

Non-Fungible Tokens: Accessible Investment for All, or a Bubble?

The Moral and Ethical Implications of Decentralized Assets

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Abstract

NFTs have complex direct and indirect consequences on the modern economy, making the use of them by the average rational individual prone to higher risk. Just as professional, educational, and social institutions progressed through the COVID-19 pandemic using technological tools such as Zoom and Microsoft Teams, the world economy has also become increasingly intertwined with technology. Non-fungible tokens (NFTs), through Web 3.0, have played a large part in this intermingling of public markets and technology. On a surface level, NFTs can seem like a trend or Ponzi scheme put forth by the young “influencers” of social media. Additionally, the underlying technical and social implications make NFTs a more complex option than traditional investments, potentially putting the average individual at a disadvantage in a modern market full of new financial sharks. So, what are the direct and indirect effects of NFTs on individual investors in the modern economy? While many see the economy as strictly related to stocks, the modern economy is broad, in which individuals make decisions based on financial, social, and ethical implications. NFTs play into these factors, resulting in effects such as pricing changes based on social trends in addition to news in the press, in the way that traditional stocks are impacted. This fluctuation and instability can result in an unwillingness for lenders to grant loans based on holdings in NFTs or cryptocurrencies. That volatility calls the intrinsic worth of an NFT into question. Despite these issues, digital capital like NFTs and cryptocurrency do provide opportunities to invest with a low barrier to entry. Concerns of environmental ethics are diminishing as crypto is fully mined and companies become carbon neutral. This multitude of factors and issues results in a market situation that is incredibly difficult to predict. Here, we conclude that while NFTs pose considerable risks to investors, the opportunities and new possibilities suggested by a growing cryptocurrency market suggest that

cryptocurrency is not just a fad or a bubble: it's here to stay and will have a lasting impact on markets.

Public Knowledge

In June of 2021, Security.org released a survey of 55% male and 45% female responses, with an age distribution reflecting the U.S. census. As a side note and for legitimacy, Security.org is an organization specializing in the research of data technologies and has citations in Forbes, The Wall Street Journal, and Wired. They found that only two percent, two percent, of Americans were very familiar with NFTs – having purchased or sold one in the past. Additionally, they found that a staggering sixty-six percent of Americans have never heard of NFTs. But what is an NFT? To answer this and ultimately respond to our research question, we first have to start at the beginning: the blockchain.

The Blockchain

What exactly is a blockchain? A blockchain is a distributed ledger of transactions that functions on the decentralized web. Each chain is composed of cryptographic data called blocks, and each block contains a hash - a unique code that identifies the block. Each block also includes the hash of the previous block and the data for its specific transaction. As transactions occur, these blocks stack on one another, forming an irreversible, verifiable record or a blockchain. So how is a new block added to the chain? There are two main methods, known as consensus mechanisms, called proof of work and proof of stake. Each of these processes is different but provides similar outputs.

With proof of work, the older of the two methods, cryptocurrency miners try to compute the solution to a cryptographic puzzle: the creation of a new hash for a new block. As the puzzles are solved, the blockchain rewards miners with some quantity of cryptocurrency. In this mining process, competition is equal, except rewards are weighted towards those with more computing power. The trouble with proof of work is that it is energy-intensive. Proof of stake functions quite differently and solves some of these issues.

In proof of stake, a network of validators risks some quantity of their cryptocurrency. They do this hoping to get a chance to validate a new transaction on the blockchain and be rewarded for doing so. Once the network chooses a validator, the blockchain updates with the accepted transaction. Finally, the network disburses cryptocurrency to the chosen validator. Proof of stake has serious advantages - it is computationally simple and requires less energy to maintain. However, the downside to proof of stake is its favoritism towards validators who can stake more cryptocurrency than others.

Cryptocurrency

There are several available options for cryptocurrency. For example, the two highest-valued coins are Bitcoin and Ethereum. As of Wednesday, April 27th, 2022, Bitcoin has a market value of \$39,148.18, putting its market cap at \$744,753,082,757. Ethereum has a market value, again as of April 27th, of \$2,874.90, putting its market cap at a value of \$346,554,363,494. If you are not convinced already, hopefully these numbers exemplify the immense scale of crypto. Cryptocurrencies operate most often as a financial instruments. In some cases, one can use cryptocurrencies for everyday purchases, like cash or a credit card, but they are most often held as assets or exchanged for other cryptocurrencies, like NFTs.

