**Bitcoin Versus the World – An Analysis of the Global Cryptocurrency Market & Potential Future Disruptors of Bitcoin**

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**ABSTRACT**

The aim of this paper is to analyze the global cryptocurrency market and define the major cryptocurrency competitors of Bitcoin. Focusing on the key weaknesses of Bitcoin, I will track the current and future problems that Bitcoin poses for cryptocurrency in order to outline a framework for an ideal, disrupting cryptocurrency. I intend to analyze Bitcoin’s key competitors according to this framework, with the purpose of assessing the long-term investment value of a future disruptor in the cryptocurrency landscape. With that being said, I will draw inference as to whether this paper should accept or not accept the feasibility that Bitcoin will be disrupted by a crypto competitor.

1. **Introduction**

The financial landscape of the medium by which currency is exchanged has vastly shifted during the twenty-first century. This shift has largely been influenced by one of the most important technical innovations in recent years, blockchain technology. In Simanta Sarmah’s publication titled *Understanding Blockchain Technology*, he describes blockchain technologies as “a database of record of transactions which is distributed, and which is validated and maintained by a network of computers around the world”.[[1]](#footnote-1) Rather than utilizing a centralized network such as supervision from a bank, records are supervised by a large community, making blockchain technology a decentralized network by which no individual has control. With that being said, no individual can change or erase a transaction from the decentralized blockchain network. When a transaction is performed, the transaction is sent to the network and computer algorithms determine the authenticity of the transaction. Once verified, this new transaction is linked with the previous transaction to form a chain of transactions known as the blockchain.[[2]](#footnote-2) To be considered valid, individual blocks must contain a proof-of-work, which is verified by other Bitcoin nodes each time they receive a block. Blockchain technology has received an immense amount of attention for the significant potential it holds as an emerging technology. Blockchain technology is significant because it enables the creation and management of smart contacts and smart properties, which in turn can be utilized to create a path for the creation of decentralized autonomous organizations.[[3]](#footnote-3) Moreover, blockchain’s decentralized network can withstand any security attack since there is no central point of failure. In Diego Romano and Giovanni Schmid’s article *Beyond Bitcoin: A Critical Look at Blockchain-Based Systems*, they stress that “it has become evident that the decentralized transaction ledger functionality implemented through the blockchain technology can be used not only for cryptocurrencies, but to register, confirm and transfer any kind of contract and property”.[[4]](#footnote-4) Given that blockchain technology can be profitably adopted in many application scenarios, blockchain technology is incredibly vital to the future of industry sectors like logistics, finance, healthcare, or even artificial intelligence applications.[[5]](#footnote-5)

In the University of Cambridge’s *Global Cryptocurrency Benchmarking Study* for 2017, Bryan Zhang, co-founder and executive director of the Cambridge Centre for Alternative Finance wrote, “the world of money and finance is transforming before our eyes. Digitized assets and innovative financial channels, instruments and systems are creating new paradigms for financial transaction and forging alternative conduits of capital”.[[6]](#footnote-6) Johnathan Vaux, the general manager of i2c Inc., a leading provider of digital payment and open banking technology, says that “cryptocurrencies were the first application of blockchain technology, and in doing so introduced an entirely new set of businesses, jobs and vocabulary to the world of payments”.[[7]](#footnote-7) Cryptocurrencies are important because instead of a requirement for a third party, the cryptocurrency’s supporting software both verifies ownership and executes transfers.[[8]](#footnote-8) In turn, this process requires a complete historical record of previous cryptocurrency transfers, which is based on the cryptocurrency’s blockchain of digital records.[[9]](#footnote-9)

