in Africa to control and protect their assets. In countries where there are political crisis and economic turmoil, people live in a chaos, which in turn caused them to lose their trust to the government and the financial institutions, in search for survival they look for a more secure method to protect their assets - the existence of cryptocurrency. In Africa, the access to financial services such as traditional bank accounts, credit cards, PayPal and even expensive cost for international transfer are very much limited, which have contributed to the practical need for non-traditional means of transferring and holding money. There is a significant amount of Africans that work overseas that send money home to their families, cryptocurrency offers the solution as a means of transferring currency that's easy and fast (Brown, 2018). For instance, using BitPesa's remittance platform, transaction fees for individuals and businesses range from 1 to 3 percent, as compared to the up to 20 percent by established money transfer companies. In addition, a transfer that might normally take up to a week can be done in one day.

According to figures released by the World Bank in 2017, the recorded remittance to developing countries in 2016 was about $441 billion, more than half of the total recorded global remittance (FundYourselfNow). The figures also revealed that global remittance fee for sub-Saharan was an average of $20 per $200 which as the highest in the world. These figures can almost tell that the global remittance system is based mainly on activities of citizens of developing countries who are immigrants in the developed world. The problem kicks in when these individuals have to send money back home, in order to do so, they have to rely on intermediary services like Western Union, Money Gram, Uni Transfer etc. These platforms collect fees and charges which considerably increase the cost of transaction. With digital money, people will be able to wire money abroad at a lower cost.

Cryptocurrency offers opportunities for those small and medium-scale businesses to conduct international business without having to go through the complicated process of traditional banking processes. It is often a challenge for many merchants in developing countries as they have no access to foreign exchange as well as means to pay and receive money in foreign currency. Crypto banking platforms enable a much greater market penetration than banking services, a mobile phone app is all that's needed. A good example is BitPesa, BitPesa is a digital foreign exchange and payment platform for frontier markets. It allows the purchase of bitcoin and international business making payments to and from Africa. Not only they offer simple and low-cost international money transfers, they also offer crypto-backed loans to small-scale and medium-scale merchants. These enable opportunities to expand their business into a global scale.

Philanthropy and international aid Donating to blockchain powered charity will provider donator to track the donation and make sure it moves through the organization to the final recipient. Bitcoin and other cryptocurrencies are not being accepted in the fundraising process in charities and NGO foundations. In doing so, the foundations exchange cryptocurrency donations through an online wallet for dollars or other fiat currencies at the going exchange rate. In addition, a handful of organizations have created customized "charity coins" to raise money for specific nonprofits or social impact projects in a transparent way. For example, donors can buy "Root tokens", to fund anti-poverty work projects. Another example is the launch of an initiative by the BitGive Foundation call "GiveTrack", which allows bitcoin donors and the public "to trace nonprofit transactions on a public platform in real time to see how funds are spent, ensure they reach their final destination, and track the results generated from contributions" (Lehr & Lamb, 2018). The United Nations World Food Program (WFP), provided Syrian refugees based in Jordan with digital currency vouchers to trade at selected markets, eliminated the dangers of carrying cash, and gave the organization a more effective and less expensive method for distributing and tracking payments. Even in China, "Ant Love" a unique blockchain donation system established by Alibaba, allows Alibaba's 450 million users to donate to various charitable groups and NGOs. The system also lets donors track their track their transaction histories, and where and how the organizations utilize the fund (Lehr&Lamb, 2018).

2.2.4 Technology

Cryptocurrencies are built on a breakthrough technology called “Blockchain”. Blockchain is an open-sourced public ledger that underpins cryptocurrencies. It is a digital record of information secured and verified through cryptography, it stores and then distributes this information across a network of computers. Each computer has a copy of the blockchain – a chronological list of every transaction ever made. Once a transaction is added to the blockchain it can’t be edited or deleted. Blockchain technology is touted as having the capacity to be revolutionary in various sectors such as finance, e-commerce, health, logistics, real estate, and jewelry industries, etc., even fighting against corruptions. The transparency and security of data stored in a blockchain facilitate trust and efficiency between users in an unprecedented way.

Marie Wieck, IBM’s general manager of blockchain, indicated that Blockchain has its origins in digital transformation and disruption, it is the answer to the 2008 financial and mortgage crisis. A rather interesting note is that most people focus on blockchain’s initial entry point and use case, Bitcoin. They associate anything blockchain with Bitcoin and that is not right. There is much more to blockchain than Bitcoin and cryptocurrencies. Currently IBM is working on its hyperledger project on food-chain safety and digital identity.

One of the biggest disadvantages of having a centralized data storage system is the risk of data breaching of consumers’ private info. Equifax, one of America’s three major credit reporting agencies, announced back in September 2017 that their system had been breached, exposing the information of approximately 143 million consumers, the affected data included sensitive materials such as Social Security numbers, driver’s license numbers, and even credit card numbers (Bernard, 2017). This is where blockchain technology kicks in, to help build the infrastructure needed to prevent these types of breaches. By distributing information across an entire network, the risk of being compromised due to a single point of failure is mitigated.