Non-Fungible Tokens - NFTs

First and foremost, NFT stands for Non-Fungible Token. Similar to cryptocurrencies, NFTs are minted on a blockchain, with the most common blockchain for NFTs being Ethereum. During this process, the originator of an NFT creates a smart-contract assigned to the minted NFT. This smart-contract identifies the NFT and its ownership in an inimitable manner. Because of these smart contracts, NFTs are one-of-a-kind tokens verifiable through digital authentication. In the same way that blockchains authenticate cryptocurrency, the blockchain acts as verification, or certificate of authenticity, in conjunction with the smart contract. After the minting of NFTs, sellers have the opportunity to sell their tokens on exchange platforms, with the most notable and trusted platform being OpenSea.

Public Opinion

While the numbers are small, what does the informed public think of NFTs? Any remotely internet-savvy person needs only a few clicks to find a plethora of articles covering controversies surrounding NFTs. Hiroko Tabuchi from the New York Times writes, “NFTs Are Shaking Up the Art World. They May Be Warming the Planet, Too.” Amanda Yeo from Mashable Tech states, “Think cryptocurrency is bad? NFTs are even worse.” Kevin Collier from NBC News claims that “NFT art sales are booming. Just without some artists' permission.” And as of January this year, the Smithsonian Magazine published an article entitled “Should NFTs Be Classified as Art? Wikipedia’s Editors Vote ‘No’” But the list does not end there. From potential scams to infringements in copyright law, of course, nothing can be without controversy NFTs just seem to attract a lot of it.

What is the Problem?

So what is the problem? Why have NFTs not been readily accepted into society? One answer comes from the medium at the forefront of the public image of NFTs - wild internet art. Oversaturation of what some would call poor art has left many a sour taste in the mouths of potential investors. The infamous Bored Ape is the most recognized. The idea that these clip art monkeys can sell from one-hundred to two-hundred Ethereum, around two-hundred-twenty-thousand dollars to four-hundred-forty-thousand dollars, is insane. Yet, as we mentioned, this is not the only issue plaguing the NFT market.

Fighting the Climate Crisis

As briefly touched on earlier, one concern surrounding NFTs is their effect on the Earth. Ethereum estimates that its blockchain annually consumes 73.2 TWh (terawatt hours) of electricity. For comparison, this is roughly equivalent to the energy use of a country like Australia over a whole year. Yet, there are solutions. Ethereum operates on a more energy-intensive proof of work model. However, they plan to switch their operations to proof of stake by the end of quarter three or early quarter four in 2022. This switch would result in an astounding 99.95 percent drop in energy usage. In addition, others are looking to decrease the overall carbon footprint of NFTs. Dr. Soheil Saraji and Dr. Mike Borowczak from the University of Wyoming published their white paper outlining A Blockchain-based Carbon Credit Ecosystem. This ecosystem would allow the coding of carbon credits into smart-contracts to indirectly offset the energy usage of NFTs.

The New Wall Street

However, with criticism also comes acceptance - and lots of it from the younger generations. Now more than ever, it has become increasingly easy to invest through platforms like Coinbase, a decentralized financial network. Yet, NFTs and cryptocurrencies today function as the next version of the dot-com bubble of the early 2000s. Markets face oversaturation, pump-and-dump schemes litter exchange platforms, and most NFT projects are digital art that only retains value if those looking to invest, give them value. Colborn Bell, investment banker and the creator of The Museum of Crypto Art, highlights this bubble well, saying, “There is this idea of making everything an NFT, and just because it’s become an NFT, it’s now valuable... For me, this is when it gets very dangerous and is akin to a financial bubble.”

The Need for Education

But the problems do not end here. If cryptocurrencies and NFTs are to be legitimized in the modern economy, public education needs to happen. Cryptocurrency and NFTs can seem like Ponzi schemes, creating a fear of missing out amongst the general population and those interested. In some ways, companies like crypto.com, which made the “Fortune favors the brave?” commercial, can seem like they exploit everyday people by increasing the anxiety associated with a financial craze. The result? Large amounts of uneducated people invest in currencies they know little about. The issue is some crypto companies do not feel the moral or ethical obligation to inform the general public of the risks associated with investing in volatile assets such as cryptocurrency and NFTs. And why should they? Aside from high school personal finance classes and those that pursue an education in investment banking, it is entirely up to the individual to educate themselves on what they choose to invest in. However, with crypto, the

situation is different. Cryptocurrency and NFT investing are more detailed and convoluted than investing in a stock portfolio. So much so that in a fifteen-minute presentation such as this one, we barely scratch the surface. However, there are those looking to remedy this problem. The NASDAQ cites companies such as Ledger and Phemex Academy as “making crypto education simpler and less daunting.” The Corporate Finance Institute even has courses on how individuals can better invest in crypto and how investors can avoid a financial bubble.