Today, the most popular application of blockchain technology is Bitcoin. Often referred to as “Gold 2.0”, Bitcoin is an open-source cryptocurrency which hosts a digital ledger secured by the mathematical field of cryptography. Bitcoin uses peer-to-peer technology and operates without any centralized third-party authority to serve as a secure electronic payment system, allowing transactions involving virtual currency in the form of digital tokens known as Bitcoin coins.[[10]](#footnote-10) Bitcoin’s supply is limited to only twenty-one million bitcoins, In Sarmah’s article, he describes one of the advantageous of Bitcoin, stating that “by digitally emulating cash creation and transactions through cryptographic operations, Bitcoin gets rid of bank charges and tries to anonymize the involved parties.”[[11]](#footnote-11) Initially, Bitcoin drew the attention of users due to its ability to maintain its users anonymity, however it became more popular due to its transparency.[[12]](#footnote-12) Although Bitcoin’s inventor is anonymous, one of the key reasons for Bitcoin’s success is the large community of programmers that have been there to support and addresses any issues with the code. While Bitcoin is extremely advantageous, there are still a few key flaws within the cryptocurrency. First, there is a problem of scalability with Bitcoin. Next, as a cryptocurrency with a faceless founder, Bitcoin has prevalent management concerns. Thirdly, there is concern about the long-term scope of Bitcoin’s security measures. Lastly, there is a strong institutional demand with Bitcoin’s public float.

The remainder of this paper is designed as follows: Section 2 will begin with important terminology and background information that will be used in the paper. Following the terminology and background, I will analyze the global cryptocurrency market and outline the key historical problems and weaknesses of Bitcoin in order to develop the framework of a successful, disrupting cryptocurrency. Section 3 will identify the timeframe, selection criteria and methodology for analysis that will make up this paper’s comparative analysis of Bitcoin and the five selected cryptocurrencies. Section 4 will be the empirical results of the comparative analysis along. Split into five subheadings for each cryptocurrency analyzed, this section will include the ways in which each competing cryptocurrency aligns with the framework as well as the long-term investment value for each cryptocurrency. Lastly, section 5 will consist of concluding remarks for the paper, including avenues for new research, final conclusions about the top future disruptor of Bitcoin and a prediction of the future global cryptocurrency market.

**2. Review of Literature**

*2.1 Explanation of Terminology*

**“Centralized Network”** — Centralized computer networks are controlled by a central authority who makes decisions on behalf of the rest of the network. A centralized network is typically built around a single server that handles all major processing for the network. Other, less-powerful computers can connect to the central server and submit requests, which the powerful central server can perform.[[13]](#footnote-13) Ultimately, the power lies with a single authority rather than within the collective.

**“Decentralized Network”** — Instead of relying on a single centralized server, decentralized networks distribute data, information, and processing workloads across the computers participating in a network. This allows for greater [fault](https://loki.network/consensus-mechanisms:-proof-of-work,-proof-of-stake,-and-hybrid-systems) tolerance, as the key components of the network are distributed across multiple machines — if one machine goes down, the network as a whole continues to function.[[14]](#footnote-14) In a decentralized network, decisions and actions are performed in a democratized way. Ultimately, the power lies within the collective rather than with a single authority.

**“Miners”** — Users who utilize their computers to perform calculations to try and discover a block. Mining is the mechanism used to introduce bitcoins into the system. Bitcoin miners are paid by transaction fees and can also receive bonuses for newly created coins, which establishes a great deal of motivation for people to provide security for the system.[[15]](#footnote-15)

**“Cryptography”** — Cryptography provides for secure communication in the presence of malicious third parties, or adversaries. For cryptocurrencies, cryptography links the blockchain and its growing list of records (blocks). Each block contains a cryptographic hash of the previous block, a timestamp and transaction data. The Bitcoin Network, for example, employs a Secure Hash Algorithm (SHA) for its cryptography and mainly uses hashes in combination with digital signatures to protect the integrity of the data flowing through the blockchain, using public-key cryptography.[[16]](#footnote-16) This is important because if one piece of input data is changed, the output data will change significantly, making it easy to detect small changes in large text files.[[17]](#footnote-17)

**“Smart Contract”** — A smart contract is a computer protocol intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract.[[18]](#footnote-18) Moreover, smart contracts allow for the performance of credible transactions without a third party, leaving no need to pay intermediaries while also saving time and conflict.[[19]](#footnote-19)

**“Smart Property”** — A property whose ownership is controlled via the Bitcoin blockchain using contracts. Making property smart allows it to be traded with radically less trust. This reduces fraud, mediation fees, and allows trades to take place that otherwise would never have happened.[[20]](#footnote-20)

**“Ideal” or “Disruptor” Cryptocurrency** — As it pertains to this paper, an “ideal” or “disrupting” cryptocurrency is best defined as a blockchain cryptocurrency that provides solutions to the largest problems with Bitcoin’s cryptocurrency model, as defined in the framework for a successful currency.

