

**THE NATIONAL UNIVERSITY OF ADVANCED LEGAL
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ON THE TOPIC

REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE

Under the Guidance and Supervision of

Dr. Athira P.S.

Assistant Professor

THE NATIONAL UNIVERSITY OF ADVANCED LEGAL STUDIES

Submitted by

AMRITHA K.H.

LM0123003

LL.M. (CONSTITUTIONAL AND ADMINISTRATIVE LAW)

CERTIFICATE

This is to certify that **Ms. AMRITHA K.H., Reg. No. LM0123003** has submitted her dissertation titled, **“REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE”** in partial fulfilment of the requirement for the award of a Degree of Master of Law in Constitutional and Administrative Law to the National University of Advanced Legal Studies, Kochi under my guidance and supervision. It is also affirmed that the dissertation submitted by her is original, bona-fide, and genuine.

Date: 25.06.2024

Place: Ernakulam

Dr. ATHIRA P.S.

Guide & Supervisor

Assistant Professor

NUALS, Kochi

CERTIFICATE ON PLAGIARISM CHECK

This is to certify that **Ms. AMRITHA K.H., Reg. No. LM0123003** has submitted her Dissertation titled **“REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE”** in partial fulfilment of the requirement for the award of a Degree of Master of Law in Constitutional and Administrative Law to the National University of Advanced Legal Studies, Kochi under my guidance and supervision and the same has been checked for plagiarism in Grammarly on 25.06.2024 at 11:15 A.M. and is found to be 7%.

Date: 25.06.2024

Place: Ernakulam

Dr. ATHIRA P.S.

Guide & Supervisor

Assistant Professor

NUALS, Kochi

DECLARATION

I do hereby declare that the dissertation titled “**REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE,**” researched and submitted by me to the National University of Advanced Legal Studies, Kochi, in partial fulfilment of the requirement for the award of Degree of Master of Law in Constitutional and Administrative Law, under the guidance and supervision of **Dr. ATHIRA P.S.**, is an original, bonafide and legitimate work and it has been pursued an academic interest. This work or any type thereof has not been submitted by me or anyone else for the award of another degree of either this University or any other University.

Date: 25.06.2024

Place: Ernakulam

AMRITHA K.H.

Reg. No: LM0123003

LL.M., Constitutional and Administrative Law

NUALS, Kochi

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19. *Maneka Gandhi v. Union of India* 1978 AIR 597
20. *Michael Djangi and others v. Cameroon, Communication 39/90, African Commission on Human and Peoples' Rights* [Af. Comm'n HPR] (Oct 1997)
21. *Minerva Mills Ltd. v. Union of India*, 1980 AIR 1789
22. *Modern Dental College and Research Centre v. State of Madhya Pradesh* [(2016) 7 SCC 353]

23. *National Provincial Bank Ltd v Ainsworth*[1965] AC 1175 (HL) at 1247–1248.
24. *Om Kumar v. Union of India*, (2001) 2 SCC 386, 399
25. *Palko v. Connecticut*, 302 U.S. 319, 327 (1937)
26. *Perry v United Kingdom*, 63737/00 Eur. Ct. H.R.(2003)
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28. *R.M.D. Chambarbaugwala vs. Union of India* 1957 SCR 930
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36. *Shayara Bano v Union of India*, (2017) 9 SCC 1
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40. *State of Maharashtra v Indian Hotel and Restaurants Assn.*, (2013) 8 SCC 519 as discussed by *Indian Hotel and Restaurant Assn. v State of Maharashtra*, (2019) 3 SCC 429
41. *State of W. Bengal v. Anwar Ali Sarkar*, AIR 1952 SC 75, 80
42. *Zippo Manufacturing Co. v. Zippo Dot Com, Inc.*, 952 F. Supp. 1119 (W.D. Pa. 1997)

ABBREVIATIONS

1. AI - Artificial Intelligence
2. AIR - All India Reporter
3. AML - Anti-Money Laundering
4. Art - Article
5. Assn - Association
6. BICA - Blockchain and Initial Coin Offering Association
7. CBDC - Central Bank Digital Currency
8. CFR - Code of Federal Regulations
9. CFT - Combating the Financing of Terrorism
10. CFTC - Commodity Futures Trading Commission
11. CRA - Canada Revenue Agency
12. DC - Digital Currency
13. DeFi - Decentralized Finance
14. DL - Deep Learning
15. DLT - Digital Ledger Technology
16. DPoS - Delegated Proof of Stake
17. ECB - European Central Bank
18. ECHR - European Convention on Human Rights
19. EU - European Union
20. FASB - Financial Accounting Standards Board
21. FATF - Financial Action Task Force
22. Fin - Financial
23. FinCEN - Financial Crimes Enforcement Network
24. FSMA - Financial Services and Markets Authority
25. GAAP - Generally Accepted Accounting Principles
26. ICCPR - International Covenant on Civil and Political Rights
27. ICO - Initial Coin Offering
28. ICT - Information and Communication Technologies
29. IEEE - Institute of Electrical and Electronics Engineers
30. IMAI - Internet and Mobile Association of India
31. IMC - Inter-Ministerial Committee

32. IMF - International Monetary Fund
33. IoE - Internet of Everything
34. IOU - I Owe You
35. IT- Information Technology
36. ITS - Intelligent Transportation Systems
37. KYC - Know Your Customer
38. LSTM - Long Short-Term Memory
39. MeitY - Ministry of Electronics and Information Technology
40. MiCA - Markets in Crypto-Assets
41. ML - Machine Learning
42. NFT - Non-Fungible Token
43. ORS - Others
44. PIN - Personal Identification Number
45. PoS - Proof of Stake
46. PoW - Proof of Work
47. RBI - Reserve Bank of India
48. REV - Revenue
49. SCC – Supreme Court Cases
50. SEC - Securities and Exchange Commission
51. SMS - Short Message Service
52. SPV - Special Purpose Vehicle
53. U.S. - United States
54. UAV - Unmanned Aerial Vehicle
55. UDHR - Universal Declaration of Human Rights
56. USA - United States of America
57. USD - United States Dollar
58. VC - Virtual Currency

CHAPTER 1

INTRODUCTION

INTRODUCTION

There are several reasons behind the recent spike in the cryptocurrency market, including increased investor confidence and interestment in digital assets.¹ Notwithstanding difficulties brought on by the state of the world economy in 2023, the market proved resilient and recovered quickly. The way the market behaves is determined by a number of influencing elements, including economic statistics, corporate performance, central bank initiatives, poll and referendum results, high-ranking individuals' individual tweets, and participant interactions.² This produces critical-like occurrences, like speculative bubbles or crashes, by feedback. These "flash crashes" occur often, sometimes within hours or even minutes.³

Cryptocurrencies like Bitcoin claim to be able to replace trust with technology in an increasingly unstable environment. Satoshi Nakamoto, the creator of Bitcoin, called it a "cryptographic-based electronic payment system proof rather than faith, enabling direct transactions between any two willing parties without the involvement of a reliable intermediary."⁴ In the 2008 essay that introduced Bitcoin, Satoshi Nakamoto chastised the established electronic payment methods for necessitating a third-party intermediary to be trusted.⁵ At the height of the 2008 financial crisis, when confidence in governments and banks to steer the economy was at an all-time low, Nakamoto

¹ Forbes Advisor, Why Is the Crypto Market Rising Today?, <https://www.forbes.com/advisor/in/investing/cryptocurrency/why-is-crypto-going-up/> (last accessed on 21-06-2022)

² HR, G., & Aithal, P. S. Organizing the Unorganized Lifestyle Retailers in India: An Integrated Framework. International Journal of Applied Engineering and Management Letters (IJAEML), 4(1), 257-278 (2020)

³ Marcin Wątopek , Stanisław Drożdż , Jarosław Kwapien , Ludovico Minati , Paweł Oświęcimka, Marek Stanuszek, Multiscale characteristics of the emerging global cryptocurrency market, Volume 901, Elsevier, page 1, Pages 1-82 (2021)

⁴ Rebecca M. Bratspies, Cryptocurrency and the Myth of the Trustless Transaction, 25 MICH. TECH. L. REV. 1 (2018)

⁵ SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 1(2008), <https://bitcoin.org/bitcoin.pdf> . The protocol behind the blockchain was first described in 1998 by Wei Dai. Wei Dai, bmoney, Wei Dai (1998), <http://www.weidai.com/bmoney.txt>.

penned the Bitcoin white paper.⁶ After ten years, the supposedly "trustless" inherent qualities of cryptocurrencies remain a major draw.

There have been previous attempts at creating a digital, decentralized currency, even though Bitcoin is the most well-known and extensively utilized cryptocurrency.⁷ Before the first lines of code were created in 2009, Bitcoin had been around for nearly ten years.⁸

From a starting price of about \$13 in 2013, the price had risen to \$770 by the start of 2014.⁹ Up until the end of 2017, the price of Bitcoin hovered around the middle hundreds. However, a surge in speculative and popular interest caused the price to approach \$20,000.¹⁰ Throughout the next three years, the price of bitcoin fluctuated between \$3,000 and \$12,000, but it failed to reach its peak despite Wall Street's excitement as banks like J.P. Morgan started setting the foundation for a digital currency system.¹¹ It obscured the innovation in the cryptocurrency space as more people became aware of Bitcoin investing thanks to the rise in popularity of exchanges like Binance and Coinbase.¹² The virus pandemic served as a driving force behind the 2021 rise of Bitcoin. Trillions of dollars in stimulus funds stoked fears about inflation, which makes the intrinsic scarcity of Bitcoin all the more alluring.¹³ In April 2021, Bitcoin reached an all-time high of over \$63,000.¹⁴ Renowned investor Cathie Wood has set a \$500,000 price objective for Bitcoin, assuming that more people will start buying the

⁶ PEW RESEARCH CTR., THE PEOPLE AND THEIR GOVERNMENT: DISTRUST, DISCONTENT, ANGER AND PARTISAN RANCOR 4-5 (2010), <http://www.pewresearch.org/wpcontent/uploads/sites/4/legacy-pdf/606.pdf>

⁷ Böhme, R., Christin, N., Edelman, B., & Moore, T. Bitcoin: Economics, technology, and governance. *The Journal of Economic Perspectives*, 29(2), 213-238(2015).

⁸ Eyal, I., & Sirer, E. G. Majority is not enough: Bitcoin mining is vulnerable. In: *International conference on financial cryptography and data security* (pp. 436-454) (2014)

⁹ Nasdaq, *Decoding Crypto: What Was the First Cryptocurrency and Who Created It?*, <https://www.nasdaq.com/articles/decoding-crypto%3A-what-was-the-first-cryptocurrency-and-who-created-it-2021-08-18> (last accessed on 21-06-2024)

¹⁰ Forbes India, *Bitcoin's price history: 2009- 2024*, <https://www.forbesindia.com/article/explainers/bitcoin-price-history/92523/1> (last accessed on 21-06-2024)

¹¹ *The Economic Times*, *Has bitcoin benefited from the banking crisis? Not in the way its fans hoped*, <https://economictimes.indiatimes.com/markets/cryptocurrency/has-bitcoin-benefited-from-the-banking-crisis-not-in-the-way-its-fans-hoped/articleshow/99166271.cms?from=mdr> (21-06-2024)

¹² *Ibid*

¹³ Msemburi, W., Karlinsky, A., Knutson, V., Aleshin-Guendel, S., Chatterji, S., & Wakefield, J. The WHO estimates of excess mortality associated with the COVID-19 pandemic. *Nature*, 613(7942), 130-137 (2023).

¹⁴ Chang, K., & Li, S. Z. Does COVID-19 pandemic event alter the dependence structure breaks between crude oil and stock markets in Europe and America. *Energy Reports*, 8, 15106-15123 (2022).

cryptocurrency. Since the introduction of Bitcoin twelve years ago, numerous other cryptocurrencies have emerged.¹⁵ But now more than ever, Bitcoin's standing as the most widely used cryptocurrency worldwide is assured.¹⁶ The use of cryptocurrencies is growing in popularity. Several nations, including China, Ecuador, Venezuela, Sweden, Estonia, Singapore, and others, have created or intend to create their own blockchain technology. Additionally, it appears that bitcoin and other well-known digital currencies are gaining traction as more businesses and services are starting to accept them as payment.¹⁷

Online-sourced goods and services have increased the use of digital payments. In this process, the traditional currency changed into digital payments. the classification that was made public in the 2016 report of the IMF.¹⁸ According to this research, digital currencies are defined as digital assets that have a corresponding value and exist in a digital format. Examples of digital currencies that can be exchanged for fiat money are PayPal and e-money.¹⁹ Virtual currencies are those that can trade for fiat money without having any value.²⁰ Within the virtual currencies, there are non-convertible variations like virtual gaming coins and currencies that may be exchanged for other currencies.²¹ There are two categories of convertible currencies: decentralized and centralized.²² Cryptocurrencies created with the use of crypto science are referred to as decentralized ones. Virtual currencies are digital representations of values that are expressed in unique account formats and made public by private developers.²³ Virtual currencies include things like Bitcoin, Ethereum, online or mobile coupons, airline miles, and virtual game tokens. Virtual currencies, however, are not the same as legally regulated

¹⁵ CNBCTV18, Cathie Woods of ark investment believes bitcoin will reach \$500000
<https://www.cnbctv18.com/cryptocurrency/cathie-woods-of-ark-investment-believes-bitcoin-will-reach-500000-9372491.htm> (last accessed on 21-06-2023)

¹⁶ Giudici, G., Milne, A. & Vinogradov, D. Cryptocurrencies: market analysis and perspectives. *J. Ind. Bus. Econ.* 47, 1–18 (2020)

¹⁷ Suriya, A. J., Sandrina, B., & R., S. Cryptocurrency: An Overview and Analysis on the Awareness. *Kristu Jayanti Journal of Computational Sciences (KJCS)*, 2(1), 45-56 (2020).