Is There More Than Money

But is there more? What nonfinancial utility can NFTs and Smart Contracts provide? The truth is there are many. NFTs can be used to digitally secure private documents and prevent the loss of physical copies such as medical records, tax returns, and home or auto titles. Additionally, NFTs could allow consumers to digitize their driver's license or passport for security and ease of use traveling. If you own your transcript as an NFT, you do not have to pay transcript servicing fees. Plus, NFTs could provide alternatives to preserving original versions of historical records and writings such as the Declaration of Independence or the United States Constitution. In short, the possibilities for these technologies are limitless.

The Metaverse

A future in which VR provides opportunities for physical interaction with digital assets in the digital world is not too far away. One could open a store to sell NFTs on virtual real estate that they bought in the Metaverse. This reality is made possible by companies such as Decentraland and the Sandbox Game. While this specific technology is still new, and a Ready-Player-One-Esque world might seem a bit far-fetched, it is not. The company Axie has bridged

the gap between gaming and finance through their play-to-earn game Axie Infinity. This game allows players to collect NFT characters and rewards exchangeable for cryptocurrencies, which players can sell for real-world currency. Now one might think, “That sounds great, where do I sign up?” But consider the utilization of Axie in the Philippines over the past few years. Due to the pandemic, some people began to turn to Axie to subsidize their income. A digital estranged labor culture began to form, and some players started to play the game so well that they could not only subsidize their income but entirely replace it. There is an abundance of ethical issues with this occurrence and no firm conclusion. Is it ethical to allow someone to stake their entire livelihood on something so volatile? Earlier this month, Axie experienced a security breach, and to contain the issue, they shut down the method of transferring cryptocurrency out of the game and into real currency. Should Axie, a game developer, be allowed to control their players’ income and lives so completely? What issues arise when people can replace their entire livelihood and production with something completely digital and fictional, producing nothing that exists and can be used by others? These questions don’t have any simple answers, but as cryptocurrency becomes more common, so too will these ethical dilemmas.

Conclusion

Hopefully, this presentation provides something new about the exciting world of decentralized assets and peeled back some of the mystery surrounding them. We covered the basics of how cryptocurrencies function, where NFTs fit into the crypto landscape, the public’s perception of them, and some interesting usage possibilities. NFTs and cryptocurrencies exist in a unique position in today’s market, largely due to their volatility and the way the public perceives them. Nevertheless, despite the shortcomings of NFTs, the future will likely grow

increasingly populated with them and other decentralized assets. Perhaps we'll see a time when every document has a smart contract with a digital signature. Maybe even home titles with smart contracts that provide royalties to the original owner upon later sales.

The possibilities presented by these new forms of currency are endless, and hopefully this presentation has expanded your interest in the cryptocurrency world. Understandably, this short presentation can only go so far in helping understand the complex world of cryptocurrency.

Because of this, we would like to leave you all with two quotes from our interview with Dr. John Fantuzzo, a scholar of philosophy education at Eastern University in St. David's Virginia: "You should consider seriously that it's just a Ponzi scheme... that there is actually nothing. It's just capitalizing on people's fear of missing out." He also went on to say, "There is something useful here, it's useful in different ways"

These quotes reaffirm the notion that the blockchain, cryptocurrency, and NFTs operate in a techno-financial bubble. For some people, this is an opportunity to take advantage of the uncertainty and dive head-first into decentralized assets. For many others, this is a risk with implications much greater in breadth and depth than can be fully understood in one day. In the end, the value of everything is relative. On a blockchain, investor confidence determines the value of its items. In the stock market, individual company performance determines the value of their stock. Neither one is stable, and both affect our economies and daily lives in ways that are only increasing in scale. Ultimately, it does not matter how one sides - decentralized finance will grow and affect everyone regardless of who owns crypto. What matters is that information is shared so that the public is informed, and cryptocurrency is shaped into a force for good, rather than a tool for greed.