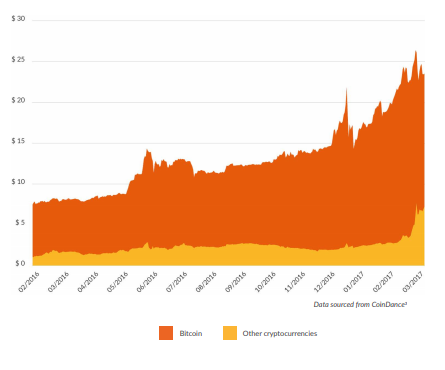
*2.2 Analysis of the Global Cryptocurrency Market and Bitcoin’s Dominance*

In the past few years, cryptocurrencies have drawn a great deal of attention from investors, entrepreneurs, regulators and the general public.[[21]](#footnote-21) Currently, one of the most instrumental developments in the rise of cryptocurrencies has been the emergence of crypto exchanges where anyone can open a wallet and trade cryptocurrencies not only against one another, but also against fiat currencies.[[22]](#footnote-22) These exchanges have created an entire “ecosystem” of services and participants seeking to provide liquidity, exploit price discrepancies for profit and to support investment by both retail and professional investors.[[23]](#footnote-23) In Giudici, Milne, and Vinogradov’s (2019) article for the Journal of Industrial and Business Economics, they describe the recent public discussions around cryptocurrencies as “triggered by the substantial changes in their prices, claims that the market for cryptocurrencies is a bubble without any fundamental value, and also concerns about evasion of regulatory and legal oversight.”[[24]](#footnote-24) With that being said, these concerns have led to situations such as calls for increased regulation and for the classification of cryptocurrencies as commodities or money. Contrary to these concerns, it is worth mentioning that there is still little established scientific knowledge about the markets for cryptocurrencies and their impact on economies, businesses and people. According to Giudici, et al., (2019), anonymity is a significantly distinctive feature of most cryptocurrency discussions, so the value of a cryptocurrency is then effectively a measure of how much users value anonymity of their transactions.[[25]](#footnote-25) Research by Giudici, et al., (2019) supported this, describing that although anonymity may be attractive for illegal activities, one cannot rule out that users may simply wish for more privacy in hopes of avoiding the “Big Brother” effect of traditional transactions.[[26]](#footnote-26) Currently, censorship across big technology as well as in the United States has shifted from a fear to a reality. During prevalent times of censorship and big data like today, a decentralized cryptocurrency is far more valuable than a centralized network because if a user desires more privacy, it can still be obtained through a decentralized cryptocurrency without reliance upon a single authority and its central server.

A major reason that Bitcoin is so unique is because it was the first cryptocurrency to appear on the market. Bitcoin capitalized on its first-mover advantage, and in turn, has created a global community and given birth to an entirely new industry of millions of enthusiasts who can create, invest in, trade and use Bitcoin and other cryptocurrencies in their everyday lives.[[27]](#footnote-27) Furthermore, when Bitcoin emerged as the first cryptocurrency, it opened the floodgates for cryptocurrencies, inspiring the development of thousands of competing projects. “The entire cryptocurrency market — now worth more than $550 billion — is based on the idea realized by Bitcoin: money that can be sent and received by anyone, anywhere in the world without reliance on trusted intermediaries, such as banks and financial services companies.”[[28]](#footnote-28) The intrinsic value of Bitcoin is supported by the scarcity of the cryptocurrency, which is another key component to what makes Bitcoin so valuable. As a limited supply currency with only 21 million bitcoins, it can be argued that Bitcoin is one of the scarcest resources in the world, especially during times like today when its demand is this strong.