¹⁸ International Monetary Fund, A NEW ERA OF DIGITAL MONEY,
<https://www.imf.org/external/pubs/ft/fandd/2021/06/online/digital-money-new-era-adrian-mancini-griffoli.htm> (21-06-2024)

¹⁹ Ibid

²⁰ Hedera, Fiat vs Crypto: A Comprehensive Comparison, <https://hedera.com/learning/fintech/fiat-vs-crypto> (last accessed on 21-06-2024)

²¹ Draganidis, S., "Jurisdictional arbitrage: combatting an inevitable by-product of crypto asset regulation", *Journal of Financial Regulation and Compliance*, Vol. 31 No. 2, pp. 170-185 (2023)

²² Ibid

²³ Lam Pak Nian, David LEE Kuo Chuen, *Handbook of Digital Currency*, Pages 5-30, Academic Press, 2015

digital currencies, like e-money. Specifically, there is a digital payment system for fiat money that is attached to electronic money. Virtual currencies, on the other hand, have their account types and no official fiat money. Although they are digital currencies, virtual currencies currently lack a central bank equivalent. They differ from e-money in that they don't conform to the fiat currency that central banks have placed on the market. In actuality, e-moneys are virtual currencies that are accepted by law.²⁴

The Greek term "cryptos" is the root of the word cryptography, which tries to guarantee data transmission safety even in risky situations. Cryptocurrencies are digital assets created using an encryption algorithm and apply to various electronic commercial endeavors. The most popular kind of digital currency nowadays is cryptocurrency. They make it possible to conduct safe, encrypted transactions without middlemen.²⁵ Cryptocurrencies are virtual, digital, decentralized, encrypted forms of alternative money. The first instance of cryptocurrency is Bitcoin. The process of encryption is the foundation of the working principle. It's common to confuse certain digital and virtual currencies with cryptocurrencies.²⁶ E-money and bank money, for instance, are not separate currencies; rather, they are based on the local currency that they represent. They're beneath the central banks' authority.²⁷ However, since Bitcoin and other cryptocurrencies are self-regulating, no government body is currently able to regulate or audit them. In a classical economic system, central banks are how authorities supply money.²⁸ The bank is involved if one of the partners plans to pay the bank. Stated differently, the bank bears direct responsibility for the transfer.²⁹

Cryptosystems eliminate the need for trust and do not require any middlemen. The removal of the middleman should theoretically result in lower expenses for things like seignories and transfer costs. In actuality, though, this isn't always the case. The fiat nature of current banknotes and their authority stems from the supplying authorities. Nonetheless, the current structure of cryptocurrency generation and circulation—which is dependent on miners and exchanges—is what gives rise to the confidence people

²⁴ Glaser, F., Zimmermann, K., Haferkorn, M., Weber, M., & Siering, M. "Bitcoin-Asset or Currency? Revealing Users' Hidden Intentions". 22. European Conference on Information Systems (2014).

²⁵ Coron, J. S. "What Is Cryptography?". IEEE Security & Privacy, 4(1), 70-73. (2006).

²⁶ Ibid

²⁷ Harvard Business Review, What If Central Banks Issued Digital Currency?, <https://hbr.org/2021/10/what-if-central-banks-issued-digital-currency> (last accessed on 21-06-2024)

²⁸ Ibid

²⁹ Bech, M. L., & Garratt, R. "Central Bank Cryptocurrencies". BIS Quarterly Review, September, 55-70 (2017).

have in digital assets. The manufacturing of cryptocurrency money is gradually decreased to prevent inflation in the currently in circulation.³⁰

It's also crucial to remember that while all virtual currencies can be referred to as cryptocurrencies, not all of them are. In actuality, those that are created via cryptography and are decentralized science are referred to as cryptocurrency. Cryptocurrencies are a type of alternative, digital, and virtual currency. Cryptocurrencies are digital assets mostly used on the internet that are not dependent on a central authority or middleman.³¹

STATEMENT OF RESEARCH PROBLEM

With its decentralized alternatives to established financial systems, cryptocurrencies have become a disruptive force in the financial technology space. In many jurisdictions, cryptocurrencies operate in a regulatory grey area, despite their fast use and growth. Market participants face many obstacles as a result of unclear and inconsistent regulatory regimes, which can also raise market volatility and uncertainty.

Over the past ten years, cryptocurrencies like Bitcoin, Ethereum, and others have been increasingly popular. However, in many regions of the world, their regulatory position is still unclear. The classification and regulation of digital assets is a challenge for governments and financial authorities, with approaches differing greatly throughout nations. The overall stability of the market, investor confidence, and market liquidity can all be impacted by this regulatory uncertainty.³²

The blockchain and distributed ledger technologies associated with cryptocurrencies have the potential to completely transform the way that money and information are transferred.³³ Although these underlying technologies have great potential, the fact that they depend on distributed consensus mechanisms for software updates increases the risk that governance errors could cause a cryptocurrency to become unstable. These

³⁰ Arıkan, N. İ. AN OVERVIEW OF THE CRYPTOCURRENCIES; THE THEORY OF MONEY PERSPECTIVE. *Malatya Turgut Özal Üniversitesi İşletme Ve Yönetim Bilimleri Dergisi*, 1(2), 147-165(2020).

³¹ Alpago, H. Bitcoin'den Selfcoin'e Kripto Para. *Journal of International Scientific Researches*, 3(2), 411-428(2018).

³² Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, *Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction*, page 27, Princeton University Press (2016)

³³ Herrera-Joancomartí J, Pérez-Solà C ,Privacy in bitcoin transactions: new challenges from blockchain scalability solutions. In: *Modeling decisions for artificial intelligence*. Springer, Cham, pp 26-44 (2016)

"hard forks," or breakdowns in governance, have the power to split a cryptocurrency into two opposing factions. The cryptocurrency community must strengthen its governance procedures and reduce the likelihood of hard forks since these occurrences have the potential to destabilize a cryptocurrency's value and foster mistrust in its ability to function as a trustworthy medium of exchange.³⁴ While traditional governing processes are unlikely to succeed in the distributed nature of cryptocurrency governance, anticipatory approaches that set measurements and thresholds to determine when software reform is required could potentially mitigate the governance failures caused by several hard forks.³⁵

India has seen a change in the cryptocurrency regulatory environment. The cryptocurrency business suffered a major blow when the Reserve Bank of India (RBI) published a circular in 2018 banning banks from working with cryptocurrency exchanges. However, the Indian Supreme Court overturned this prohibition in 2020, reviving interest and engagement in the industry. Despite this, there is still uncertainty over the regulation of cryptocurrencies in India due to ongoing debates regarding possible prohibitions or the creation of a central bank digital currency (CBDC).³⁶

Research Problem:

There are no rules and regulations or any guidelines laid down for settling disputes while dealing with cryptocurrency. Trading in cryptocurrency is now done at investors' risk and the Government is of the view to ban or prohibit them. Banning or prohibition of crypto assets infringes fundamental and constitutional rights. A regulatory approach toward crypto assets may be recommendable. This research can help to improve the existing regime by making certain reforms and changes.

RESEARCH QUESTIONS OF THE STUDY

1. Whether the transactions of these decentralized currencies affect the economic status of India?

³⁴ Trump, B.D., Wells, E., Trump, J. et al. Cryptocurrency: governance for what was meant to be ungovernable. *Environ Syst Decis* 38, 426–430 (2018)

³⁵ Linkov I, Trump BD, Poinatte-Jones K, Florin MV, Governance strategies for a sustainable digital world. *Sustainability* 10(2):440 (2018)

³⁶ Sunidhi Kashyap & Kuldeep Chand, Impact of Cryptocurrency in India, 2 INT'L J.L. MGMT. & HUMAN. 69 (2019)

2. If Cryptocurrencies are banned, what constitutional rights of cryptocurrency traders are affected?
3. Whether the Government's and RBI's view to ban/prohibit cryptocurrency and/or its transactions in the country through various legislations and rules a good approach?

OBJECTIVES OF THE RESEARCH

1. Review the history of cryptocurrency regulation in India, including key legal and regulatory milestones.
2. Identify current regulatory positions and proposed future regulations.
3. Examine the broader economic impacts of cryptocurrency regulation on India's financial markets and economy.
4. Assess the social implications, including financial inclusion, remittances, and access to financial services.
5. To identify the different regulatory approaches adopted by different countries.
6. Develop recommendations for policymakers to foster a balanced regulatory environment that promotes innovation while ensuring consumer protection and market integrity.
7. Suggest frameworks for regulatory oversight that can adapt to the evolving nature of cryptocurrency technologies.

RESEARCH HYPOTHESIS

Based on the above-stated objectives the following is the hypothesis that is formulated:

Regulatory measures can prove useful rather than prohibitory measures of crypto assets in India.

RESEARCH METHODOLOGY

The dissertation focuses on the laws and policies related to crypto assets both nationally and internationally. The research methodology adopted is the doctrinal method. Primary sources- the constitution, statutes, court cases, administrative rules and regulations, and other government publications. Secondary sources- books, journals, online articles, newspapers, etc

LIMITATIONS OF THE RESEARCH

The cryptocurrency market, especially in India, faces significant challenges due to its nascent stage, leading to insufficient historical data and potential issues with data reliability. Problems such as lack of transparency, manipulation, and reporting biases can make data from exchanges and market participants untrustworthy. The ever-changing regulatory landscape further complicates long-term research, as speculative information about potential future regulations can affect the accuracy of predictive assessments. The market's notorious volatility, influenced by factors like investor sentiment, technological advancements, and global trends, makes it difficult to isolate the impact of regulatory changes.

Researching the effects of cryptocurrency regulations is complex due to the varied impacts on stakeholders like consumers, developers, investors, and exchanges. Capturing and evaluating these diverse effects is challenging, and biases from stakeholders with vested interests can skew survey and interview results. Specialized knowledge is required to analyze cryptocurrencies and blockchain technology, limiting the accessibility of such research. Regulatory uncertainty and legal risks can make it difficult to conduct studies in India, and protecting participants' privacy when handling sensitive financial data adds another layer of difficulty. Moreover, differences in markets, legislative frameworks, and cultural characteristics mean findings from India may not be applicable elsewhere, and the rapid evolution of cryptocurrencies and blockchain technology can quickly render research findings obsolete.

CHAPTERISATION

Chapter 1- INTRODUCTION, the researcher gives a brief overview of the concept of cryptocurrency and how it came into being in the global market. It discusses the evolution of cryptocurrency throughout the world. It outlines the research problem and the research questions the researcher seeks to solve. There is also a list of research objectives the researcher would like to achieve in the study. The research methodology along with the sources of her study has been stated. The researcher stated the research hypothesis the researcher to come at the end of the study along with the limitations she had to face during her whole research process.

Chapter 2- CRYPTO ASSETS AND ITS BACKGROUND contains an explanation of cryptocurrency seeking the different definitions given by the various authorities and by judges in case laws related to cryptocurrencies. The chapter further explains the

characteristics of cryptocurrency. The researcher then proceeds with a basic introduction to blockchain technology on which the cryptocurrency works covering the basics, key components, and different types of blockchain technology. The chapter then focusses on the cryptocurrency ecosystem, which consists of the programmers who design cryptocurrencies and manage the blockchain, the miners who verify transactions, the exchanges and wallet providers, and the regulators who establish guidelines for their use. Big investors and powerful people who can influence market movements are also included. The Challenges of cryptocurrency and the applications of cryptocurrency have also been discussed briefly.