Annotated Bibliography

Tanusree Sharma, Zhixuan Zhou et al. 2022. “ "It's A Blessing and A Curse": Unpacking Creators' Practices with Non-Fungible Tokens (NFTs) and Their Communities”. Association for Computing Machinery, Vol. 1, No. 1 (February 2022) doi: 2201.13233 <https://arxiv.org/abs/2201.13233>

Sharma and Zhou take a human-based approach to NFTs, attempting to examine their benefits and drawbacks through interviews with those who are closest to them: their creators. Overall, the creators of these NFTs viewed them positively; some calling them a “New Renaissance”. However, they were not ignorant of the dangers of NFTs: their usage in illicit transactions and criminal activity, their inaccessibility to the general populace, and the great potential for defrauding and scams. The study and interview claim to make 3 contributions: insights into how NFT creators perceive and engage with NFTs, key issues that the NFT ecosystem faces (such as content rights and regulations), and improvements for the NFT ecosystem. This study will be useful to our argument as a perspective from those on the ‘inside’ of NFTs, offering insight into their creation and the seller’s point of view.

David Aharon, Ender Demir. 2021. “NFTs and asset class spillovers: Lessons from the period around the COVID-19 pandemic”. Verge, last modified October 29, 2021. Accessed February 25, 2022. <https://doi.org/10.1016/j.frl.2021.102515>

Aharon and Demir conducted a very well-written, lengthy mathematical analysis of the period between January 2018 to June 2021 regarding the market volatility and function of NFTs. The reason they focused on this time range goes along with their findings: that NFTs are carriers of mercantile systemic risk. During ‘normal times’ (ie. non-pandemic or non-wartime), NFTs transport market risk from the market to the consumer. They directly carry the weight that fluctuates and is difficult to predict and dedicate their worth to one token owner. However, during ‘turbulent times,’ the roles of NFTs transition to serving as absorbers of market shock – reducing risk. The main concern of their work is to evaluate the market connectedness and returns of NFTs as compared to other assets, such as gold, oil, equities, and bonds.

Robyn Conti, John Schmidt. 2022. “What Is An NFT? Non-Fungible Tokens Explained”.

Forbes, last modified February 15, 2022. Accessed February 25, 2022.

<https://www.forbes.com/advisor/investing/nft-non-fungible-token/>

Conti and Schmidt go for a top-down, layman’s explanation of NFTs: What are they, how do they work, and why have they become so popular and valuable. They examine the difference between “traditional” cryptocurrencies such as bitcoin and Ethereum, namely the non-fungibility aspect, and discuss how the average person can attempt to get into the NFT economy and purchase NFTs. This source is useful as a simplified explanation of NFTs, which by nature are a complex and nebulous subject owing to their technological background and their extreme novelty within the economy.

Justine Calma. 2021. “The Climate Controversy Swirling Around NFTs”. Verge, last modified

March 15, 2021. Accessed February 25, 2022.

<https://www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change>

Calma's article takes on a bigger-picture perspective of NFTs and the side effects that come along with their presence. They go on to explain that NFTs are backed by various cryptocurrencies, and even can take on their own media, being gifs, images, or really any digitally-owned token. Despite the unfinished consensus on the direct greenhouse gas emissions due immediately to NFTs, many tokens are backed by Ethereum. Like many cryptocurrencies, Ethereum is supported by a system of proving the validity of each token via lots of math and calculations - which very quickly becomes extremely power-hungry. The push is certainly there for a cleaner, greener system, but the community has been waiting for years already – and it doesn't look like it will be largely realized in the near future.