Today, one bitcoin is worth $21,336. Since the financial market crash during March of the COVID-19 pandemic, the price of Bitcoin has risen by 419.6% over the last nine months from a price of $4,106.98. Additionally, the price of Bitcoin has risen by 102.7% over the past three months from a price of $10,528.89. Although the overall market has largely bounced back from where it crashed in March, the manner in which Bitcoin has outperformed equities as well as commodities like gold and silver is a testament to its strength as well as value, especially during a time in which the Federal Reserve’s balance sheet doubling amidst economic uncertainty. With that being said, there are more mechanisms causing Bitcoin’s current bull run than only economic uncertainty. For one, questions about the legitimacy of Bitcoin as a form have money have been squashed. In July of 2020, a US Federal Court ruled that bitcoin is a form of money covered under the Washington D.C., Money Transmitters Act (MTA) during a case against an operator of an underground bitcoin trading platform.[[29]](#footnote-29) Secondly, Bitcoin’s institutional demand has been incredibly bullish. For example, in the past 45 days, Grayscale’s AUM has grown from $7.6B to $13B with holdings of 261,000 BTC doubling to 544,000 BTC in the past twelve months.[[30]](#footnote-30) Growing institutional demand for Bitcoin comes without a surprise, as more portfolio managers and institutions have begun support Bitcoin as a legitimate, sustainable tool for diversification. Lastly, Bitcoin is a reality to consumers today. According to Fundera, by the end of 2019, around 2,300 businesses in the United States accept bitcoin payments.[[31]](#footnote-31) With major companies like Microsoft, AT&T, Overstock and Twitch now accepting bitcoins as methods of payment, a clear trend has formed between Bitcoin’s explosion of demand and the continuing increase of institutional acceptance for the cryptocurrency.

Figure 1: Total Cryptocurrency Market Capitalization: Comparing Bitcoin’s Market Cap to Other Cryptocurrencies between February 2016 and March 2017.

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As pictured in Figure 1 above, this graph displays the total cryptocurrency market capitalization, split between Bitcoin’s market capitalization (red) relative to all other cryptocurrencies (yellow) between February, 2016 and March, 2017. This graph tells more than one story. On one hand, Bitcoin’s utter dominance of the cryptocurrency market is on full display. Bitcoin’s market cap towers over the combined market capitalization of all other cryptocurrencies, steadily maintaining anywhere from 60-80% of the total market during the referenced time period. On the other hand, Figure 1 also tells an important story about the growth of the global cryptocurrency market. From February 2016 to March 2017, the total cryptocurrency market capitalization increased by more than 3x in size, reaching nearly $25B in March 2017. As of December 16, 2020, CoinMarketCap.com lists Bitcoin’s market capitalization as $395.996B, which is 64.4% of the global cryptocurrency market capitalization of $615.124B.[[32]](#footnote-32) Drawing inference from Figure 1, it must be noted that the total cryptocurrency market capitalization has increased by more than 24x since March 2017 and grown by more than 80x since February 2016.

Bitcoin’s domination of the global cryptocurrency market is rather clear. However, there is still 35.6%, or $218.984B worth of market capitalization remaining for the rest of the cryptocurrency market to claim. During Bitcoin’s current bull run, alternative forms of cryptocurrency have benefited from the spillovers in demand for cryptocurrency that Bitcoin has created. Alternative forms of cryptocurrency, also known as “altcoins”, are important because they support the global cryptocurrency market. Although their goals may be to compete with and capture Bitcoin’s market share, the sheer competition among cryptocurrencies positively impacts the innovation and growth of this young, promising industry. Being an industry based around the endless capabilities of decentralization, competition is indicative of the future success and growth global cryptocurrency market. Without competition across cryptocurrency, situations like updates to Bitcoin’s code and the necessity for improvements would be virtually non-existent. For example, Ethereum, cryptocurrencies most popular altcoin, launched Ethereum2.0 on December 1, 2020 to update their core software. By introducing Ethereum 2.0, Ethereum aims to address issues with the network’s scalability and security.[[33]](#footnote-33) Ethereum 2.0 is a great example of how competition improves decentralized networks. In the case of cryptocurrency, competition is less of an existential threat to future success because rather than positioning themselves totally against one another, it creates a necessity for cryptocurrencies to adapt to innovations within the scope of the market.