Chapter 3- THE CONSTITUTIONAL PROVISIONS AFFECTED BY THE BANNING OF CRYPTO ASSETS, the researcher considers the consequences when cryptocurrencies and their transactions are completely banned in India. The chapter discusses the different fundamental and constitutional rights available to the traders and investors of crypto assets. The rights guaranteed under Article 19(1)(g) which states the freedom to practice any profession, trade, and business, article 301 which deals with the freedom of trade, commerce, and intercourse within the territory of India, article 19(1)(a) dealing with right to freedom of speech and expression, article 21 which states about the Right to life and personal liberty, right to property under article 300 A and finally article 14 dealing with freedom of equality and equal protection of rights has been discussed along with the support of different findings of the Courts in case laws.

Chapter 4- CRYPTOCURRENCY AND INDIA'S STAND ON IT discusses the effect of cryptocurrency on the Indian economy. The researcher has identified the positive as well as the negative impacts. The chapter also discusses the attitude of the Government of India towards cryptocurrencies and the need for its regulation so that financial crimes can be brought under control. The chapter also states the legal status of cryptocurrency in India along with the challenges that India would have to face if cryptocurrency is adopted without any regulatory framework. The chapter also analyses the Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019, and the revised Bill of 2021.

Chapter 5- INTERNATIONAL EXPERIENCE OF CRYPTOCURRENCY REGULATION IN BRIC COUNTRIES OTHER THAN INDIA focuses on the cryptocurrency regulations in the BRICS countries excluding India. These countries

form a list of developing countries that can better develop in the cryptocurrency area. Initially, these countries were skeptical about accepting a new payment system but later they started to incorporate crypto transactions in their law.

Chapter 6- REGULATORY FRAMEWORK FOR CRYPTOCURRENCY focuses on the tests adopted by the Courts while deciding upon the nature of cryptocurrency and whether these digital currencies should be banned or not. The researcher has also attempted to provide certain regulatory measures to be adopted in India instead of imposing a complete ban on cryptocurrency. It is a suggestion made by the researcher based on how other countries have legally accepted and recognized cryptocurrencies by regulating them and not banning them.

Chapter 7- CONCLUSION the researcher has summarized her whole research. A small survey has been conducted by the researcher to show how relevant such research was and how much the people in the country know about the concept of cryptocurrency and its future as an investment. This chapter also contains the findings and recommendations.

CHAPTER 2

CRYPTO ASSETS AND ITS BACKGROUND

Cryptocurrency is a revolutionary virtual or digital currency that has received a lot of attention and popularity in recent years. It is a decentralized currency that runs on a peer-to-peer network, which eliminates the need for a central authority or intermediary, like as a government or bank, to issue or control it.³⁷ By using the pseudonym Satoshi Nakamoto where people still wonder if it is a person or an organization cryptocurrency has managed to gain popularity in 2009 in the form of Bitcoin. The creation of Bitcoin was such that it marked a significant milestone in the world of finance and technology as it introduced the novel concept of a decentralized digital currency that is based on blockchain technology.³⁸ Blockchain is the underlying technology that powers cryptocurrency. It is a distributed public ledger that maintains all transactions in an encrypted and transparent format.³⁹ A network of computers, known as nodes, checks and records each transaction on the blockchain by solving complicated math problems. This is known as mining, and miners are rewarded with newly produced cryptocurrency tokens for their efforts to secure the network and validate transactions.⁴⁰

In addition to Bitcoin, there are countless more cryptocurrencies, each with its own distinct features and applications. Ethereum, Litecoin, and Ripple are some of the most popular cryptocurrencies. Ethereum, which was introduced in 2015, is both a cryptocurrency and a decentralized computing platform that allows for the design and execution of smart contracts and decentralized applications (dApps).⁴¹ Smart contracts are self-executing contracts in which the rules of the agreement are explicitly written into code, allowing for the secure and transparent automation of numerous processes

³⁷ Council on Foreign Relations, The Crypto Question: Bitcoin, Digital Dollars, and the Future of Money, <https://www.cfr.org/backgrounder/crypto-question-bitcoin-digital-dollars-and-future-money> (last accessed on 22-06-2024)

³⁸ Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, <https://inleo.io/@jeffjagoe/bitcoin-a-peer-to-peer-electronic-cash-system-satoshi-nakamoto-the-bitcoin-whitepaper> (last accessed on 22-06-2024)

³⁹ Future Learn, 'A brief history of blockchain'. <https://www.futurelearn.com/info/courses/introduction-to-blockchain-dlt/0/steps/250288> (last accessed on 22-06-2024)

⁴⁰ B. Thuraisingham, "Blockchain Technologies and Their Applications in Data Science and Cyber Security," 3rd International Conference on Smart BlockChain (SmartBlock), Zhengzhou, China, 2020, pp. 1-4(2020)

⁴¹ V. P. Ranganthan, R. Dantu, A. Paul, P. Mears and K. Morozov, "A Decentralized Marketplace Application on the Ethereum Blockchain," IEEE 4th International Conference on Collaboration and Internet Computing (CIC), Philadelphia, PA, USA, 2018, pp. 90-97 (2018)

and transactions.⁴² Litecoin, also known as the "silver to Bitcoin's gold," is a cryptocurrency developed in 2011 as an alternative to Bitcoin. It has faster transaction times and a new hashing method, making it better suited to modest transactions and daily use.⁴³ Ripple, on the other hand, is a cryptocurrency that enables fast and efficient cross-border payments and transfers. It aims to provide a low-cost and safe means for financial institutions to move funds globally by leveraging its patented payment protocol and consensus mechanism.⁴⁴ Due to their anonymous and decentralized nature, cryptocurrencies have gained a huge popularity which makes them immune to government or bank interference or manipulation. But at the same time, these assets also face a lot of criticisms and challenges and Concerns have been raised about their use in criminal activities, price volatility, and the environmental impact of mining operations.⁴⁵

THE TERM CRYPTOCURRENCY

Currently used legal definitions and interpretations of "currency" and "money" do not cleanly suit cryptocurrencies.⁴⁶ For instance, "real" currency is defined as "the coin and paper money of the United States or of any other country that [i] is designated as legal tender and that [ii] circulates and [iii] is customarily used and accepted as a medium of exchange in the country of issuance" in interpretive guidelines published by FinCEN in 2013.⁴⁷ Cryptocurrencies should be considered as money even though they don't fit the conventional definitions of "currency" or "money," especially the requirement that they be accepted as legal tender. The purpose of cryptocurrencies is to "transfer value from one person to another."⁴⁸

⁴² Giannakaris P, Panagiotis T, Zahariadis T, Gkonis P, Papadopoulos K, Using smart contracts in smart energy grid applications, International Scientific Conference on Information Technology and Data Related Research, pp 597–602(2019)

⁴³ Jaysing Bhosale, Sushil Mavale, Volatility of select Crypto-currencies: A comparison of Bitcoin, Ethereum and Litecoin, Vol 6, Annual Research Journal of SCMS, pg 132-141, (2018)

⁴⁴ Kaya Soylu P, Okur M, Çatıkkaş Ö, Altıntig ZA. Long Memory in the Volatility of Selected Cryptocurrencies: Bitcoin, Ethereum and Ripple. Journal of Risk and Financial Management.; 13(6):10 (2020)

⁴⁵ Sahoo, Pradipta Kumar. Bitcoin as digital money: Its growth and future sustainability. Theoretical & Applied Economics 24: 53–64 (2017)

⁴⁶ Susan Alkadri, Defining and Regulating Cryptocurrency: Fake Internet Money or Legitimate Medium of Exchange?, 17 DUKE L. & TECH. REV. 71 (2018-2019).

⁴⁷ Fin. crimes enft network, u.s. dep't of treasury, fin-2013-goo 1, application of fincen's regulations to persons administering, exchanging, or using virtual currencies (mar. 18, 2013) (citing 31 c.f.r.§ 1010.100(m) (2014))

⁴⁸ John L. Douglas, New Wine into Old Bottles: Fintech Meets the Bank

Can cryptocurrency be regarded as a currency or property is still a debatable question that everyone seems confused about. "Virtual currency," according to the FATF report, is a digital representation of value that can be traded online and serves as (1) a unit of account, a store of value, a medium of exchange, or all three, but not having the status of legal money. According to the FATF report, "cryptocurrency" is defined as a math-based, decentralized, convertible virtual currency that is signed cryptographically each time it is exchanged and depends on public and private keys for value transfer.⁴⁹ It is also defined as "a type of digital currency that generally exists only electronically. Central banks and other governmental authorities do not insure or control cryptocurrencies. Examples include Bitcoin and Ether."⁵⁰ Digital currencies (DCs) are value representations that are digital and are currently issued by private developers with a unit of account of their own. They are not issued or supported by any government or central bank, nor are they backed by any sovereign currency. Instead, they are acquired, stored, accessed, and transacted online.⁵¹ According to November 2017, the InterRegulatory Working Group on Fintech and Digital Banking Report, Digital currencies can be transmitted, saved, or sold electronically and are recognised as a form of payment by both natural and legal people. However, they are not always linked to fiat currencies. The digital representation of value, or "currency," that may be exchanged between parties makes up the first of DC schemes' two main components. The second is the method by which value is moved from a payer to a payee. Peer-to-peer trading is made possible by privately issued digital currencies (DCs), like Bitcoin, maybe at a reduced cost to end users and with faster transaction times, particularly when transnational. Because DC schemes employ cryptographic methods, they are frequently referred to as "cryptocurrencies." There are reportedly hundreds of cryptocurrencies in use today, with a market valuation of over USD 6.5 billion⁵. But daily, only a very tiny portion of these currencies are exchanged.⁵² The International Monetary Fund has defined Virtual Currency as VC is a type of digital currency that is issued by private developers and represents value in their unit of account. As long as the parties to the transaction consent, VCs may be acquired, saved, accessed, and exchanged

Regulatory World, 20 N.C. BANKING INST. 17, 39 (2016)

⁴⁹ "Virtual Currencies – Key Definitions and Potential AML/CFT Risks" was issued in June 2014 by FATF

⁵⁰ State of Connecticut, Department of Banking, <https://portal.ct.gov/dob/consumer/consumer-education/fin-tech-and-cryptocurrency-terms-and-definitions>

⁵¹ Committee on Payments and Market Infrastructures, "Digital Currencies," November 2015.

⁵² Report of the Working Group on FinTech and Digital Banking, 08 Feb 2018

electronically for several uses. The term "VCs" refers to a broader range of "currencies," from straightforward IOUs (I owe you) from issuers (such as airline miles and Internet or mobile discounts) to VCs backed by assets like gold and "cryptocurrencies" like Bitcoin. Virtual currencies (VCs) are a subset of digital currencies since they are digital representations of value. But they're not like other digital currencies, like electronic money (e-money), a digital payment system that is backed by fiat money. VCs, on the other hand, have their unit of account and are not valued in fiat money. VCs do not meet the legal definition of money or currency. Currently, venture capitalists fall short in three economic functions related to money. The current small size and narrow acceptance network of VCs severely limits their use as a medium of exchange; there is currently little evidence that VCs are used as an independent unit of account; and finally, the high price volatility of VCs limits their ability to serve as a reliable store of value.⁵³

The European Central Bank Crypto-Assets Task Force defined a crypto-asset as "a new type of asset recorded in digital form and enabled by the use of cryptography that is not and does not represent a financial claim on, or a liability of, any identifiable entity" for its analysis and assessment.⁵⁴ The European Securities and Markets Authority has defined Crypto assets as "Crypto-assets are a type of private asset that depends primarily on cryptography and Distributed Ledger Technology (DLT). There are a wide variety of crypto-assets. Examples of crypto-assets range from so-called cryptocurrencies or virtual currencies, like Bitcoin, to so-called digital tokens issued through Initial Coin Offerings (ICOs). Some crypto-assets have attached profit or governance rights while others provide some consumption value. Still others are meant to be used as a means of exchange."⁵⁵

Section 69(4) of FSMA 2023 defines "crypto asset" as follows: Any digital representation of value or contractual rights that is cryptographically secured, may be

⁵³ Virtual Currencies and Beyond: Initial Considerations, IMF Staff Discussion Note, Dong He et al., page 7, 16, 17 (January 2016) (available at <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf> last accessed on 10-06-2024)

⁵⁴ ECB Crypto-Assets Task Force, Crypto-Assets: Implications for financial stability, monetary policy, and payments and market infrastructures, No 223 / May 2019 (available at <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op223~3ce14e986c.en.pdf> last accessed on 10-06-2024)

⁵⁵ The European Securities and Markets Authority, Advice Initial Coin Offerings and Crypto-Assets, ESMA50 157-1391, 9 January 2019 (available at https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf, last accessed on 10-06-2024)

transmitted, saved, or exchanged electronically, and that uses technology to facilitate data recording or storage (such as distributed ledger technology) is referred to as a "crypto asset."⁵⁶ Because it describes the underlying technology, this term is widely applicable. It is also comparable to the concept found in the EU's Markets in Crypto Assets Regulation (MiCA) and aligns with the Financial Action Task Force's (FATF) suggested definition of a "virtual asset."⁵⁷ Internal revenue service, Department of Treasury, USA has also defined virtual currency as "Virtual currency" can be saved for investments or used to pay for products and services. A computerized representation of value known as virtual currency serves as a store of value, a unit of account, and/or a medium of exchange. Federal taxation in the United States regards convertible vehicles as property. The same general tax laws that govern real estate transactions also apply to virtual currency transactions. For U.S. federal tax reasons, venture capital (VC) is not considered currency that could result in a gain or loss in foreign currency.⁵⁸ In general, virtual currency is a digital representation of value that performs the same tasks as a nation's traditional money.⁵⁹ Cryptocurrency is defined as "A type of virtual currency that incorporates cryptography to enhance its security. Most, but not all, cryptocurrencies are decentralized."⁶⁰

The Securities and Exchange Commission of the USA has given its definition as according to some, Bitcoin is a peer-to-peer, decentralized virtual currency that functions similarly to real money. It may be used to make purchases online, typically of goods and services, or traded for more conventional currencies like the US dollar. In contrast to conventional currencies, Bitcoin is not backed by any government and

⁵⁶ Financial Services and Markets Act 2023, § 69, Legislation.gov.uk, (Commencement No. 1) Regulations (SI 2023/779)

⁵⁷ James Campbell, Eleanor Furlong, Provisions Relating to Digital Assets under the Financial Services and Markets Act 2023 Come into Force, available at <https://www.pillsburylaw.com/en/news-and-insights/financial-services-markets-act-digital-assets.html>, last accessed on 9 Jun 2024.