Healthcare & Insurance. Implementation of blockchain technology into healthcare industry makes patient record sharing among healthcare providers seamless and instant,

improving the quality care received while reducing cost. It reduces the time for the tracking of healthcare records within the hospital, or even if a patient is in an emergency he/she can visit the nearest hospital with the ability to access to access the medical care history instantly. This would benefit both consumers and healthcare providers. Records stored on blockchain would be instantly available to all authorized healthcare providers resulting in improved accuracy and medical diagnosis. The same principle works for the health insurance industry.

Logistics. Implementation of blockchain technology in the logistic shipment is one of the first successful use cases that helps to facilitate efficiency and save costs. China's Petrochemical giant Sinochem has successfully completed a shipment of gasoline using blockchain technology in early April 2018. It is said that it was the first time that blockchain applications have been applied to all key participants in the commodity trading process. Sinochem claimed on its website explaining how the digital bill of landing and smart contracts could save 20%-30% financial costs (Tahir, 2018). With China demanding more imports of crude oil, implementing a cost-effective method for China's future petrochemical trades and shipments will benefit the country in the long run.

Food chain safety. In this health-conscious era, people are interested in the origin of the food they consume every day, such as whether or the food is organic or Fair Trade. For a retailer, blockchain helps to know whom and where his supplier has had dealings. For consumers, blockchain technology can make a difference. By reading a simple QR code with a smartphone, data such as an animal's date of birth, use of antibiotics, vaccinations, and location where the livestock was harvested, can easily be conveyed to consumers (Charlebois, 2018). Such technology also helps to track products in case of food-borne illness outbreaks. By using blockchain in the completely connected supply system, it took only two seconds rather than weeks to trace the origin of the outbreak. Food companies can save lives by using blockchain technology, the end result is the empowerment of the entire chain to be more responsive to any food safety disasters. Walmart has partnered with IBM to build a map of food supply chain to be able to track produce to promote safety in case of food-borne illness outbreaks. By using blockchain in the completely connected supply system, it took only two seconds rather than weeks to trace the origin of the outbreak (Eissler, 2018).

Property sales and land ownership rights. Another groundbreaking use of the blockchain is facilitating property sales and securing land ownership rights. In China, due to the government control of its monetary policies especially on its currency outflaw, it imposes difficulties for the citizens who wish to invest in property outside the countries. An anonymous, secure currency with no ties to a central banking authority, cryptocurrencies offer the perfect solution. OneGram, a Dubai based cryptocurrency, each coin is backed by a gram of gold and sharia-compliance, is expected to facilitate sales for the local real estate developer like MAG lifestyle Development. On the other hand, blockchain technology also works to secure property and land ownership rights. In many parts of the developing world, proof of land or property ownership is a challenge. With records store in the paper form from behind closed doors in closed systems, it is possible to counterfeit paper document and engage in fraud. With blockchain, once information about the land, the buildings, sales history or records from inspections are put in the ledger, it is immutable, meaning that there's no way to falsify, alter or delete it. It will all be publicly visible and never be reversed.

Diamond Industry. If you are not an expert, identifying the authenticity of a diamond can be challenging. A London-based company called Everledger has placed more than 1.6 million diamond on a blockchain to determine the provenance of diamond products to help prevent the flow of "blood diamonds." The technology has enabled diamond suppliers to replace a paper certification process with a blockchain ledger (Roberts, 2017). Entries on the digital ledger include dozens of attributes for each diamond, such as color, carat, and certificate number. The technology can also apply to other luxury products such as Wine and fine art.

Fight against corruption. Another role of cryptocurrency in politics is its ability to fight against corruption. In developing countries, misappropriation of state funds by corrupt government officials is a big problem. by using blockchain technology, especially those built upon smart contracts protocol, it will allow for a more transparent contract system, with records being public, citizens will be able to monitor the way in which state funds are being utilized. Another area of interest to fight against corruption with blockchain technology is the election process. It can be used to make elections to become more free and fair with the citizens being able to freely exercise their franchise. Blockchain systems such as Ballotchain can manage online elections with anonymous

voting that participants can verify at any time, and then each ballot cast is encrypted and securely transmitted. The system ensures that voters cannot vote twice or commit electoral fraud, thus ensuring the integrity of election processes.

Identity rights Political crisis in some middle-east countries has forced many of its civilians to flee their countries without an identity. According to the World Bank, an estimated 1.1 billion people, including many millions of children, women and refugees, globally lack any form of officially recognized identification (Desai, 2017). The hardship faced by refugees and asylum seekers are compounded in the absence of identity documents. Those traveling without an ID are likely to face barriers or delays when attempting to cross international borders and when registering with authorities and/or humanitarian organizations. ID2020, an open-source, self-sovereign, blockchain-based identity system seeks to address these problems. Being developed by an alliance of large companies like Accenture and Microsoft, with UN agencies, private sectors and governments, it aims to help undocumented people secure elements of identity, from children's vaccination cards, voter registrations, to refugee asylums (Hempel, 2018). In an upcoming pilot program, the alliance will incorporate blockchain into a biometric system used by the United Nations refugee agency, UNHCR, to facilitate transactions like cash transfer, shelter or food.