*2.3 Identifying the Weaknesses of Bitcoin*

Although Bitcoin is arguably the strongest form of currency due to its true limited supply, Bitcoin still has its own weaknesses. First, Bitcoin has an issue with scalability. Bitcoin’s scalability problem lies within a restriction of size and frequency, which creates a limited rate at which the Bitcoin’s blockchain can process transactions.[[34]](#footnote-34) Today, Bitcoin’s network has a block size restriction of 1MB and a sustained rate of only 7 transactions per second, which is hundreds of times less than something like Visa’s retail payment network VisaNet, which handles on average around 2,000 transactions per second with peaks of more than 50,000 transactions per second.[[35]](#footnote-35) The “*Scalability Trilemma*” is a term coined by Vitalik Buterin, the founder of Ethereum that tackles this problem. The *Scalability Trilemma* describes three tradeoffs that crypto projects face when deciding how to optimize their network: decentralization, security and scalability.[[36]](#footnote-36) According to the *Scalability Trilemma*, the degree of scalability is significant because there are security tradeoffs to achieving infinite scalability.[[37]](#footnote-37) Ultimately, a sacrifice must be made between security or scalability until there is an innovation to solve this trilemma.

Another key weakness of Bitcoin is its management concerns. Satoshi Nakamoto’s decentralized currency opened the door to a new world. However, he never showed up to claim his project. Instead, Nakamoto disappeared from the internet on April 23, 2011, leaving the project in the hands of its users and developers.[[38]](#footnote-38) As a result, Bitcoin can only work correctly with a complete consensus among all users to the protocol, in turn creating a strong incentive for users and developers to protect Bitcoin’s consensus.[[39]](#footnote-39) Although some view this as a necessary component of decentralization towards anonymity and privacy protection, others see future management concerns about such a heavy reliance on the consensus between users and programmers. Given a situation in which developers and users fall out of consensus, Bitcoin’s management concerns would reach an all-time high among holders.

While the security of Bitcoin’s blockchain offers some of the strongest preventions against identity theft and offers protections with backup and encryption, there is a massive threat if any single entity can gain control of 50% or more of the network’s computing power. With that level of control, there is effectively a risk for the likelihood of double-counted coins, stopped payments and stalled transactions.[[40]](#footnote-40) According to Olga Kharif’s article for Bloomberg News from January 31 2020, “five mining entities- all of them based in China- control 49.9% of all computing power on the network, the highest concentration of mining power ever”.[[41]](#footnote-41) The five mining entities are AntPool, BTC.com, BTC.top, F2 Pool and ViaBTC. Given the situation that a singular entity gains control of more than 50% of the network’s computing power, the authenticity of Bitcoin’s decentralization would become heavily disputed. Instead, Bitcoin’s network operations would become highly centralized, effectively compromising the cryptocurrency’s main attraction.[[42]](#footnote-42) Another concern with Bitcoin’s security may arise if its encryption software becomes outdated. After all, as blockchain technology and machine learning progress, it is entirely possible that the security measures of Bitcoin will become obsolete as the ability to crack the cryptocurrency’s public-private key pairs grows.

Lastly, there are many concerns with the institutional demand for Bitcoin’s public float. Given such a strong institutional demand during Bitcoin’s current bull run, this presence of continued institutional support raises concerns about future price corrections to what is already an incredibly volatile cryptocurrency. During 2015, whale-sized wallets, or wallets holding between 100 to 100,000 bitcoins, made up 62.9% of the supply owned.[[43]](#footnote-43) On a positive note, as of August 2020, whale-sized wallets percentage of supply had decreased to 49.8%, a strong hope for further decentralization inside the blockchain.[[44]](#footnote-44) As institutional demand for Bitcoin continues to grow, it is entirely possible that if the cryptocurrency cannot drive and maintain a high demand from smaller entities. If this were to occur, Bitcoin’s price would be extremely volatile to whale-sized wallets selling their cryptocurrency. Moreover, Bitcoin’s network would become far less decentralized if it begun catering to its institutional investors.