⁵⁸ IRS Virtual Currency Guidance: Virtual Currency is Treated as Property for U.S. Federal Tax Purposes; General Rules for Property Transactions Apply (March 2014) available at <https://www.irs.gov/newsroom/irs-virtual-currency-guidance> (Last accessed on 09-06-2024) and <https://www.irs.gov/pub/irs-drop/n-14-21.pdf> (Last accessed on 09-06-2024)

⁵⁹ IRS reminds taxpayers to report virtual currency transactions (March 2018) available at <https://www.irs.gov/newsroom/irs-reminds-taxpayers-to-report-virtual-currencytransactions> (Last accessed on 09-06-2024).

⁶⁰ The Internal Revenue Service Is Developing a Digital Asset Monitoring and Compliance Strategy, Report Number: 2024-IE-005, TREASURY INSPECTOR GENERAL FOR TAX ADMINISTRATION, 18 Dec 2023

functions without a central bank or authority.⁶¹ In general, cryptocurrency claims to be intrinsically valuable objects (like gold or cash) that are meant to facilitate sales, purchases, and other types of financial transactions. They lack the support of a government or other institution, but they are meant to perform many of the same tasks as well-known currencies like the US dollar, the euro, or the Japanese yen.⁶² Commodity Futures Trading Commission, USA has tried to bring Crypto assets under commodity. According to Section 1a (9) of the US Commodity Exchange Act, a "commodity" is defined as "all services, rights, and interests in which future delivery contracts are transacted in the present or the future. Virtual currencies are commodities, according to the Memorandum and Order in *Commodity Futures Trading Commission v. Patrick McDonnell* in the sense that the Commodity Exchange Act defines it. However, the ruling makes it clear that there was no discussion of "currency versus commodity" throughout.⁶³ In *Commodity Futures Trading Commission v. My Big Coin Pay, Inc. et al.*, the United States District Court, District of Massachusetts, adopted the same stance, ruling that virtual currency futures trading qualifies them as "commodities" under the Statute.⁶⁴ The Financial Crimes Enforcement Network, Department of Treasury, USA has stated that virtual currency is a kind of exchange that functions in some situations similarly to actual currency but lacks some of its characteristics of money. Specifically, virtual currency is not recognized as a legal tender in any nation. This guideline deals with virtual currency that is "convertible." This kind of virtual money functions as a stand-in for real money or has a value akin to that of real money.⁶⁵

According to the Canada Revenue Agency (CRA), a digital representation of value that is not money is called cryptocurrency. It's an electronic asset. It serves as a means of payment for products and services between those who consent to utilize them. For the Income Tax Act, the CRA generally views cryptocurrencies as commodities. Generally

⁶¹ Investor Alert: Bitcoin and Other Virtual Currency-Related Investments (May 2014) available at https://www.sec.gov/oiea/investor-alertsbulletins/investoralertsia_bitcoin.html (Last accessed on 09-06-2024).

⁶² Chairman Jay Clayton, Statement on Cryptocurrencies and Initial Coin Offerings (December 2017) available at <https://www.sec.gov/news/public-statement/statementclayton-2017-12-11> (Last accessed on 09-06-2024).

⁶³ *Commodity Futures Trading Comm'n v. McDonnell*, 18-CV-361, (E.D.N.Y. Mar. 6, 2018)

⁶⁴ *Commodity Futures Trading Comm'n v. My Big Coin Pay, Inc.*, CIVIL ACTION NO. 18-CV-10077, (D. Mass. Oct. 29, 2020)

⁶⁵ Guidance - Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies (March 2013) available at <https://www.fincen.gov/sites/default/files/shared/FIN-2013-G001.pdf> (Last accessed on 09-06-2024)

speaking, any money received from bitcoin trades is either regarded as capital gains or as company income, depending on the specifics.⁶⁶ A digital asset known as virtual money can be used to purchase and sell products and services. Cryptocurrency is a virtual money based on blockchain technology. When using cryptocurrency to pay for products or services, income tax regulations about barter transactions are applicable. Any two people who decide to trade goods or services without using legal money are engaging in a barter transaction. Similar to commodities, virtual cash can likewise be purchased or sold.⁶⁷ India has neither legalized nor illegalized cryptocurrency as of now.

CHARACTERISTICS OF CRYPTOCURRENCY

No Third-Party Seizure: Since all financial transactions, including the exchange of actual currency, occur between peers, no single entity has the right to regulate or seize the money.⁶⁸ Specifically, the central authority cannot seize Bitcoins since it does not print, own, or control Bitcoins in the same manner that it does other cryptocurrencies.⁶⁹

Transparency and anonymity: Unless a Bitcoin user makes their wallet address publicly known, it is challenging to identify them. It is easy to make a new wallet address, though, even if the wallet addresses are made public. Compared to traditional monetary systems, where hackers might obtain customer financial information, the Bitcoin system significantly improves privacy. Moreover, this pseudonymity is achieved without sacrificing system openness because all Bitcoin transactions are kept in blocks that resemble a public ledger. Regretfully, numerous studies have shown that flow analysis and clustering are more practical techniques for monitoring Bitcoin transactions and determining the owner of the transaction.^{70 71} Nonetheless, a lot of work has been put into addressing Bitcoin's privacy and anonymity problems, and a

⁶⁶ Guide for cryptocurrency users and tax professionals (Last modified on 24 October 2023) available at <https://www.canada.ca/en/revenue-agency/programs/about-canadarevenue-agency-cra/compliance/digital-currency/cryptocurrency-guide.html> (Last accessed on 09-06-2024)

⁶⁷ Virtual Currency (Last modified on 26 June 2019) available at <https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/compliance/digital-currency.html> (Last accessed on 09-06-2024)

⁶⁸ P. Koshy, D. Koshy and P. D. McDaniel, "An analysis of anonymity in Bitcoin using P2P network traffic", Proc. 18th Int. Conf. Financial Cryptogr. Data Secur. (FC), pp. 469-485, Mar. 2014

⁶⁹ B. Mobasher, "Data mining for web personalization" in *The Adaptive Web*, Berlin, Germany:Springer, vol. 4321, pp. 90-135, 2007

⁷⁰ D. Ron and A. Shamir, "Quantitative analysis of the full Bitcoin transaction graph", Proc. 17th Int. Conf. Financ. Cryptogr. Data Secur. (FC), pp. 6-24, 2013

⁷¹ D. D. F. Maesa, A. Marino and L. Ricci, "Uncovering the Bitcoin blockchain: An analysis of the full users graph", Proc. IEEE Int. Conf. Data Sci. Adv. Anal. (DSAA), pp. 537-546, Oct. 2016.

number of methods suggested by the research community have been successful in boosting anonymity.⁷²⁷³⁷⁴⁷⁵

Tax exemption and reduced transaction fees: Due to Bitcoin's decentralized architecture and pseudonymous nature, it is tax-exempt and has lower transaction fees. Bitcoin used to allow for speedy transactions for relatively little money. Even now, using Bitcoin for transactions is still less expensive than using credit cards, PayPal, and bank transfers. However, the reduced transaction cost is only useful for large international transactions. This is because smaller value transfers and transactions—like paying for everyday household items—lead to higher average transaction costs in the Bitcoin currency.⁷⁶⁷⁷

Stealing resilience: Bitcoins cannot be stolen unless the attacker has access to the private keys, which are frequently kept offline and are linked to the user's wallet. For instance, much like with a credit card, using Bitcoin does not necessitate disclosing the PIN (Personal Identification Number), and this protection is provided by design. Furthermore, as Bitcoins are not susceptible to chargebacks, once a transaction is committed, it cannot be undone. The ownership address of the transferred Bitcoins is reassigned to the new owner as soon as they are received, preventing a reverse transaction. This ensures that there is zero danger involved in getting Bitcoins.^{78 79}

BLOCKCHAIN TECHNOLOGY

The innovative idea of blockchain technology serves as the foundation for the operation of numerous cryptocurrencies, including Ethereum, Bitcoin, and many more. Beyond

⁷² G. Fuchsbauer, M. Orru and Y. Seurin, "Aggregate cash systems: A cryptographic investigation of mimbleswimble" in *Advances in Cryptology—EUROCRYPT*, Cham, Switzerland:Springer, vol. 11476, pp. 657-689, 2019

⁷³ X. Chen, M. A. Hasan, X. Wu, P. Skums, M. J. Feizollahi, M. Ouellet, et al., "Characteristics of Bitcoin transactions on cryptomarkets" in *Security Privacy and Anonymity in Computation Communication and Storage*, Cham, Switzerland:Springer, vol. 11611, pp. 261-276, 2019

⁷⁴ Q. Wang, X. Li and Y. Yu, "Anonymity for bitcoin from secure escrow address", *IEEE Access*, vol. 6, pp. 12336-12341, 2018

⁷⁵ A. Jivanyan, *Lelantus: Towards confidentiality and anonymity of blockchain transactions from standard assumptions*, Dec. 2022, [online] Available: <https://eprint.iacr.org/2019/373>

⁷⁶ Akins, B. W., Chapman, J. L., & Gordon, J. M. A whole new world: Income tax considerations of the cryptocurrency economy. *Pittsburgh Tax Review*, 12, 25–56(2014).

⁷⁷ Ram, A. J. Taxation of the Bitcoin: Initial insights through a correspondence analysis. *Meditari Accountancy Research*, 26(2), 214–240, (2018).

⁷⁸ Weichbroth, P.; Wereszko, K.; Anacka, H.; Kowal, J. Security of Cryptocurrencies: A View on the State-of-the-Art Research and Current Developments. *Sensors*, 23, 3155 (2023). <https://doi.org/10.3390/s23063155>

⁷⁹ Litwack, S. Bitcoin: Currency or fool's gold: A comparative analysis of the legal classification of Bitcoin. *Temple International and Comparative Law Journal*, 29, 309 (2015).

digital currencies, its implications are far-reaching, with the potential to revolutionize a variety of industries, including supply chain management, healthcare, and banking.⁸⁰ It popularized the concept of "smart contracts," which are digital contracts that may operate on their own and don't require outside verification when the necessary conditions are met.⁸¹ The concept of Decentralised Finance (DeFi), which refers to a collection of blockchain-based apps intended to replace the current financial system, emerged as a result of the increasing use of cryptocurrencies. Because the network is decentralized, users have direct control over their finances, and the use of smart contracts eliminates the need for intermediary organizations like banks. An additional noteworthy advancement has been the emergence of Nonfungible Tokens (NFTs). These are one-of-a-kind digital goods that can't be traded one-to-one, like paintings or videos. NFTs can be instantly identified and their ownership is traceable on the digital record because they are built on blockchains. Their application to process the ownership of tangible assets, such as real estate documents and vehicles, has also resulted from this. The release of the "National Strategy on Blockchain" by MeitY in December 2021, which outlined its vision to adopt blockchain in various sectors like healthcare, agriculture, finance, voting, and e-governance, as well as laying the groundwork for establishing a "National Blockchain Framework," under which it will work towards building a national-level infrastructure for blockchain, is indicative of the Government of India's keen interest in the technology and its application to the public domain. By 2027, it aims to enable blockchain technology that is "Made in India" for usage worldwide while reaching convergence between blockchain, the Internet of Things, the cloud, and artificial intelligence—a concept known as the "BICA Stack."⁸²

Basics of Blockchain:

Decentralization- Blockchain, on the other hand, runs on a decentralized network of computers, or nodes, each of which has a duplicate of the whole ledger. Because it

⁸⁰ Tsukerman, M. The block is hot: A survey of the state of cryptocurrency regulation and suggestions for the future. *Berkeley Technology Law Journal*, 30(4), 1127–1169 (2015).