Paperless society. Paperless trade was initially used through electronic means, however, the security and authenticity of documents are still not guaranteed. The only way to ensure that documents remain safe from tampering is to use a decentralized network which can only be accessed by its participants (Tahir, 2018).

While the implementation of blockchain is not yet widespread, the shared, open and secure attributes of blockchain will create confidence and reliability, exploration of applications is growing exponentially. However, regulation on cryptocurrency market may also put a limit on the blockchain sector.

2.2.5 Legal

Like all currency, cryptocurrencies can be exploited for criminal use, a secure and completely anonymous system of cryptocurrency exchange can severely hamper government agencies in their attempts to identify criminals. Bitcoin can be laundered and used to subsidize black-market enterprises. It is well-known that bitcoin has been used in the purchase of illegal drugs on Silk Road, where anonymity safeguards the identity of both buyer and seller. Bitcoin is also the preferred donation option for the notorious hacking group LulzSec. Criminal enterprises require huge subsidization of capital, Bitcoin and digital cryptocurrency are their preferred means of funding. Individuals interested in using bitcoin for illegal transactions, would simply cycle through and change their public keys, therefore, each new transaction would conceivably have a new address. This presents another layer of difficulty for law enforcement officers in attempting to cracking down the fraudster. The anonymity is arguably the greatest selling point of bitcoin technology for individuals that seeking to mask their identity.

In combat with these criminal uses of cryptocurrency, many governments are working on regulations to suppress such illicit uses. Meanwhile, in Thailand, the government announced regulations for cryptocurrency and ICOs by the end of March 2018. according to Thai Rath, cryptocurrency and ICO business intermediates will be required to identify themselves and the sources of crypto investment funds in order to prevent money laundering. It requires the registration and know-your-customer (KYC) compliance of cryptocurrency operators including agents, dealers, and brokers. These businesses will be obligated to provide transaction information as well as the names of buyers and sellers to the Anti-Money Laundering (AML) Office.

While cryptocurrencies may pose significant risks, the underlying technology may be the solution to mitigate the risks created. These mitigating solutions would take the form of distributed ledger technology (DLT) that works as a permissioned blockchain to keep financial institution and regulators coordinated, along with biometrics and artificial intelligence to improve digital security and identify suspicious behavior (Glazer, 2018).

The anonymous nature of cryptocurrency transactions makes them well-suited for a host of illicit activities, such a money laundering, terrorist financing and tax evasion. There are ways to combat with it, including government restrictions on registrations of cryptocurrency transactions and ICO business intermediates. Furthermore, advanced technology of DLT may be able to keep financial institution and regulators coordinated to combat with digital crimes. Furthermore, currently the cryptocurrency industry is falling in a jurisdiction grey area between being a currency, property, security or commodity. The outcome of the definitions will be different in that they are governed by different statutes, regulated by different agencies, and operate in different markets. The difference affects buyers, sellers, and investors.

2.2.6 Environment

The creation of digital currencies requires significant energy inputs. Bitcoin is created through an energy-intensive "mining" process that uses high computing power to solve a complex mathematical equation, proving an anonymous miner used the process the network agreed upon to build the blockchain record of transactions. Upon a successful completion of the equation, miners then get bitcoin as reward (Cheng, 2018).

Bitcoin mining consumes energy and it requires specialized powerful hardware are major sticking points, these custom hardware can cost several hundred to a few thousand dollars. Due to escalating demand for coin mining, GPUs (Graphics Processing Unit) are now selling for double their value-price, miners from around the world are turning to Asian markets located in Hong Kong and Singapore for cheaper GPUs. According to Fundstrat's model, it assumes electricity costs of 6 cents per kilowatt hour and other expense to arrive at the break-even estimate of $8,038.

According to Digiconmist, in 2017, the estimated power consumption associated with Bitcoins exceeded 30TWh (terawatt hours), this level is higher than the total energy consumption of Ireland, and 19 other European countries (Bentley, 2018). Each transaction consumes roughly 100 kWh- the equivalent to running a light bulb for three months. By contrast, a credit card transaction uses about 0.2 kWh (AFP, 2018). Worse than that, the majority of the power it produces is generated by coal-fired power

stations, ultimately giving Bitcoin a massive carbon footprint. This trend is expected to continue as Bitcoin and other cryptocurrencies grow, the power consumption of their networks is predicted to continue increasing, by January 2019, Digiconmist expects Bitcoin to reach 125TWh, 4 times greater than the figures from 2017 (Bentley, 2018). This process threat for the global energy ecosystem, marking the networks more energy efficient will be the next steps in ensuring the markets are less damaging to the environment.