*2.4 Designing a Framework for a Successful Cryptocurrency*

In the following section, this paper will select three different cryptocurrencies to compare and contrast relative Bitcoin. It is important to maintain a common baseline for the analysis in order to draw easily comparable conclusions about each cryptocurrency. Therefore, the following section will evaluate each cryptocurrency with a framework of questions for determining a successful cryptocurrency. The framework is designed as follows:

* The cryptocurrency’s scalability must be evaluated first. This is currently one of Bitcoin’s largest problems with its blockchain. Does a cryptocurrency have a scalability problem of their own or a potential for one in the future? If there are no clear problems with scalability, has the cryptocurrency minimized the *Social Trilemma*?
* Who are the founders and management team of this cryptocurrency? What are management’s goals for their cryptocurrency? Do any of the different management teams negatively affect the decentralization of the cryptocurrency? Would institutional investors favor any management teams over Bitcoin’s user and developer consensus?
* How does each cryptocurrency’s security measures compare to Bitcoin? What about encryptions and backups? Is cryptocurrency forever gone if the access to a wallet is lost? Does the cryptocurrency allow mining? If so, is there potential for a singular entity to control more than 50% of the network’s computing power?
* Describe any institutional demand for this cryptocurrency. What is the cryptocurrency’s market capitalization? How about the scarcity of the cryptocurrency; how does their limited supply compare to Bitcoin’s? If there isn’t a large institutional demand today, is there potential for future institutional demand to skyrocket? Is there a large presence of whale-sized wallets for the cryptocurrency? What is the percentage of supply owned?

**3. Data and Methodology**

*3.1 Timeframe and Selection Criteria*

The timeframe was chosen based on the total life of cryptocurrency. Therefore, the window of time analyzed begins with Satoshi Nakamoto’s Bitcoin whitepaper in 2009 and stretches all the way to present-day, as well as any future outlooks. The selection criteria for choosing the three cryptocurrencies to analyze relative to Bitcoin is as follows:

* Cryptocurrencies will not be randomly chosen.
* In order for selection, the cryptocurrency’s market cap must be inside the top 15 of all cryptocurrencies.
* A cryptocurrency did not meet the selection criteria if its reputation is historically questionable.
* The cryptocurrency must possess a unique characteristic relative to Bitcoin.
* A cryptocurrency does not meet the criteria if its main functionality is to minimize exchange rate risk between two foreign currencies or serves as a cryptocurrency exchange.
* In order to meet the selection criteria, a cryptocurrency’s security measures must be trustworthy.

*3.2 Methodology for Analysis*

In the following sub-sections, the selected cryptocurrencies will be compared and contrasted with Bitcoin according to the defined framework for a successful currency. As mentioned, three cryptocurrencies were chosen based on the selection criteria. The first cryptocurrency analyzed relative to Bitcoin will be Monero. Next, Ethereum will be compared with Bitcoin. Lastly, the third cryptocurrency analyzed will be Cardano. Once the individual analysis of each cryptocurrency is finished, these results will be applied to compare each selected cryptocurrency among one another to determine which currencies hold the best long-term investment value.

*3.3 Analysis*

*3.3.1 – Monero (XMR)*

Monero is an interesting cryptocurrency that was founded by seven developers, five of which have remained anonymous. Launched in 2014, the team behind Monero say that privacy and security are the cryptocurrency’s biggest priorities.[[45]](#footnote-45) Monero is unique because it aims to achieve the greatest level of decentralization possible while also advocating for complete and utter privacy. In comparison to Bitcoin, Monero was designed with the intention to capitalize on such issues prevalent in Bitcoin. In order to prevent centralization, the Monero network uses a consensus mechanism called CryptoNight. CryptoNight is based on proof-of-work rather than mining blocks, which effectively prevents large mining farms from becoming a dominant force.[[46]](#footnote-46) Monero’s privacy is extremely complex. Monero’s blockchain obscures things like details about senders, recipients and the amount of crypto being transferred, which is said to offer an upper hand over rival’s privacy that is selectively transparent. XMR’s privacy is further supported by stealth addresses. Stealth addresses are addresses which are created for every transaction and can only be used once. Monero’s demand is incredibly unique for a cryptocurrency as well. During cryptocurrency’s 2018 bear run, Monero was one of the only cryptocurrencies that performed well. Today, there is more than 17.7M coins in circulation, however the maximum supply of Monero is not known, limiting the aspect of the cryptocurrency’s scarcity. Currently, Monero has a market capitalization of $2.824B, ranking Monero the fifteenth largest cryptocurrency. Overall, Monero capitalizes quite well on a few of Bitcoin’s shortcomings, such as the use of proof-of-work to ensure total decentralization rather than using a reward-based system in order to incentivize mining. However, Monero’s privacy is overtly excessive, in turn. The distinct features of XMR’s total privacy have led the currency to being increasingly used for illicit transactions instead of Bitcoin. Currently, governments around the world offer hundreds of thousands of dollars to anyone who can crack Monero’s code.[[47]](#footnote-47)