⁸¹ Grewal-Carr V, Marshall S. Blockchain enigma paradox opportunity. (2016) available at <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-blockchain-full-report.pdf>, last accessed 10-06-2024.

⁸² Prateek Tripathi, The growing role of blockchain in Indian governance, Observer Research Foundation accessed on 10-06-2024, 12:25 IST, <https://www.orfonline.org/expert-speak/the-growing-role-of-blockchain-in-indiangovernance#:~:text=The%20Government%20of%20India%20has,various%20sectors%20like%20healthcare%2C%20agriculture%2C>

eliminates the single point of failure and increases the blockchain's resistance to censorship and manipulation, this decentralization is essential to its security and integrity.⁸³

Distributed Ledger Technology (DLT)- Distributed ledger technology, or DLT, includes blockchain technology, in which the ledger—a record of transactions—is dispersed among several users or locations. DLT eliminates the need for a central authority to approve and oversee transactions, in contrast to traditional ledgers. To ensure transparency and lower the possibility of fraud, each node in the network keeps a synchronized copy of the ledger.⁸⁴

Immutability- Cryptographic hashing and the consensus processes that control the addition of new blocks to the chain are responsible for achieving this immutability. A chain of blocks is created by combining transaction data, a timestamp, and a cryptographic hash of the previous block in each block. It would be nearly impossible to change a single block without also altering all subsequent blocks, which would require agreement from the majority of network users.⁸⁵

Key Components of Blockchain⁸⁶

Blocks- A block list of transactions is contained in each block that makes up a blockchain. Every block possesses a header consists contains metadata like the hash of the preceding block, the timestamp, and the block number. The body is where the transaction data is located.

Hash Functions- 'Hashing' is the process of transforming an input (or message) into a fixed-length string of bytes, usually a hash code. This function only works in one direction; reversing the function and getting the original input is not computationally possible. Hashing functions are used by the blockchain to guarantee data integrity. The

⁸³ Angelis, J., & da Silva, E. R. Blockchain adoption: A value driver perspective. *Business Horizons*. (2018). Available at <https://doi.org/10.1016/j.bushor.2018.12.001> (last accessed on 11-06-2024)

⁸⁴ Priem, R. Distributed ledger technology for securities clearing and settlement: benefits, risks, and regulatory implications. *Financ Innov* 6, 11 (2020) <https://doi.org/10.1186/s40854-019-0169-6> (last accessed on 11-06-2024)

⁸⁵ Gautami Tripathi,, Mohd Abdul Ahad , and Gabriella Casalino, A comprehensive review of blockchain technology: Underlying principles and historical background with future challenges, Volume 9, *Decision Analytics Journal*, ISSN 2772-6622, (2023).

⁸⁶Shubhani Aggarwal, Neeraj Kumar, *Advances in Computers*, Volume 121, Elsevier,Pages 193-209, (2021)

hash of the header from the preceding block is contained in each block, connecting them.

Nodes- The machines that take part in the blockchain network are called nodes. They propagate updates, validate transactions, and keep the ledger up to date. Nodes come in a variety of forms: Full nodes maintain the complete blockchain and authenticate every block and transaction. Light nodes use simplified payment verification (SPV) to confirm transactions and store only the block headers. Mining nodes are dedicated to using the mining process to create new blocks to the blockchain and validate transactions.

Consensus Mechanisms-Consensus methods are procedures that guarantee that the contents of the blockchain are agreed upon by all nodes inside the network. Typical methods for reaching consensus are as follows: Proof of Work (PoW) is a feature of Bitcoin, PoW forces miners to add new blocks by solving challenging cryptographic puzzles. The network's security is maintained via this resource-intensive operation. Proof of Stake (PoS) in which the quantity of tokens that validators own and are prepared to "stake" as collateral determines their selection. PoS uses less energy than PoW does. Through the use of Delegated Proof of Stake (DPoS), a limited group of delegates is chosen by stakeholders to validate transactions and build blocks. In permissioned blockchains, practical byzantine fault tolerance, or PBFT, is used to withstand Byzantine errors such that the network may still come to a consensus even when some nodes act maliciously.

Types of Blockchain:

Public Blockchain-One popular kind of blockchain is a public blockchain, which is open and decentralized by design. Furthermore, computer networks using this kind of blockchain technology are essentially open to everybody interested in transacting. In addition, two different Proof-of-work and Proof-of-stake models are being employed, and the transaction incentives are essentially given to the validated individual based on their validation.⁸⁷ Additionally, the Public Blockchain is a distributed ledger system that is unrestrictive and doesn't require any form of authorization. Anyone with access can be granted permission to access all or a portion of the Blockchain's data. Additionally,

⁸⁷ Kumar, N. M., & Mallick, P. K. Blockchain technology for security issues and challenges in IoT. *Procedia Computer Science*, 132(1), 1815-1823 (2018).

this type of Blockchain grants authorization for the verification of past and present records. In addition, mining and cryptocurrency exchange is done with this. The blockchains for Bitcoin, Ethereum, and Litecoin are the most popular in this market. It is largely safe as long as stringent security procedures and guidelines are followed.⁸⁸⁸⁹

Private blockchains-Although private blockchains are not public, they do have certain access-related capabilities. With the help of the system administrator, this blockchain permits the transaction.⁹⁰ This kind of blockchain is limited to closed systems and networks, which are typically helpful in businesses and organizations where membership is restricted to specific individuals. This kind of blockchain has appropriate security, permissions, authorizations, and accessibility. The experts claim that private blockchains are used for a variety of purposes, including voting, supply chain management, asset ownership, and digital identity management. Popular private blockchains include Corda, Hyperledger projects, Multichain, and others. Because private blockchains are only operated by authorized nodes, information and transaction-related data shared between nodes cannot be accessed by anyone outside the private network.⁹¹

Hybrid Blockchains-Hybrid blockchains combine private and public blockchain technology, which is necessary for greater control and the accomplishment of loftier objectives. Although hybrid blockchain is closed and works with both centralised and decentralised systems, it has attributes like integrity and transparency as well as safety.⁹² Maximum customisation is said to be one of the key advantages of hybrid blockchains, which combine a public permission-less system with a private permission-based system. Users can access specific sections of these blockchain systems, while the remaining portions can either be recorded or stored because of the advantages of the

⁸⁸ Williams, P. Does competency-based education with blockchain signal a new mission for universities?. *Journal of higher education policy and management*, 41(1), 104-117 (2019).

⁸⁹ Lin, W., Huang, X., Fang, H., Wang, V., Hua, Y., Wang, J., ... & Yau, L. Blockchain technology in current agricultural systems: from techniques to applications. *IEEE Access*, 8, 143920-143937 (2020).

⁹⁰ Jirgensons, M., & Kapenieks, J.. Blockchain and the future of digital learning credential assessment and management. *Journal of teacher education for sustainability*, 20(1), 145-156 (2018)

⁹¹ Radanović, I., & Likić, R. Opportunities for use of blockchain technology in medicine. *Applied health economics and health policy*, 16(5), 583-590 (2018).

⁹² Omar, I. A., Jayaraman, R., Salah, K., Yaqoob, I., & Ellahham, S. Applications of blockchain technology in clinical trials: Review and open challenges. *Arabian Journal for Science and Engineering*, 46(4), 3001-3015. (2021)

ledger's records, safe. Because hybrid blockchains are sufficiently versatile, users can join them as private blockchains with ease.⁹³

Consortium Blockchain-Partnership Another kind of semi-decentralized blockchain is called blockchain, and it may be used to organize and manage the blockchain network. This kind of blockchain can do tasks even from a single company. Blockchain can be used in this situation where they are employed in places like banks, government agencies, etc. to exchange data or do mining. Examples of this kind of cooperation include R3, Energy Web Foundation, and others.⁹⁴

Blockchain applications broaden the scope of the peer-to-peer payment network. This gives the system features based on a distributed ledger, such as integrity, security, trust, privacy preservation, attack prevention, etc., making it possible for Internet of Things (IoT) programs to interact with the distributed storage⁹⁵. This method has the advantage of being decentralized, fully securing the entire environment, and only permitting the addition of new blocks. The blockchain application sectors are at the forefront of many blockchains and cryptocurrencies. Because cryptocurrencies employ power to validate blockchains and give machines incentives, they are tied to blockchain technology. A relatively new kind of digital money called cryptocurrency uses the blockchain to provide immutability, decentralization, and transparency.⁹⁶ The use of blockchain technology is expanding in tandem with the use of cryptocurrency. This comprises the intrinsic value of the network based on many factors. Through this process, a new form of money is created that, depending on its importance, stores values and enhances understanding of price variations.⁹⁷

CRYPTOCURRENCY ECOSYSTEM

To gauge trust in the ecosystem of blockchain-based cryptocurrencies, one must first understand the fundamental components of the ecosystem, which include coins,

⁹³ Yang, X. M., Li, X., Wu, H. Q., & Zhao, K. YThe application model and challenges of blockchain technology in education. *Modern distance education research*, 2, 34-45 . (2017).

⁹⁴ Paul, P and Aithal, P. S. and Saavedra, R. and Ghosh, Surajit, *Blockchain Technology and Its Types—A Short Review* (December 26, 2021). *International Journal of Applied Science and Engineering (IJASE)*, 9(2), 189-200. (2021).

⁹⁵ M. H. Miraz and M. Ali, "Applications of blockchain technology beyond cryptocurrency", arXiv:1801.03528, 2018

⁹⁶ T. M. Navamani, "A review on cryptocurrencies security", *J. Appl. Secur. Res.*, vol. 18, no. 1, pp. 49-69, 2023

⁹⁷ Ibid

wallets, mining systems, exchanges, payment systems, blockchain, and significant players. Along with security, cryptocurrencies need to offer value, exchangeability, and a definable amount of money. Furthermore, the benefits of cryptocurrencies include extraneous features like trust less-ness, lower transaction fees than traditional payment methods, faster fund transmission by overcoming institutional and geographic barriers, decentralization, which allows for multiparty transaction verification, and pseudonymization, which hides the true identities of the parties involved in a transaction. The capacity to be converted into fiat money and other cryptocurrencies, fast transaction settlement (facilitating the exchange of value between parties transacting quickly), irreversibility (ensuring that a transaction cannot be undone once it is completed), and controlled supply (assisting in maintaining the right equilibrium and good intrinsic value) are additional desirable qualities.

To preserve user identities, cryptocurrencies use long, random character sequences known as public usernames and secret passwords. Wallets are applications that are used to generate, store, arrange, and transact keys. Every cryptocurrency comes with a built-in wallet that can only do basic operations, but businesses and the open-source community are always creating more sophisticated wallets that are more secure. Some wallets, for example, allow users to create mnemonics—short, concise phrases—instead of lengthy private keys, adding an extra layer of security.⁹⁸ Modern cryptocurrency wallets offer advanced features like hierarchical deterministic key generation, integrated currency conversion, linked cards, zero-fee transactions, insurance, and customer support. These additions blur the line between wallets and exchanges.

Exchanges facilitate borderless, cross-platform transactions and come in three types:

- Brokerage services: Popular for companies buying and selling bitcoins.
- Order-booking exchanges: Compatible with various Bitcoin trading engines.
- Trading platforms: Integrate multiple cryptocurrencies, fiat currencies, and digital products/services.

⁹⁸ G. Gutoski and D. Stebila, "Hierarchical deterministic Bitcoin wallets that tolerate key leakage", Proc. Int. Conf. Financial Cryptogr. Data Secur., pp. 497-504, 2015.