The challenges for cryptocurrency mining to combat with its carbon footprint and be more environmental friendly, there are ways such as promoting the use of renewable energy to mine coins, and to use more efficient hardware that will need less energy. To achieve this goal, a clear governance structure can play an important part on generating more standards, rules and best practices. However, Bitcoin was created to be controlled by users and not by a government or corporation, the push for scale to save on energy costs and go green also risks pushing bitcoin against its founding philosophy.

Cryptocurrency mining requires immense computing power across huge networks of computers all working together, thus consumes enormous amount of energy and requires specialized hardware, ultimately leave a massive carbon footprint and cause global warming. As the cryptocurrency market continues to grow, the power consumption is expected to increase as well. By promoting the use of renewable energy and generate a clear governance structure, it is possible to make the network more energy efficient and more environmental friendly.

Chapter three: Investment on Cryptocurrency

"Investing in cryptocurrencies or tokens in highly speculative and the market is largely unregulated. Anyone considering it should be prepared to lose their entire investment." (Bovaird, 2018)

Cryptocurrencies are highly volatile and speculative assets. Hong Kong's Securities and Futures Commission (SFC) warn investors about risks involved in cryptocurrency investment, stating: "The SFC reminds investors that trading cryptocurrencies may expose them to risks including insufficient liquidity, high price volatility and potential market manipulation…Invests may be exposed to substantial risks and significant financial losses in trading cryptocurrency futures contracts and other cryptocurrency-related investment products (eg. Options, swaps and contracts for differences), especially on unregulated exchanges." The volatility and speculative nature of cryptocurrencies indicated a need for diversification across platforms.

As the stock prices of many cryptocurrencies have boomed over the year of 2017, many analysts and investors have pointed to the digital currency as potential site of a new bubble. Citing that it shares similar characteristics of the dotcom bubble of the 1990s and the housing bubble of early 2000s: investor confidence proved to be too high for the underlying market to ultimate support it. The most infamous quote of all is left to JP Morgan Chase CEO Jamie Dimon, who said bitcoin is a fraud. While Morgan Stanley chairman and CEO James Gorman have said bitcoin doesn't quite deserve the attention it is getting (Coleman, 2018).

Robert Shiller, a Nobel Prize-winning economist, is among several market watchers to question bitcoin's long-term viability. He predicted both the dot-com bubble and the housing bubble prior to the popping of the two, called bitcoin "a sort of bubble", "it may be with us for a while," he said, adding that the reason people are excited about bitcoin is more psychological than computer science. "I think that part of it is political, there's a big element of people who don't trust the government anymore, and they like the idea that this didn't come from the government. It came from some real smart computer scientists."

George Soros, a billionaire investor and business magnate who denigrated Bitcoin as a bubble has turned pro to cryptocurrency investment. In 2018's World Economic Forum in Davos, by addressing that:"Normally when you have a parabolic curve, eventually it has a very sharp break." Adam Fisher, who runs Soros Fund Management's macro investing operation, has secured internal approval to begin trading crypto assets, according to a Bloomberg report in early April 2018. With institutional capital Soros shedding a positive sight on cryptocurrency trading, the tide could turn (Wilmoth, 2018).

After more than 70% of the market value was wiped out in just a few days in January 2018, there is one great aspect about all this: The market is still there and most companies are still there (with a few exceptions). This means cryptocurrency does not have the same behavior as other markets due to the fact that anyone can easily participate and even though it was hit hard, they still exist and grow (Criptocoinking, 2018). During the first quarter of 2018, the downward trend in cryptocurrency market has mainly contributed to the "panic selling" due to pressure from reports indicating a complete ban on crypto, and bearish responses from institutional investors, added to the volatility has been bans from major social media giants such as Facebook, Google and Twitter. However, with regulations set into places, investors are more confident, the demand from institutional investors increase, examples can be seen following the entrance of George Soros, the Rockefeller family, and the Rothschild, the outlook on cryptocurrency market will likely change in the near future (Sharma, 2018).

For traditional investments such as stocks, fundamental analysis includes evaluating the financial health and viability of a company according to its financial statement. If the numbers look good, one can be confident that the company has good fundamental and one can, therefore, invest in it. However, Performing the fundamental analysis for cryptocurrencies, is radically different since there are no financial statements. Because cryptocurrencies are not corporations, but rather a representation of value or asset within a network. Its viability directly depends on the participations of community, namely users, miners and developers.

“People did not want to miss the rocket ship to the moon.” The role of emotion in the decision-making process: some prefer to go with gut feelings, others with extensive data analysis and some with the wisdom of the crowds. There is difference between allowing other people to invest for you and allowing products and platforms to help you make better decisions. When investing in a new technology, one should study thoroughly about the company, and look at its potential and limitations in the foreseeable future. It’s important to understand (1) the purpose of a company/technology and (2) what problems it does solve (3) Is the price fair?