*3.3.2 – Ethereum (ETH)*

Ethereum is arguably the most influential cryptocurrency without the name “Bitcoin.” Founded by eight co-founders, Vitalik Buterin authored Ethereum’s original white paper in 2013, and still works to improve the platform to this day.[[48]](#footnote-48) Today, Ethereum maintains a market capitalization of $73.578B which is the second highest in the entire cryptocurrency market, trailing only Bitcoin. Ethereum is a decentralized open-source blockchain system featuring its own cryptocurrency, Ether. Ethereum’s supposed goal is to “become a global platform for decentralized applications (dApps), allowing users from all over the world to write and run software that is resistant to censorship, downtime and fraud”.[[49]](#footnote-49) One reason that Ethereum is so unique is due to the creation of a blockchain smart contract platform. By designing a platform that could execute smart contracts using the blockchain, Ethereum effectively utilizes the existing benefits of smart contract technology.[[50]](#footnote-50) Ethereum is also unique in that its blockchain can host other cryptocurrencies known as “tokens”. As of today, more than 280,000 different token cryptocurrencies have been launched using Ethereum’s blockchain and more than forty make the top-100 cryptocurrencies by market capitalization. Ethereum launched a major update on December 1, 2020 called Ethereum 2.0. The Ethereum 2.0 update has been incredibly significant to necessary updates to the network’s blockchain. In the 2.0 update, Ethereum fixed an issue with staking the cryptocurrency, making it possible to begin staking on the Ethereum 2.0 network.[[51]](#footnote-51) Ethereum’s economics are significantly different than Bitcoin because Ethereum does not have a limited total supply, meaning that Ethereum is deflationary. Instead, Ethereum’s issuance rate is adjusted through consensus which allows the network to maintain the minimum issuance needed for an adequate security.[[52]](#footnote-52) The average time that it takes to mine an Ethereum block is around 13-15 seconds, which is around 2-3x faster than the average transaction speed of Bitcoin. As Ethereum works towards the next phase of Ethereum 2.0, it will be interesting to see how they continue to improve their network’s blockchain. As mentioned by Vitalik Buterin in October 2020, Ethereum’s next target for improvement is to develop base-layer scalability- however, Buterin maintains that such an update is still years away from today.[[53]](#footnote-53) As for management concerns, it is evident that Ethereum’s has a comparative advantage relative to Bitcoin when it comes to leadership. However, future success of Ethereum will be largely determined by the cryptocurrency’s ability to develop base-layer scalability to the blockchain.

*3.3.3 – Cardano (ADA)*

Cardano is a young, emerging cryptocurrency that was founded in 2017 by Charles Hoskinson, one of the eight co-founders of the Ethereum network. Today, Cardano has a market capitalization of $5.08B, the eighth highest in the cryptocurrency market. Cardano is an open-source project that uses a proof-of-stake blockchain platform with the goal to “allow changemakers, innovators and visionaries to bring about positive global change”.[[54]](#footnote-54) Additionally, Cardano aims to “redistribute power from unaccountable structures to the margins to individuals - helping to create a society that is more secure, transparent and fair”.[[55]](#footnote-55) Participation is a unique component of Cardano’s blockchain. In Cardano, ADA tokens are designed to ensure owners have a place to participate in the network’s operation. As an ADA token owner, users receive the right to vote on any proposed changes to the software.[[56]](#footnote-56) Cardano is different from Ethereum and Monero in that there is a maximum supply of 45 billion ADA tokens. Cardano is secured through a proof-of-stake protocol known as Ouroboros.[[57]](#footnote-57) Ouroboros improves the security guarantees delivered by a proof-of-work consensus while using far less power. That being said, Cardano boasts that Ouroboros is environmentally sustainable, verifiably secure and at least four times more energy efficient than Bitcoin.[[58]](#footnote-58) Decentralization of Cardano’s blockchain is a major priority to the management team. For example, in 2020, Cardano held a Shelley upgrade that aimed to make its blockchain anywhere from fifty to one hundred times more decentralized in order to pave the way for hundreds of assets to run on its network.[[59]](#footnote-59)