Exchanges may operate in one or multiple modes depending on their size. This evolution in wallet and exchange functionalities reflects the growing sophistication and integration of cryptocurrency services, offering users more comprehensive and versatile tools for managing digital assets. A market analysis indicates that whereas small exchanges often only run in one mode, major exchanges offer services in two.⁹⁹

Payment service providers serve as networks of middlemen that link cryptocurrency and the traditional economy. The two primary types of payment networks are cryptocurrencies and payment rail. The payment rail enables trading between fiat and digital currencies at endpoints by leveraging cryptocurrency exchanges situated between networks. Payment rails are frequently used to complete speedy cross-border transactions, but governments have found it challenging to effectively monitor and manage these networks due to the pseudonymization of cryptocurrencies. The payment rails facilitate money transfers between businesses and between individuals. Alternatively, payment networks for cryptocurrencies ensure that a minimum of one endpoint utilizes cryptocurrencies. These networks manage payments for companies that use merchant services to accept cryptocurrencies. These networks could likewise be utilized as conventional Bitcoin exchanges.¹⁰⁰

The main players in the cryptocurrency space are i) Users, or those who send and receive coins through apps, networks, or other individuals. ii) Service providers, self-employed programmers, or companies offering platforms for the creation and trade of cryptocurrencies. iii) Regulators, executives, companies, representatives, and consortiums are among those who create policies, operational frameworks, rules, and processes for the ethical and lawful use of cryptocurrency systems. iv) Verifiers of transactions: people or companies that mine cryptocurrencies and supervise transactions.

⁹⁹ D. Gambetta, "Can we trust trust" in *Trust: Making and Breaking Cooperative Relations*, Oxford, U.K.:Univ. Oxford, vol. 13, pp. 213-237, 2000

¹⁰⁰ Karmila Sari Sukarno, Pujijono, *The Use of Cryptocurrency as a Payment Instrument*, Vol 130, *Advances in Economics, Business and Management Research*, 366-370 (2020)

CHALLENGES OF CRYPTOCURRENCIES

Pump and Dump of Cryptocurrency Activities

The price of a security mechanism is manipulated in a "pump and dump" scheme. These dishonest practices, which originated in the early years of the stock market, are currently being used in the cryptocurrency space. The severity of the issue is demonstrated by the numerous warnings concerning Bitcoin pump-and-dump schemes that the Securities and Exchange Commission (SEC) and the Commodities Futures Trading Commission (CFTC) have issued.¹⁰¹ While marketing teams employed pump-and-dump tactics during Initial Coin Offerings (ICOs), cryptocurrencies today take many different forms. The three primary elements of a pump-and-dump plan are a group of con artists, a hidden or semi-secret communication channel where con artists may coordinate their illicit actions, and social media for organizing concerted attempts to hype a certain currency. Typically, con artists promote a particular cryptocurrency on Twitter and create groups on platforms like Reddit or Telegram to arrange large-scale purchases of it. The currency may be bought by regular traders who hope to predict the next trend and drive up the price even further. These traders just watch the price rise, unaware of any negative activity. The scam artists start to sell (or "dump") their shares when a predetermined price target is met, which precipitously lowers the price.¹⁰²

Cryptocurrency Prices Prediction

Robust Machine Learning (ML) technology called Deep Learning (DL) leverages large amounts of data and accurate forecasts to address complex, nonlinear problems. Accurate price estimation is challenging because of the large range of values; this issue is resolved by the deep learning technique¹⁰³ combined their findings with the forecast of Bitcoin price by contrasting deep neural networks with Long Short-Term Memory (LSTM). When compared to other regression models, the methodology's findings demonstrate that LSTM has a reasonable degree of accuracy. They attempted to analyse deep learning models in the context of bitcoin trading using regression analysis, even though it is an insufficient tool for the job. In and for non-stationary Bitcoin time series

¹⁰¹ Customer Advisory: Beware Virtual Currency Pump-and-Dump Schemes, 2017, [online] Available: <https://www.investor.gov/additional-resources/news-alerts/alertsbulletins/investor-alert-public-companies-making-ico-related> (Last accessed on 11-06-2024)

¹⁰² Investor Alert: Public Companies Making ICO-Related Claims, Washington, DC, USA, 2018

¹⁰³ S. Ji, J. Kim and H. Im, "A comparative study of Bitcoin price prediction using deep learning", Mathematics, vol. 7, no. 10, pp. 898, Sep. 2019

data, a deep learning-based approach for trend classification and prediction is described.¹⁰⁴ ¹⁰⁵The developed method's results show how effectively the LSTM model worked based on a profitability analysis of the buy-and-hold strategy. The system's output results show that, in predicting the price of Bitcoin, the LSTM generalized flawlessly. The Diebold-Matiano test and the confidence set of Hansen's Model are used to evaluate prediction.¹⁰⁶

Privacy and Anonymity

The notion of safeguarding the privacy of user data is not new. For example, most social networks on the internet are centralised and include users who share data all the time. User data privacy is a concern because the central organisation has access to all of the data about users and might grant further access to outside companies. Sensitive information contained in social graphs—which show the interactions, behaviours, and preferences among users of online social networks—may be utilised to determine an individual's genuine identity. One proposed solution to these privacy concerns was the use of decentralised social networks and evaluated the degree of anonymity offered by a number of decentralised substitutes for online social networks.¹⁰⁷ A study on the protection of privacy in online social networks was presented. While the study concluded that end-to-end encryption might offer secrecy, a persistent problem in decentralised social networks was hiding the social graphs that contained private user information from storage providers using dispersed techniques. We investigated two decentralised social networks: Pisces and Lockr. Pisces was built mostly for scalability, and it doesn't address the issue of link privacy, which connects users in a social graph. Anonymity and privacy concerns with Bitcoin transactions are closely related to social networks and link privacy. Since cryptocurrencies first appeared, numerous approaches have been taken to investigate the privacy limitations of digital currency.¹⁰⁸

¹⁰⁴Z. Chen, C. Li and W. Sun, "Bitcoin price prediction using machine learning: An approach to sample dimension engineering", *J. Comput. Appl. Math.*, vol. 365, Feb. 2020

¹⁰⁵T. Shintate and L. Pichl, "Trend prediction classification for high frequency Bitcoin time series with deep learning", *J. Risk Financial Manag.*, vol. 12, no. 1, pp. 17, Jan. 2019

¹⁰⁶Y. Peng, P. H. M. Albuquerque, J. M. C. D. Sá, A. J. A. Padula and M. R. Montenegro, "The best of two worlds: Forecasting high frequency volatility for cryptocurrencies and traditional currencies with support vector regression", *Exp. Syst. Appl.*, vol. 97, pp. 177-192, May 2018

¹⁰⁷L. Schwittmann, M. Wander, C. Boelmann and T. Weis, "Privacy preservation in decentralized online social networks", *IEEE Internet Comput.*, vol. 18, no. 2, pp. 16-23, Mar. 2014

¹⁰⁸M. Siddula, L. Li and Y. Li, "An empirical study on the privacy preservation of online social networks", *IEEE Access*, vol. 6, pp. 19912-19922, 2018

Technological Challenges

Blockchain is a new technology with the potential to upend the industry by providing ground-breaking concepts that could transform society when it replaces outdated solutions.¹⁰⁹¹¹⁰ As such, it is imperative to ascertain whether a blockchain is actually required for a certain application.¹¹¹ If blockchain is created correctly and maturely, it can be used for many different purposes in many different systems. Implementing blockchain technology is not a simple undertaking because it involves a lot of potential topologies and transactional mechanisms. Thus, before it may be employed in a variety of applications, a thorough and in-depth examination is required.¹¹² Another challenge that comes with putting a blockchain-based application into practice is the requirement for a standard testing methodology. Resilience to security threats must be clearly established. Large-scale applications on the blockchain could run into problems because of the design of the system or because of security-related attacks. The long processing and confirmation time of blockchain-based transactions is the primary cause of this issue. The processing system's performance determines how well transactions are processed.¹¹³ One issue that clearly affects firms looking to embrace blockchain technology is integration with other systems. The cost of upgrading the infrastructure, employing qualified personnel, recruiting specialised developers, and controlling management expectations will all be incurred.¹¹⁴ Laws are essential for the widespread adoption and acceptance of blockchain-enabled products.¹¹⁵

¹⁰⁹ A. R. Javed, "Future smart cities requirements emerging technologies applications challenges and future aspects", *Cities*, vol. 129, Oct. 2022

¹¹⁰ N. Puri, V. Garg and R. Agrawal, "Blockchain technology applications for next generation" in *Blockchain Artificial Intelligence and the Internet of Things*, Berlin, Germany:Springer, pp. 53-73, 2022

¹¹¹ K. Wust and A. Gervais, "Do you need a blockchain?", *Proc. Crypto Valley Conf. Blockchain Technol. (CVCBT)*, pp. 45-54, Jun. 2018

¹¹² A. A. Monrat, O. Schelen and K. Andersson, "A survey of blockchain from the perspectives of applications challenges and opportunities", *IEEE Access*, vol. 7, pp. 117134-117151, 2019

¹¹³ *ibid*

¹¹⁴ M. R. Islam, M. M. Rahman, M. Mahmud, M. A. Rahman and M. H. S. Mohamad, "A review on blockchain security issues and challenges", *Proc. IEEE 12th Control Syst. Graduate Res. Colloq. (ICSGRC)*, pp. 227-232, Aug. 2021

¹¹⁵ S. K. Dwivedi, P. Roy, C. Karda, S. Agrawal and R. Amin, "Blockchain-based Internet of Things and industrial IoT: A comprehensive survey", *Secur. Commun. Netw.*, Aug. 2021

APPLICATION OF CRYPTOCURRENCY

Internet of Everything (IoE)

IoE is more expansive than IoT and seeks to intelligently connect people, processes, data, and objects. The Internet of Everything (IoE) is expected to redefine business concepts and practices. The automation and optimisation of processes is the primary advantage of digital technology. Second, new business models across a number of industries are made possible by the usage of digital technology. Examining the implications of the many possibilities while implementing IoE will be interesting from a business standpoint. It is necessary to compete with unprecedented business velocity and agility. To find out how incorporating blockchain-based technology affects interoperability across different organisations, more research is required.¹¹⁶

Artificial Intelligence (AI)

The ultimate goal of next-generation network communications is to develop, optimise, and improve the environmental friendliness of human society. On all fronts, a much greater integration of AI is expected. Research indicates that the implementation of artificial intelligence and machine learning techniques can improve physical layer security, obstacle and range detection, and channel coding. It is obvious that more research would be needed in each of these areas of inquiry.¹¹⁷¹¹⁸

Data Storage and Analytics

Thousands of gadgets use the Internet of Everything (IoE) now to continuously generate streams of new data in real time. Effective data storage solutions are first and foremost needed for this. Blockchain-enabled technologies clearly have a lot of potential in that field. There are currently a number of concepts in the sector that are comparable to fog, edge, and cloud computing-based solutions, but it is still unclear how to distribute and combine these technologies in other fields.¹¹⁹

¹¹⁶ M. H. Miraz, M. Ali, P. S. Excell and R. Picking, "A review on Internet of Things (IoT) internet of everything (IoE) and internet of nano things (IoNT)", Proc. Internet Technol. Appl. (ITA), pp. 219-224, Sep. 2015

¹¹⁷ A. S. Khan, K. Balan, Y. Javed, S. Tarmizi and J. Abdullah, "Secure trust-based blockchain architecture to prevent attacks in VANET", Sensors, vol. 19, no. 22, pp. 1-27, 2019

¹¹⁸ M. A. Karabulut, A. F. M. S. Shah and H. Ilhan, "Performance optimization by using artificial neural network algorithms in VANETs", Proc. 42nd Int. Conf. Telecommun. Signal Process. (TSP), pp. 633-636, Jul. 2019

¹¹⁹ Supra note 70

Vehicle-to-Vehicle Communications

Intelligent Transport Systems (ITS) is one of the major applications that will flourish in the next ten years; it will make use of the current technological capabilities and their references.¹²⁰¹²¹¹²²¹²³ A blockchain-based approach to specifying the trust management of cars has been demonstrated and evaluated through simulation.¹²⁴ The main shortcoming of the approach was its limitation to ad hoc networks; hence, more investigation is needed to guarantee effectiveness in mobility and other necessary scenarios.

Unmanned Aerial Vehicles (UAV)

UAVs, or drones, will be essential in attaining the high-data-rate required for wireless communication, and it is anticipated that they will be included in the upcoming 6G mobile networks.¹²⁵ ¹²⁶ Here, drone security, privacy, and the data they collect present a big opportunity for blockchain technology. IBM even filed a blockchain patent to address drone fleet security. There are numerous blockchain-based uses for drones.¹²⁷ First, blockchain technology can be used to organize identity management. As a result, the setup for air traffic control may be made safe, accurate, and efficient. Lastly, insurance companies can use trustworthy records to settle disputes.¹²⁸

¹²⁰ A. U. Makarfi, K. M. Rabie, O. Kaiwartya, X. Li and R. Kharel, "Physical layer security in vehicular networks with reconfigurable intelligent surfaces", Proc. IEEE 91st Veh. Technol. Conf. (VTC-Spring), pp. 1-6, May 2020

¹²¹ A. U. Makarfi, K. M. Rabie, O. Kaiwartya, K. Adhikari, G. Nauryzbayev, X. Li, et al., "Toward physical-layer security for Internet of Vehicles: Interference-aware modeling", IEEE Internet Things J., vol. 8, no. 1, pp. 443-457, Jan. 2021.