Although many scholars have cited that cryptocurrency is a bubble in the earlier stage, many have turned pro eventually. The market was hit hard in January 2018, due to “panic selling” which was a result of rumors on government ban, bearish responses of institutional investors and social media bans by big tech companies, yet the market of cryptocurrencies are still there. This means, cryptocurrency does not have the same behavior as other markets due to the fact that anyone can easily participate and even though it was hit hard, they still exist and grow. Media presence, market participation, and policy changes by the government all play crucial roles on causing major cryptocurrency price volatilities. For those who interested in investing in cryptocurrencies, one should evaluate the risks posed such as insufficient liquidity, high price volatility and potential market manipulation, investors may be exposed significant financial losses, these concerns indicating a need for diversification across platforms. Performing fundamental analysis of cryptocurrency investment is different from traditional investment as there are no financial statements, the assessment of its asset valuation depends on the users, miners and developers. When investing in a new technology, one should study thoroughly about the company, and look at its potential and limitations in the foreseeable future.

3.1 Major events that impact crypto prices

News or speculation of upcoming regulations on the cryptocurrency industry leads to massive moves in one direction or another, as investors rush to sell off coins or purchase them, creating instability in price and wild swings in valuation. Below are lists of major events that affect the price movements of Bitcoin.

Date	Impact	Event
April 1st, 2017	↑	Japan announced that Bitcoin would be accepted as a legal payment method
September 4, 2017	↓	Beijing deemed initial coin offerings illegal and orders all mainland-based cryptocurrency exchanges to shut down, the price of bitcoin slumped by as much as 36% after the news. The government claims that it has implemented these policies to prevent pyramid schemes, money laundering, and other fraudulent activities associated with cryptocurrency industry.
September 12, 2017	↓	JPMorgan CEO publicly denounced bitcoin-'is a fraud', and will eventually blow up
October 13, 2017	↑	Japan's public and outward embrace of cryptocurrencies helped push Bitcoin prices to then-historic highs.
December 10, 2017	↑	Chicago Board Options Exchange announced it would start offering Bitcoin future contracts, trading was halted three times in six days.
December 22, 2017	↓	Bitcoin lost nearly half of its value as popular exchange Coinbase launched an internal investigation into fraudulent practices and potential market manipulation on their platform.
January 11, 2018	↓	Prices of most cryptocurrencies dropped significantly after South Korea announced they would ban crypto trading entirely, or at least implement significant controls on the market. The result was a more than 15% slide in Bitcoin, while Ethereum, Ripple, Litecoin, and most other major cryptocurrencies lost double digits amounts in market capitalization within hours.
January 24, 2018	↑	After the South Korean government changed its tack and sounded a more positive note, cryptocurrencies quickly reversed their slide and generated significant upward momentum.
January 30, 2018	↓	Facebook to ban all ads that promote cryptocurrencies in an effort to prevent the spread of what it called "financial products and services frequently associated with misleading or deceptive promotional practices." Bitcoin price dropped 12 percent.

February 2, 2018	↓	Leading credit card issuers, such as JPMorgan, Chase & Co., Bank of America Corp. in the US and Lloyds bank in the UK, ban their credit card users on purchases of cryptocurrency
February 4th, 2018	↓	China ban on cryptocurrency ads on social media, since advertisements for cryptocurrency stopped appearing on Baidu and Weibo, China's biggest search engine and social media platform respectively.
February 5, 2018	↓	China block domestic internet users from accessing international digital currency exchange.
March 21st, 2018	↑	Bitcoin price surged past the $9,000 mark following G20 meeting where central bankers and finance ministers said they had "productive" discussions on cryptocurrency.
March 26th, 2018	↓	Twitter announced it would bad advertising for cryptocurrencies, following Google and Facebook's crackdown that aims to protect investors from fraud. Bitcoin fell 7 percent to below $8,000.
April 12th, 2018	↑	Bitcoin recorded a 15.94% increase in value within a 30-munites window, from $6,900 to $8,000. It was likely that a wave of investors or potentially a few institutional investors allocated billions of dollars into the market in a short period of time, causing a short-term pump and leading the price of the cryptocurrency to surge.

https://coinmarketcap.com/

By looking at the historical price movements, the researcher summarizes the following factors that influence the high growth and volatility of cryptocurrency prices: Regulation news, media hype, and investors sentiment.

Regulatory news has been a main driver of price movements. Whenever there is a positive government moves towards cryptocurrency, cryptocurrencies market tends to move towards at a bullish trend, such a Japan consider Bitcoin as legal tender of payment in April 2017; Whenever there's negative news such a China's ban on ICOs, caused huge price decline. The rally in December 2017 is likely connected to the impending launch of bitcoin futures on CME, the world's largest derivatives exchange, which are regulated by the U.S. Commodity Futures Trading Commission and

authorized by the Securities and Futures Commission (SFC) to provide automated trading services.