Reference List

- Aksoy, Pinar Aksoy, Ç, and Zehra Ö Üner. “NFTs and Copyright: Challenges and Opportunities.” Academic.oup.com. *Journal of Intellectual Property Law and Practice*, June 21, 2021. <https://academic.oup.com/jiplp/article-abstract/16/10/1115/6307085>.
- Ashford, Kate. “What Is Cryptocurrency?” *Forbes*. *Forbes Magazine*, April 19, 2022. <https://www.forbes.com/advisor/investing/cryptocurrency/what-is-cryptocurrency/>.
- Axie Infinity. Axie Infinity. Accessed April 24, 2022. <https://axieinfinity.com/>.
- “Bitcoin Price Today, BTC to USD Live, Marketcap and Chart.” *CoinMarketCap*. *CoinMarketCap*. Accessed April 27, 2022. <https://coinmarketcap.com/currencies/bitcoin/>.
- Bove, Tristan. “This NFT Collector Opened a Crypto Art Museum, and Decided to Never Sell Any of It.” *Fortune*. *Fortune*, February 3, 2022. <https://fortune.com/2022/02/03/nft-collector-crypto-art-museum-market-crash/>.
- Callon-Butler, Leah. *PLAY-TO-EARN / NFT Gaming in the Philippines. Play-To-Earn*. *Creatives Nomads*, 2021. <https://www.youtube.com/watch?v=Yo-BrASMHU4>.
- Chohan, Raeesah, and Jeannette Paschen. “What Marketers Need to Know about Non-Fungible Tokens (Nfts).” *Business Horizons*. Elsevier, December 18, 2021. <https://www.sciencedirect.com/science/article/pii/S0007681321002202>.
- Collier, Kevin. “NFT Art Sales Are Booming. Just Without Some Artists' Permission.” *NBCNews.com*. *NBC Universal News Group*, January 10, 2022. <https://www.nbcnews.com/tech/security/nft-art-sales-are-booming-just-artists-permission-rcna10798>.

Conti, Robyn. "What Is an NFT? Non-Fungible Tokens Explained." Forbes. Forbes Magazine, April 26, 2022. <https://www.forbes.com/advisor/investing/cryptocurrency/nft-non-fungible-token/>.

Cornelius, Kristin B. "Dr. Kristin B. Cornelius." About " Dr. Kristin B. Cornelius. Accessed April 6, 2022. <https://kristincornelius.net/about/>.

"Dotcom Bubble." Corporate Finance Institute. CFI Education Inc, January 22, 2022. <https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/dotcom-bubble/>.

"Ethereum Price Today, ETH to USD Live, Marketcap and Chart." CoinMarketCap. CoinMarketCap. Accessed April 27, 2022. <https://coinmarketcap.com/currencies/ethereum/>.

"Ethereum's Energy Usage Will Soon Decrease By ~99.95%." Ethereum Foundation Blog. Ethereum Foundation. Accessed April 24, 2022. <https://blog.ethereum.org/2021/05/18/country-power-no-more/>.

Haber, Stuart, W Scott Stornetta, and Bellcore. "How to Time-Stamp a Digital Document." springer.com. Springer-Verlag, 1991. https://link.springer.com/content/pdf/10.1007/3-540-38424-3_32.pdf.

Kafka, Peter. "Web3 Is the Future, or a Scam, or Both." Vox. Vox, February 1, 2022. <https://www.vox.com/recode/22907072/web3-crypto-nft-bitcoin-metaverse>.

Kaspersky. "What Is Cryptocurrency and How Does It Work?" www.kaspersky.com. Kaspersky, February 9, 2022. <https://www.kaspersky.com/resource-center/definitions/what-is-cryptocurrency>.

Kostick-Quenet, Kristin, Kenneth D. Mandl, Timo Minssen, Glenn Cohen, Urs Gasser, Isaac Kohane, and Amy L McGuire. "How Nfts Could Transform Health Information Exchange - Science.org." science.org. science.org, February 3, 2022.
<https://www.science.org/doi/10.1126/science.abm2004>.

Lee, Isabelle. "A Majority of Americans Surveyed Think the Digital Art Craze Is More Than Just a Fad and That Nfts Are the 'Next Big Thing'." Business Insider. Business Insider, April 5, 2021. <https://markets.businessinsider.com/news/stocks/nfts-majority-americans-surveyed-digital-art-more-than-a-fad-2021-4-1030272455>.

McCullough, Brian. "A Revealing Look at the Dot-Com Bubble of 2000 - and How It Shapes Our Lives Today." ideas.ted.com. TED Conferences, LLC, December 4, 2018.
<https://ideas.ted.com/an-eye-opening-look-at-the-dot-com-bubble-of-2000-and-how-it-shapes-our-lives-today/>.

McGreevy, Nora. "Should NFTS Be Classified as Art? Wikipedia's Editors Vote 'No'." Smithsonian.com. Smithsonian Institution, January 18, 2022.
<https://www.smithsonianmag.com/smart-news/wikipedia-editors-vote-no-on-nft-art-definition-180979405/>.