¹²² K. M. Awan, M. Nadeem, A. S. Sadiq, A. Alghushami, I. Khan and K. Rabie, "Smart handoff technique for Internet of Vehicles communication using dynamic edge-backup node", Electronics, vol. 9, no. 3, pp. 1-20, 2020

¹²³ O. A. Saraereh, A. Ali, I. Khan and K. Rabie, "Interference analysis for vehicle-to-vehicle communications at 28 GHz", Electronics, vol. 9, no. 2, pp. 262, Feb. 2020

¹²⁴ T. Rana, A. Shankar, M. K. Sultan, R. Patan and B. Balusamy, "An intelligent approach for UAV and drone privacy security using blockchain methodology", Proc. 9th Int. Conf. Cloud Comput. Data Sci. Eng., pp. 162-167, Jan. 2019

¹²⁵ M. Sarfraz, "Capacity optimization of next-generation UAV communication involving non-orthogonal multiple access", Drones, vol. 6, no. 9, pp. 1-15, 2022

¹²⁶ A. S. Shah and M. A. Karabulut, "Optimization of drones communication by using meta-heuristic optimization algorithms", Sigma J. Eng. Natural Sci., vol. 40, no. 1, pp. 108-117, 2022

¹²⁷ B. Li, Z. Fei and Y. Zhang, "UAV communications for 5G and beyond: Recent advances and future trends", IEEE Internet Things J., vol. 6, no. 2, pp. 2241-2263, Apr. 2019

¹²⁸ A. Douglas, IBM Applies for Blockchain Patent to Address Drone Fleet Security, Feb. 2018, [online] Available: <https://www.commercialdroneprofessional.com/ibm-applies-for-blockchain-to-address-drone-fleet-security/> (last accessed on 11-06-2024)

Energy Trading¹²⁹

Peer-to-peer energy trading platforms where users can buy and sell energy directly. Enhancing grid efficiency and integrating renewable energy sources.

International Trade and Remittances¹³⁰

Cross-border payment ensures faster, cheaper, and more secure international money transfers. Streamlining trade finance processes and reducing fraud through blockchain-based solutions.

Charity and Aid Distribution¹³¹

Ensuring donations are used as intended through transparent blockchain tracking. Directly distributing aid to beneficiaries, reducing overhead and intermediaries. People from different parts of the world can transfer donations in the form of cryptocurrencies where the value will be uniform.

Gaming and Virtual World¹³²

Creating robust, decentralized in-game economies with real-world value. Ownership of Digital Assets ensures true ownership of in-game items and assets.

Decentralized Finance (DeFi)¹³³

Platforms enable users to lend or borrow funds without traditional banks. Stablecoins are cryptocurrencies pegged to fiat currencies to reduce volatility and facilitate transactions. Users earn returns on their crypto holdings by providing liquidity to decentralized exchanges.

Virtual money has several desirable attributes that draw in a growing number of different types of clients that employ a particular technology for their reasons.¹³⁴ The

¹²⁹ Chenghua Zhang, Jianzhong Wu, Chao Long, Meng Cheng, Review of Existing Peer-to-Peer Energy Trading Projects, Vol 105, Elsevier, Pages 2563-2568(2017)

¹³⁰ Sandra Lavenex, Opening up the international trade arena: 'new trade issues' and the EC's international presence, 23(3), oxford review of education, 401-405. (2018).

¹³¹ Shin, E.-J.; Kang, H.-G.; Bae, K. A Study on the Sustainable Development of NPOs with Blockchain Technology. Sustainability, 12(5) , pg 6158 (2020)

¹³² Diana Qiao, This Is Not a Game: Blockchain Regulation and Its Application to Video Games, 40 N. ILL. U. L. REV. 176 (2020)

¹³³ Stefan Kitzler, Friedhelm Victor, Pietro Saggese, Bernhard Haslhofer, Disentangling Decentralized Finance (DeFi) Compositions, Vol 17, ACM Journals, pp 1–26 (2023)

¹³⁴ B. Mobasher, "Data mining for web personalization" in The Adaptive Web, Berlin, Germany:Springer, vol. 4321, pp. 90-135, 2007

creation of cryptocurrencies, the newest category of digital assets, has been one of the most significant technological developments in recent years. Especially in 2021, the bitcoin business played a pivotal role in promoting several significant breakthroughs. Three crucial phases have been experienced by cryptocurrencies to reach their remarkable development: acceptance, innovation, and integration. However, it's also important to think about the potential of cryptocurrencies and what it means for every one of us. It's interesting to note that a lot of celebrities are starting to identify with bitcoin assets; cryptocurrency is no longer only a topic for investors.¹³⁵ The predictions for cryptocurrencies' future and their implications for investors are explained in the debate that follows. It could be useful to comprehend the possible future of cryptocurrencies in order to be prepared for changes that may occur in the ecosystem over the course of the next five to ten years.¹³⁶

¹³⁵ Paul Guirguis and Sue Ross, Celebrity Crypto Fines Flag Lessons for Lawyers, BLOOMBERG LAW, (Oct. 13, 2022, 4:01 AM), <https://news.bloomberglaw.com/us-law-week/celebrity-crypto-fines-flag-lessons-for-lawyers>. (last accessed on 22-05-2024)

¹³⁶ Ibid

CHAPTER 3

THE CONSTITUTIONAL PROVISIONS AFFECTED BY
THE BANNING OF CRYPTO ASSETS

The question of transactions done through cryptocurrencies came into the eyes of the Court following the case *Internet and Mobile Association of India v Reserve Bank of India*.¹³⁷ The brief facts of the case are as follows. The Reserve Bank of India issued that Virtual currencies and other technological breakthroughs can enhance financial system efficiency and inclusivity. However, virtual currencies (VCs), also known as cryptocurrencies and crypto assets, raise concerns about consumer protection, market integrity, and money laundering, among others. The Reserve Bank has warned users and traders about the risks of dealing with virtual currencies, such as Bitcoin. To mitigate risks, RBI-regulated firms will no longer provide services to individuals or businesses dealing with or settling VCs, effective immediately. Regulated entities that already supply such services must terminate the agreement within a designated time frame.¹³⁸

CASE LAW OF CRYPTOCURRENCY

Following which a circular¹³⁹ was later issued by the RBI under Section 35(1)(a) and Section 56 of the Banking Regulation Act, 1949 and Section 45JA and 45L of the Reserve Bank of India Act, 1934 and Section 10(2) read with Section 18 of the Payment and Settlement Systems Act, 2007. This circular made a blanket ban on the cryptocurrencies in India, it made it nearly hard for exchanges and traders to function within the country's financial system.¹⁴⁰ It stated that the Reserve Bank had issued public notices on December 24, 2013, February 01, 2017, and December 05, 2017,

¹³⁷ *Internet and Mobile Association of India v Reserve Bank of India*, AIR 2021 SUPREME COURT 2720

¹³⁸ Reserve Bank of India, “Statement on Developmental and Regulatory Policies”, (Issued on April 5, 2018)

¹³⁹ Reserve Bank of India, “Prohibition on dealing in Virtual Currencies (VCs)”, DBR.No.BP.BC.104 /08.13.102/2017-18 (Issued on April 6, 2018)

¹⁴⁰ SCC Times, Cryptocurrency in India: An Unregulated Safe Haven For Money Laundering?, <https://www.sconline.com/blog/post/2021/09/28/cryptocurrency-in-india/> (last accessed on 22-06-2024)

warning users, holders, and traders of virtual currencies, including Bitcoins, about the risks involved in dealing with them.¹⁴¹ The Reserve Bank had decided to prohibit regulated businesses from trading in or supporting the payment of VCs due to associated risks. Services offered include account maintenance, registration, trading, settlement, clearing, lending against virtual tokens, accepting collateral, building exchange accounts, and transferring funds for VC purchases and sales. The regulated entities were also asked to exit from such relationships within a period of 3 months from the date of the circular.¹⁴²

This circular was a major setback to the then traders of the cryptocurrencies as it was the time when crypto investments were more. Many newspaper articles and other relevant sites have cited that it was a time when crypto investments would go high. For example, according to a report of 2018 it was stated that Bitcoin accounts for more than 50% of the total cryptocurrency market capitalization. It was worth approximately \$317 billion. Ether was the second-largest digital currency, with a market capitalization of \$68.9 billion.¹⁴³

The Internet and Mobile Association of India (IAMAI), a well-known non-profit organization that represents the interests of the digital economy, took on the task of challenging the RBI circular. The IAMAI claimed that the circular infringed fundamental rights guaranteed by the Indian Constitution, particularly Article 19(1)(g), which ensures the freedom to practice any profession, trade, or business.¹⁴⁴ After navigating the judicial system, the matter eventually reached the Supreme Court of India. In March 2020, a three-judge bench of the Supreme Court issued a landmark verdict declaring the RBI's circular invalid.¹⁴⁵ The court's decision was a huge success for India's cryptocurrency business, as well as a strong reinforcement of the concepts of proportionality and fairness in regulatory activities. The court ruled that the RBI's circular was not supported by a well-thought-out decision-making process and that the

¹⁴¹ Supra note 138

¹⁴² The Economic Times, SC lifts curbs on use of cryptocurrency, RBI circular declared unreasonable, <https://economictimes.indiatimes.com/markets/stocks/news/sc-lifts-curbs-on-use-of-cryptocurrency-rbi-circular-declared-unreasonable/vedioshow/74470928.cms> (last accessed on 22-06-2024)

¹⁴³ Arjun Karpal, Cryptocurrencies could be worth \$1 trillion in 2018, CEO says, CNBC, 18 Dec 2017, 6:47 AM EST

¹⁴⁴ BTC Wires, Indian Law, and Cryptocurrency, <https://www.btcwires.com/glossary/indian-law-and-cryptocurrency/> (last accessed on 19-05-2024)

¹⁴⁵ Supra note 142

central bank had failed to demonstrate any serious damage caused by virtual currencies that would justify such severe measures.¹⁴⁶ The court's ruling was hailed as a victory for the ideals of individual liberty, freedom of trade, and occupation. It delivered a clear message to regulatory authorities that any restriction on basic rights must be justified by sound reasoning and a careful examination of the potential consequences.¹⁴⁷ While cryptocurrencies are not outright banned in India, the lack of a clear regulatory framework and the government's cautious approach have created an environment of uncertainty for investors and businesses operating in the cryptocurrency space.¹⁴⁸ The Supreme Court's ruling lifted the RBI's banking ban, allowing banks and financial institutions to provide services to cryptocurrency exchanges and traders without the fear of regulatory repercussions.¹⁴⁹ Despite the Supreme Court's decision in 2020 to abolish the banking ban, the RBI has continued to express concerns regarding cryptocurrencies.¹⁵⁰ The central bank's approach has been influenced by concerns about financial stability, investor protection, and the possibility of cryptocurrencies being used for illegal purposes. The RBI has regularly expressed worries about cryptocurrencies, citing potential financial instability, money laundering, and consumer protection issues. The RBI has often called for an outright ban on cryptocurrencies in India, noting the risks they pose to the country's financial system.¹⁵¹ During its November 2021 presentation to the Parliamentary Standing Committee on Finance, the RBI reiterated its position on banning private cryptocurrencies. When the Indian government was considering introducing the Cryptocurrency and Regulation of Official Digital Currency Bill in 2021, the RBI reportedly urged for a total ban on private cryptocurrencies, citing concerns about potential financial instability and investor protections.¹⁵² Throughout these instances, the RBI has continuously stated that private

¹⁴⁶ Reuters, India's top court strikes down RBI banking ban on cryptocurrency, <https://www.reuters.com/article/business/indias-top-court-strikes-down-rbi-banking-ban-on-cryptocurrency-idUSKBN20R0KW/> (last accessed on 19-05-2024)

¹⁴⁷ Ibid

¹⁴⁸ James, B. ,Cryptocurrency: An overview on its impact on Indian Economy, International Journal of Creative Research Thought .695-698 (2018).

¹⁴⁹ Supra note 146

¹⁵⁰ Financial Express, Cryptocurrency ban to be made explicit; Govt to introduce Bill soon, <https://www.financialexpress.com/money/cryptocurrency-ban-to-be-made-explicit-govt-to-introduce-bill-soon-2205896/> (last accessed on 22-06-2024)

¹⁵¹ David Adler, Silk Road: The Dark Side of Cryptocurrency, Fordham Journal of Corporate and Financial Law, FEBRUARY 21, 2018, <https://news.law.fordham.edu/jcfl/2018/02/21/silk-road-the-dark-side-of-cryptocurrency/>

¹⁵² Arabian Business, Crypto investors get a shock as India drafts bill to ban digital currency, <https://www.arabianbusiness.com/money/wealth/alternative-assets/462324-crypto-investors-get-shock-as-india-circulates-draft-bill-to-ban-the-digital-currency> (last accessed on 22-06-2024)

cryptocurrencies pose major hazards to the country's financial system and should be prohibited or highly controlled.¹⁵³ If the Government is to take the opinion of the RBI and brings a ban on crypto assets, then what kinds of fundamental rights are being violated?