Media hype. Bitcoin is a highly volatile currency and it can be slightly manipulated by the media especially news with a negative influence. Examples such as “Jamie Dimon said that Bitcoin is a bubble”, “Hackers stole millions of dollars in Bitcoin”, these kind of news unfavorably affected the price of bitcoin, creating a bearish trend for the market. However, in practice, negative news can only shatter the industry for a short period of time, and the market usually recovers itself after the waves. More than that, such news seems to popularize the cryptocurrency industry, making it more exposed to the public and therefore bring more interests in its investment. So, in the long term, they deliver even more success.

Sentiments of crypto investors. Due to its popularity increases and uptake by peers, more retail investors have entered into the market. They buy when there is a price hike, sell when there is a price decline, so at the end, these investors are buying high and selling low, which opposes to the law of investment in maximizing wealth. To catch up with the cryptocurrency sphere, it is very important that the investor understand what he or she is investing in, by study forums, discussions and keeping update of the industry.

In a report by Callahan (2018), she wrote that demand and supply, government regulations, Media presence, market participation, and new technological changes all play crucial roles on the impact of Bitcoin price. The increasing presence of Bitcoin on the press had led the original cryptocurrency to skyrocket in value, the rise on price further invites widespread market participation, resulting in more retail investors in droves to the crypto industry. Apart from the widespread market speculation, governments also play a large role in causing major cryptocurrency price volatilities, especially their effort to regulate the industry. Drastic policy changes can have a big impact on the short-term direction, however, history suggested the market recovers itself after the panic period.

Government interference, speculation and knee-jerk reactions will continue to have an outsized impact on cryptocurrency price fluctuations.

3.2 Future and challenges

There are many potentials for the development and innovation of cryptocurrency and blockchain technology in reshaping the business world and our daily lives in the foreseeable future.

Many critics of cryptocurrencies believe blockchain is the real game changer. Increased transparency, accurate tracking, a permanent and reduced costs means consumers have the potential to manage fractional ownership in autonomous cars; shave billions of dollars in transaction costs; vote via smartphone with immediate verifiable results; and encrypt health information without risk of privacy breaches.

The cryptocurrency industry is not without any threat in the longer term. Vigna P. and Casey J. (2015) have pointed out that even though cryptocurrencies such as Bitcoin is challenging the global economic order in eliminating the enormous cost that a bank-centric model of payments imposes, bringing the unbanked into the global economic system, and the ability of blockchain technology to facilitate trust. However, in a longer term, competition may evolve, such as a new technology, or competition from big tech companies launching their own payment system, or even governments may launch their own sovereign backed digital currency, etc. Such concerns are not without their possibilities, as we never know what may happen in the future.

Apart from the promising features of blockchain technology and its potential as medium of exchange, cryptocurrency is still at its early stage and is accepted more as a form of investment by the general public at this time. For it to thrive and become revolutionary, growth and massive adoptions are essential. Government regulations and support, the development of complementary services and ecosystems, and responses to security challenges within the currency network are critical determinants of growth. The challenges lies on its able to overcome many problems it has been facing, apart from main concerns over price volatility, unregulated, ICO scam, money laundering, financing of terrorism and cyber securities, others including technology complexity, immutability, and environment impact.

Highly volatile and unregulated. The cryptocurrency market is subject to limited regulations and highly speculative, they are prone to rapid fluctuation and manipulation, spiking transaction value. For those utilizing Cryptocurrencies as a means of exchange or stable funding streams, the volatility of it could mean a big swing of its value in a single day. Despite being existed for nearly 10 years, the cryptocurrency market is still in its early stage, challenges remain in the government's attempt to regulate the industry and to prevent dangerous practices that come along. The S&P Global Ratings financial institutions sector lead, Mohamed Damak quoted: "We believe that the future success of cryptocurrencies will Largely depend on the coordinated approach of global regulators and policymakers to regulate and enhance market participants' confidence in these instruments" (Carey, 2018). A worldwide regulation of cryptocurrencies could see its value settle into more stable patterns as fears over security and longevity are put to bed.

ICO scams. An Initial Coin Offering (ICO) is used by startups to bypass the rigorous and regulated capital-raising process required by venture capitalists or banks (Investopedia). Along with the balloon of cryptocurrency market, it also attracts scams, with some promising investors return of over 1,000 percent in weeks. Pump and dump ICOs schemes have become a problem for the market due to the fact that it is largely unregulated, the process of launching an ICO is much simpler than an IPO. Massive amount of funds is raised by introducing tokens into the market via ICOs with investors buying these tokens in exchange for fiat money. The entrepreneurs behind the token speculate massively on the coin, driving the prices up and attract investors. Once it is done, they cash out, leaving the investors with worthless coins that have little or no value.

Illicit users. Proven blockchain software which makes Bitcoin secure has made it separate from normal currencies, and the privacy nature that came with using the currency has made it an attractive option for the fraudsters looking to avoid paying tax, as well as money laundering & terrorism financing.