"The Merge." ethereum.org. Ethereum.org. Accessed April 24, 2022.
<https://ethereum.org/en/upgrades/merge/>.

Merkle, Ralph Charles. "Secrecy, Authentication, and Public Key Systems." *Secrecy, Authentication, and Public Key Systems* . Thesis, National Science Foundation, 1979.
<https://www.merkle.com/papers/Thesis1979.pdf>.

Misamore, Brian. "How Amazon Survived the Dot-Com Bubble: HBS Online." Business Insights Blog. Harvard Business School, April 3, 2018.

<https://online.hbs.edu/blog/post/how-amazon-survived-the-dot-com-bubble>.

Nakamoto, Satoshi. "Bitcoin: A Peer-to-Peer Electronic Cash System." bitcoin.org. bitcoin.org, 2008. <https://bitcoin.org/bitcoin.pdf>.

"NFTs: Awareness, Familiarity, and Ownership." Security.org. Security.org, March 24, 2022. <https://www.security.org/digital-security/nft-market-analysis/>.

Nichols, Keith. "NFTs Explained: Hear from the Expert." Tax & Accounting Blog Posts by Thomson Reuters. Thomson Reuters, August 24, 2021.

<https://tax.thomsonreuters.com/blog/nfts-explained-hear-from-the-expert/>.

"Non-Fungible Tokens (NFT)." ethereum.org. ethereum.org. Accessed April 21, 2022.

<https://ethereum.org/en/nft/>.

"Proof-of-Work (POW)." ethereum.org. Ethereum.org. Accessed April 24, 2022.

<https://ethereum.org/en/developers/docs/consensus-mechanisms/pow/#:~:text=Proof-of-work%20energy-usage,->

[A%20major%20criticism&text=To%20maintain%20security%20and%20decentralization,medium-sized%20country%20like%20Austria](https://ethereum.org/en/developers/docs/consensus-mechanisms/pow/#:~:text=Proof-of-work%20energy-usage,-A%20major%20criticism&text=To%20maintain%20security%20and%20decentralization,medium-sized%20country%20like%20Austria).

Regner, Ferdinand, André Schweizer, and Nils Urbach. "NFTs in Practice – Non-Fungible Tokens as Core Component of a Blockchain-Based Event Ticketing Application."

theblockchaintest.com. 40th International Conference on Information Systems, December 2019. theblockchaintest.com.

Saraji, Dr. Soheil, and Dr. Mike Borowczak. "A Blockchain-Based Carbon Credit Ecosystem." uwyo.edu. University of Wyoming, January 15, 2021.

http://www.uwyo.edu/research/_files/a-blockchain-based-carbon-credit-ecosystem.pdf.

Schumann, Megan. "Rutgers Expert Explains NFT." Rutgers Expert Explains NFT | Rutgers University. Rutgers, April 7, 2021. <https://www.rutgers.edu/news/rutgers-expert-explains-nft>.

Servando, Kristine, Emily Nicolle, and Bloomberg. "Who Hurts Most in \$600 Million Axie Heist? 'Not the Venture Capitalists,' but Gamers." Fortune. Fortune, April 4, 2022. <https://fortune.com/2022/04/02/600-million-axie-heist-hurts-gamers-not-venture-capitalists-nft-gaming-cryptocurrencies/>.

Tabuchi, Hiroko. "NFTs Are Shaking Up the Art World. They May Be Warming the Planet, Too." The New York Times. The New York Times, April 13, 2021. <https://www.nytimes.com/2021/04/13/climate/nft-climate-change.html>.

Tao, Jack. "There's No Going Forward for Crypto Without User Education." Nasdaq. Nasdaq Inc, August 2, 2021. <https://www.nasdaq.com/articles/theres-no-going-forward-for-crypto-without-user-education-2021-08-02>.

"What Is Blockchain Technology? - IBM Blockchain." IBM. IBM. Accessed April 15, 2022. <https://www.ibm.com/topics/what-is-blockchain>.

"What Is 'Proof of Work' or 'Proof of Stake'?" Coinbase. Coinbase. Accessed May 17, 2022. <https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake>.

Yeo, Amanda. "Think Cryptocurrency Is Bad? NFTs Are Even Worse." Mashable. Mashable, October 29, 2021. <https://mashable.com/article/nft-cryptocurrency-bad-environment-art>.