**4. Data and Results**

Monero uniquely capitalizes on some of Bitcoin’s pivotal flaws, like using proof-of-work consensus to prevent large mining farms from acting as a dominant force. Features of Monero such as privacy, however, are blatantly extreme and in turn create an environment of cryptocurrency that is even more useful for illegal activities than Bitcoin. Although Monero saw a large string of success during the 2018 crypto crash, since then, the cryptocurrency has continually struggled to see their price return to even half of where it once was.

Ethereum is a unique cryptocurrency for many reasons. First, updates to the blockchain that improve the entire scope of the cryptocurrency’s network, such as Ethereum 2.0, are groundbreaking for a decentralized cryptocurrency. It is evident that active improvements to the network’s blockchain can drive the institutional demand of a cryptocurrency. Next, Ethereum’s stable management is to be desired by an investor far more than Bitcoin’s reliance on consensus between developers and users. Third, Ethereum’s smart contracts have use cases across nearly all industries. Using Ethereum’s smart contracts, the needs for trusted intermediaries between contractors are greatly reduced, as are any transaction costs.

Although Cardano is an exciting, emerging cryptocurrency, this proof-of-stake blockchain platform will support the total cryptocurrency market in a far better way than it can compete with Bitcoin. Cardano’s blockchain is extremely important for agricultural companies tracking the produce from farm to table, storing credentials in a tamper-proof way, and assisting retailers to clamp down on counterfeit goods.[[60]](#footnote-60) Therefore, Cardano is much more vital to the overall growth of the cryptocurrency market than acting as a direct competitor to Bitcoin.

**5. Avenues for Future Research**

Having analyzed Bitcoin relative to Monero, Ethereum and Cardano, there are quite a few different avenues for future research into the cryptocurrency market. One avenue for future research is to analyze Bitcoin relative to more cryptocurrencies that have rolled out updates like Ethereum 2.0 in order to continue improving the cryptocurrency’s network. Another avenue for future research is to compare leading DeFi technology to Bitcoin in order to analyze any comparative advantages that DeFi technology has over Bitcoin. Lastly, an avenue for further research is to focus on cryptocurrencies that have seen prices drop by more than 10% within the last month. By comparing beat up cryptocurrencies to Bitcoin, this avenue could be a great way to screen speculative value investments.

**6. Conclusions**

Monero effectively removes the risks of mining farms acting as a dominant force, however, its excessive privacy as well as lack of limited supply damage the cryptocurrency’s institutional appeal. It is safe to say that Ethereum is the most important altcoin in our world today. Updates such as Ethereum 2.0 are incredibly promising to future of the cryptocurrency market. Other factors like Ethereum’s ability to utilize smart contracts and host other cryptocurrencies are crucial to its success as well. As the cryptocurrency market continues to rapidly expand, as will use cases for other cryptocurrencies on Ethereum’s decentralized open-source network. While Ethereum continues to improve its network’s blockchain, the time frame in which Ethereum can solve and update base-layer scalability is going to be most indicative of the cryptocurrency’s future success. Although Cardano is not a serious competitor to Bitcoin, this cryptocurrency’s blockchain will benefit the future of industries like agriculture, education, retail and more. Overall, Ethereum presents the best case as a potential disruptor of Bitcoin. However, I conclude that increased competition between Bitcoin and Ethereum will not lead to a future disruption in the cryptocurrency market. Rather than cannibalizing one another, the competition among all decentralized cryptocurrencies will drive and support the future growth of not only Bitcoin and Ethereum, but the entire cryptocurrency market.

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