Crypto theft. Like all forms of currency, both traditional and digital currencies, even cryptocurrency, face the risk of theft. In a time of volatile markets, hackers are also active in the sector, Investors should realize security measures to protect their online accounts they use to buy cryptocurrencies, those accounts may get hacked and their

funds may be stolen. There is some risk of major hacks regarding various exchanges in which cryptocurrencies are traded. In January 2018, $530million of digital currency was stolen from Japanese Coincheck. These hacks while not typically indicative of flaws with the cryptocurrency's code, have historically shown to impact the price of each currency. April 9th, 2018, Indian bitcoin exchange Coinsecure has disclosed a theft of 438 bitcoins from its wallet, valued at over $3 million at the time, the country's biggest cryptocurrency theft to date. The exchange insists its own systems haven't been compromised nor hacked, but points to the unconvincing claim of its CSO, Amitabh Saxena, who contended the theft occurred during a separate "exercise to extract BTG (Bitcoin Gold)" to distribute among its customers (Das, 2018).

Cyptojacking. Another concern over the security of internet use has been cryptojacking. Cryptojacking involves using someone's CPUs to secretly mine cryptocurrency without that person's permission, hackers and website owners used the processing power of visitor's CPU's to mine cryptocurrency for their own financial gain (Terzo, 2018). February 20, 2018, cryptojackers targeted Tesla's cloud computing platform. According to a Tesla spokeswoman, the matter was resolved within "hours" and that the "initial investigation found no indication that customer privacy or vehicle safety or security was compromised in any way". In the 2018-2019 period, a newer technique of mining cryptocurrency has emerged that "exploits visitors to a website", and this has become the key theat. Computers being hacked may notice a slowdown in the performance or a sudden jump in usage, these are signals that the CPUs or GPUs may have been invaded by cryptojackers.

Technology complexity. While users don't need to be blockchain experts, however, for the purpose to promote for a larger-scale of adoptions, tools based on the technology surely need more human-friendly interfaces.

Environment impact. Cryptocurrency mining requires immense computing power across huge networks of computers all working together, thus consumes enormous amount of energy and requires specialized hardware, ultimately leave a massive carbon footprint and cause global warming. As the cryptocurrency market continue to grow, the power consumption is expected to increase as well.

Chapter four: Research Result

Governments can support or oppose the implementation of cryptocurrency in the market, therefore the outcome of regulations are extremely influential for the future of cryptocurrencies. Although opposes to the original purpose of cryptocurrency as a decentralized exchange, regulation is mainly targeting criminal users and in an effort to enhance investor protection. Regulations could stabilize the market in order to drive adoption and growth and reduce price volatility, as a result, greater legitimacy gives users and institutional investors the confidence to invest (Sharma, 2018). On the other hand, investors will have to share those profit generated via cryptocurrency investment in the form of capital-gain tax to the government (Zuckerman, 2018).

Financial crisis spread distrust to the financial industry, as a result, it contributed to the progress of cryptocurrencies (Baghla, 2017). Transaction with digital currencies can be faster, cheaper and more efficient than traditional currencies (Acheson, 2018). Many concerns over its peer-to-peer nature, that it processed a threat to the elimination of centralized banking or the need of brokers in the capital market (Vigna, P & Casey 2017. p.54). However, due to the complexity of the technology, user knowledge is still limited, a middleman is still needed to give advice and help facilitate payments. Multiple global banks are now working on integrating blockchain technology into their own system, aiming to reduce cost, improve efficiency, transparency, and to be able to compete with Fintech companies (Meola, 2018). On the other hand, the innovation of cryptocurrency simplifies the crowdfunding process through ICO fundraising, making investors prone to scams (Gray, 2018). As the market attempts to sort out what role cryptocurrency will play in the economic system, it is still extremely volatile due to its infancy.

Cryptocurrency plays an important role for those in less developed countries as a real currency and store of value. Cryptocurrencies and mobile transfers have created an opportunity for people in less-developed countries to control and protect their assets, places with years of political crisis and lacking in financial infrastructure, it gives people the ability to send money home in a relatively low cost and short time (Brown, 2018). Cryptocurrency as a method for charity fundraising enables donator to track the

donation and make sure it moves through the organization to the final recipient (Lehr & Lamb, 2018).

Many popular features of blockchain technology could be revolutionary for the future of the modern world, especially sectors that involve large-scale record-keeping, such as finance, e-commerce, health, logistics, real estate, and etc., can all benefit from the technology in facilitating trust, improving efficiency and transparency (Lehr & Lamb, 2018). Blockchain-based identity seeks to sort out the identity crisis that refugees in the middle east are facing, it helps undocumented people secure elements of identity, as well as facilitate transactions like cash transfer, shelter or food (Hempel, 2018). Blockchain technology helps consumers to identify the origin of food, empowering the entire chain to be more responsive to any food safety disasters (Charlebois, 2018). While the implementation of blockchain is not yet widespread, the shared, open and secure attributes of blockchain will create confidence and reliability, exploration of applications is growing exponentially.

If cryptocurrency is the new vehicle of global currency, it must be based on sound and safe business practices, and do not directly or intentionally contribute to money laundering and black-market enterprises. In order to legitimize cryptocurrency as a trustworthy form of exchange, steps must be taken to restrict on ICO business intermediates and illicit crypto transactions.

Cryptocurrency mining requires immense computing power across huge networks of computers all working together, thus consumes an enormous amount of energy and requires specialized hardware, ultimately leave a massive carbon footprint and cause global warming (Bentley, 2018). Challenges lie in promoting the use of renewable energy and generate a clear governance structure, in order to make the network more energy efficient and environmentally friendly (Lehr & Lamb, 2018).

Although many scholars have cited that cryptocurrency is a bubble in the earlier stage, many have turned pro eventually (Wilmoth, 2018). The market was hit hard in January 2018, due to “panic selling” which was a result of rumors on government ban, bearish responses of institutional investors and social media bans by big tech companies, yet the market of cryptocurrencies are still there (Criptocoinking, 2018). This means

cryptocurrency does not have the same behavior as markets that turned bubble due to the fact that anyone can easily participate and even though it was hit hard, they still exist and grow (Febrero, 2018). Media presence, market participation, and policy changes by the government all play crucial roles in causing major cryptocurrency price volatilities (Callahan, 2018).

Chapter five: Conclusion and Recommendations

5.1 Conclusion

Cryptocurrency is still in its early stage and a niche product, it is evolving despite its issues and challenges, the blockchain technology platform is definitely leading the way towards a more seamless digital global economy.

Riding the wave of the rise, challenges have also come along with it. The future of cryptocurrency remains in the hands on the government's decision to support or oppose its implementation, its ability to integrate and improve the current economy system, the role it plays in the society, and the development of block chain technology to revolutionize various sectors, the government's attempt to regulate the industry in preventing dangerous practices that come along, the ability of the various exchange platforms to improve their cyber securities and to promote the network to be more energy efficient and environmentally friendly.

Investors should be aware that cryptocurrencies are highly volatile and speculative assets. Various reports have anticipated that a more regulated market could reduce price volatilities and give investor more confidence. Media presence, and market participation also play crucial roles on the impact of cryptocurrency prices. Meanwhile, the real test that the cryptocurrency market is undergoing are trust and sustainability as it tries to shed its speculative reputation and shift to being a credible and reliable store of value and medium of transaction (Guy, 2018). For it to thrive and become revolutionary, growth and massive adoptions are essential.

Lastly, Investors seeking profit from cryptocurrency investment should remain vigilant and study thoroughly about the market, as price volatility will likely remain due to possible changes from regulators and governments in the near future, and investors need to be prepared for that.

5.2 Recommendations

Individuals who interested in investing in cryptocurrencies should evaluate the risks posed such as high price volatility, and potential market manipulation, investors may be exposed significant financial losses, these concerns indicating a need for careful evaluation of the market and diversification across platforms.

Performing fundamental analysis of cryptocurrency investment is different from traditional investment as there are no financial statements, the assessment of its asset valuation depends on the users, miners, and developers (Aziz). When investing in a new technology, one should study thoroughly about the company, and look at its potential and limitations in the foreseeable future.

The security of cryptocurrency exchanges and ICO scams remain serious concerns for governments and regulators considering their high vulnerability to fraud, theft, hacking, and other unethical practices. Investors wanting to buy them should understand their own risk profile in how much they are willing to lose and expected return. It's important to research and analysis about the coins they plan to invest, read the white papers, study about the industry of the coins and its presence on social media, as well as the technical abilities of any cryptocurrency founders, much as venture capitalists do before investing in startups.

One way to mitigate volatility in long-term investing is diversification. For the foreseeable future, there's a good chance that the overall growth potential for a long-term investment in crypto far outweighs the potential for stock market investment. However, due to the volatility and speculation in cryptocurrency market, traditional stock market still makes sense as an investment vehicle for long-term, predictable returns. Therefore investors who interested in long-term cryptocurrency investing, should consider holding a diversified crypto portfolio alongside a diversified stock portfolio (Garner, 2018).

For security reason, use a Hardware Wallet to store cryptocurrencies of significant amount. A cryptocurrency wallet is medium that allows user to store, receive, and send cryptocurrency. A hardware wallet is a type of "cold" storage wallet that allows user to

store the funds on a device such as a USB. Hardware wallets generate their own private key and store it right on the device (Pettit, 2018). A hardware wallet uses pin access to connect to the computer and internet to allow easily exchange and management of assets. After use, it should be disconnected from the internet and store at a physically safe location. Hardware wallets give user an extra layer of protection against cyber-attacks, phishing sites, and malware.

In the meantime, investors should always remain vigilant as more regulation and adoption is on the horizon, as to how the market may evolve due to this afford.

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