RIGHT TO TRADE AND DO BUSINESS UNDER 19(1)(g)¹⁵⁴ AND 301¹⁵⁵

Cryptocurrencies represent a new frontier in money and technology, allowing individuals and organizations to engage in innovative kinds of trade and commerce. Proponents believe that a complete ban on cryptocurrency will hinder innovation and deny citizens the ability to participate in a thriving global sector.¹⁵⁶ Article 19(1)(g) states that citizens have the basic freedom to practice any profession, trade, or business, subject to reasonable restrictions established in the public good. This basic right has been central to the legal debate over the regulation of virtual currencies in India. Article 301 of the Indian Constitution deals with the freedom of trade, commerce, and intercourse within the territory of India. This ensures economic unity within the country and the free movement of goods and services across borders but with reasonable restrictions. Thus people who are dealing in cryptocurrencies like mining crypto assets, buying and selling them, and even trading these assets do so under the fundamental right guaranteed under Article 19(1)(g) and constitutional right under Article 301.

Both of these articles do not speak about the type of activities that can fall under the expression of trade and business. As a result, the morality of a specific activity does not serve as an express basis for evaluating whether or not something is protected under Article 19(1)(g). However, public morality can be used to justify reasonable constraints on this freedom under Article 19(6). This approach was endorsed by Subba Rao J. in *Krishna Narula*¹⁵⁷, which ruled that while morality might be used to justify constraints, it cannot limit the extent of any basic right. This means that Article 19(1)(g) and 301 guarantees every citizen's freedom of trade and business, which may only be limited by

¹⁵³ News18, A Vehement 'No' to Cryptocurrencies but Blockchain is 'Welcome', Arun Jaitley Says, <https://www.news18.com/news/business/a-vehement-no-to-cryptocurrencies-but-blockchain-is-welcome-arun-jaitley-says-1648003.html> (last accessed on 22-06-2024)

¹⁵⁴ INDIA CONST. art. 19, cl. 1, cl. g

¹⁵⁵ INDIA CONST. art. 301

¹⁵⁶ Saiedi, E., Broström, A. & Ruiz, F. Global drivers of cryptocurrency infrastructure adoption. *Small Bus Econ* 57, 353–406 (2021)

¹⁵⁷ *Krishna Kumar Narula Etc vs The State Of Jammu And Kashmir & Ors*, AIR 1967 SUPREME COURT 1368

an ex-post restriction established by the legislation and must be reasonable under Article 19(6). Speaking of restrictions concerning public interest, it is a common notion of the State to prohibit those trade and business activities coming under the purview of *res extra commercium*. This is very famous Roman doctrine which means that certain things were incapable of private ownership. In India, it was held in *R.M.D. Chambarbaugwala vs. Union of India*¹⁵⁸ the Supreme Court dealt mostly with gambling, and Justice S.R Das inconspicuously referred to such intrinsically destructive practices as "Res Extra Commercium." The Supreme Court ruled that the liquor business was a trade and hence subject to reasonable regulations under Article 19(6) of the constitution.¹⁵⁹

If crypto assets are to be classified as commodities coming under the purview of *res extra commercium* it must be based on public interest and its potential impact on the society.¹⁶⁰ Though the RBI has raised their concern over the use of crypto assets, such a use has not affected the public interest immensely.¹⁶¹ If cryptocurrencies are deemed to pose a significant threat to the country's financial stability or public interest, there could be an argument for classifying them as *res extra commercium*, thereby restricting their private ownership and commercial exploitation. If the unregulated and decentralized nature of cryptocurrencies is considered a threat to public order or national security, there could be an argument for treating them as *res extra commercium*, subject to strict control and regulation by the state.¹⁶² The energy-intensive nature of cryptocurrency mining and the associated environmental impact has been a subject of debate. If the environmental impact of cryptocurrencies is deemed to be detrimental to the public interest or unsustainable, it could potentially be considered as a factor in classifying them as *res extra commercium*.¹⁶³ Some proponents claim that cryptocurrencies have the potential to promote financial inclusion, innovation, and economic progress, all of which benefit society.¹⁶⁴ However, if the negative societal

¹⁵⁸ *R.M.D. Chambarbaugwala vs. Union of India* 1957 SCR 930

¹⁵⁹ *Supra* at note 146.

¹⁶⁰ Satvik Varma, The Legal Status of Cryptocurrencies in India, 56 *ECON. & POL. WKLY.* 15, 16 (2021)

¹⁶¹ Reserve Bank of India, Circular on Prohibition on Dealing in Virtual Currencies (VCs), RBI/2017-18/154 (Apr. 6, 2018)

¹⁶² Anirudh Burman, Regulation of Crypto Assets in India, 55 *ECON. & POL. WKLY.* 12, 14 (2020)

¹⁶³ Alex de Vries, Bitcoin's Growing Energy Problem, 2 *JOULE* 801, 802-803 (2018).

¹⁶⁴ *Supra* note 156

repercussions of cryptocurrencies are determined to outweigh their potential benefits, there may be a case for categorizing them as *res extra commercium* in order to defend the greater public interest.

But it would be difficult to classify cryptocurrencies as *res extra commercium* (things outside commerce) under the current legal framework in India. Cryptocurrencies are supposed to be decentralized and privately held by people or businesses.¹⁶⁵ Unlike natural resources such as air, water, and public roads, which are considered public goods, cryptocurrencies are created and traded using private networks and exchanges. Classifying them as *res extra commercium* would contradict their primary design and purpose¹⁶⁶. Cryptocurrencies are a new and growing technology in the financial sector. At this point, classifying them as *res extra commercium* could hinder innovation and prevent individuals and firms from participating in a fast-growing global market.¹⁶⁷ There is currently no legal precedent in India for classifying digital or virtual assets like cryptocurrencies as *res extra commercium*. This regulatory framework may include measures like licensing regulations, anti-money laundering provisions, consumer protection principles and taxation policies. Articles 19(1)(g) and 301 of the Indian Constitution provides the rights to engage in any profession, trade, or business. Classifying cryptocurrencies as *res extra commercium* and forbidding their private ownership and exchange may infringe these fundamental and constitutional rights respectively, unless there are compelling reasons and a well-reasoned decision-making process.¹⁶⁸

THE RIGHT TO PROPERTY UNDER ARTICLE 300A¹⁶⁹

As discussed above one of the major debatable questions is whether Cryptocurrency should be classified under *res extra commercium* or property. The supporters of Crypto Assets claim that though crypto assets are used in transactions, they possess every

¹⁶⁵ Nakamoto, S. Bitcoin: A peer-to-peer electronic cash system, (2008).

¹⁶⁶ Vitalik Buterin, Ethereum: A Next-Generation Smart Contract and Decentralized Application Platform, Whitepaper, 2014

¹⁶⁷ Hileman, Garrick and Rauchs, Michel, 2017 Global Cryptocurrency Benchmarking Study (April 6, 2017).

¹⁶⁸ DBS, Should cryptocurrency be regulated?, https://www.dbs.com/blockchain/regulating-cryptocurrency.html#fn_2 (last accessed on 22-06-2024)

¹⁶⁹ INDIA CONST. art. 300A, amended by The Constitution (44th Constitution Amendment Act), 1978

feature of a property. Scarcity and exclusivity are key characteristics of property rights. Cryptocurrencies are supposed to be scarce, with a fixed and limited quantity. This scarcity is frequently incorporated into the underlying blockchain system, ensuring that the supply of a certain cryptocurrency cannot be arbitrarily raised. This attribute is similar to the scarcity of traditional forms of property, such as land or natural resources.¹⁷⁰ Similar to traditional forms of property, cryptocurrencies can be transferred, exchanged, or traded between individuals or businesses. This transferability is provided by the underlying blockchain technology, which allows for secure and transparent transactions. Distributed ledger technology (DLT) is computer software that runs on peer-to-peer networks. It provides a transparent, verifiable, and tamper-resistant transaction management system through a consensus mechanism, rather than a trusted third-party intermediary to ensure execution. DLTs typically use two approaches to confirm and secure transactions, however the exact mechanics may differ. First, most DLTs use cryptographic public-private keys. Pairs are used to secure and authorize entries in a ledger. The public key serves as a public address for transactions, similar to a bank account or email address. The private key enables the person or entity associated with the public key to initiate transactions, similar to how a bank account PIN authorized funds transfers or an email password allows message creation. This cryptographic key pair secures peer-to-peer transactions by allowing only the holder of the private key to begin them.¹⁷¹ Alienability is closely related to transferability, as it refers to the ability to dispose of or transfer ownership of property. Cryptocurrencies have a high level of alienability since they may be freely transferred, bought, or sold to others, much like other forms of property. Crypto currency has been regarded as a property that is capable of being identified and segregated.¹⁷² This alienability of cryptocurrencies aligns with the fundamental principles of property rights, where owners have the freedom to dispose of or transfer their property as they see fit. The introduction of smart contracts and programmable cryptocurrency transactions improves the transferability and alienability of these digital assets. Smart contracts automate transactions based on specified circumstances, allowing for more complicated transfer situations and increasing the alienability of cryptocurrencies. The decentralized

¹⁷⁰ Joshua A.T. Fairfield, *Bitproperty*, *Southern California Law Review*, Vol 88:805, 2015

¹⁷¹ Carla L. Reyes, *Conceptualizing Cryptolaw*, 96 *Neb. L. Rev.* 384 (2017)

¹⁷² *ByBit Fintech Ltd v Ho Kai Xin*, (2023) SCHG 199

ledger allows contract ware to operate independently, eliminating the issues associated with self-help. It makes sense to term it a smart contract because it is capable of performing more than a typical contract.¹⁷³

According to Lord Wilberforce's decision in *National Provincial Bank Ltd v Ainsworth*¹⁷⁴ Cryptocurrency holds all four features of a property. The computer-readable strings of characters in cryptocurrency are "sufficiently distinct to be capable of then being allocated uniquely to an account holder on that particular network". The process of identifying cryptocurrencies is broadly similar to how banks keep track of their customers' bank accounts. The combination of an account holder's public key (the code that allows a user to receive cryptocurrencies into their account) and private key (the second code that is only available to the account holder), as well as the requirement that the two keys be combined to record a cryptocurrency transfer, means that cryptocurrencies are sufficiently identifiable by third parties. Third parties can obtain cryptocurrency through active trading marketplaces. Blockchains retain a public record of a cryptocoin's life history, and a cryptocoin is fully recognised until it is spent using the private key. Cryptocurrency thus preserves some permanency or stability. Because bitcoin is property, it can be held in trust if the trust's ingredients are present. The court's decision that bitcoin is property implies that cryptocurrencies can be beneficially owned and hence did not form part of the pool of assets for distribution to unsecured creditors.¹⁷⁵ Cryptocurrencies are not limited by geography or jurisdiction, allowing for smooth cross-border transactions and transfers. This worldwide reach and ease of transferability across borders provide a substantial advantage over traditional financial systems, which sometimes face problems and restrictions in cross-border transactions. This makes another reason why crypto assets can be regarded as a property.¹⁷⁶ The right to property is protected under Article 17 of the EU Charter of Fundamental Rights¹⁷⁷ and Article 1 of Protocol 1 to the European Convention on Human Rights.¹⁷⁸ This right

¹⁷³ Max Raskin, *The Law and Legality of Smart Contracts* 1 GEO. L. TECH. REV. 305 (2017)

¹⁷⁴ *National Provincial Bank Ltd v Ainsworth* [1965] AC 1175 (HL) at 1247–1248.

¹⁷⁵ Victoria Rea, *Cryptocurrencies as property*, Wilson Harle Barristers & Solicitors, 13 Oct 2020

¹⁷⁶ Joshua R. Hendrickson, Thomas L. Hogan, William J. Luther, *The Political Economy of Bitcoin*, *Economic Inquiry*, Vol 54 Issue 2, Apr 2016, pgs 925-939

¹⁷⁷ Charter of Fundamental Rights of the European Union, art. 17, 2012 O.J. (C 326) 391, 399

¹⁷⁸ Protocol to the Convention for the Protection of Human Rights and Fundamental Freedoms art. 1, Mar. 20, 1952, 213 U.N.T.S. 262.

has a broad scope, including not just physical goods but also intangible assets and pecuniary situations such as corporate shares, intellectual property rights, and a firm's goodwill. However, the rights must be sufficiently established and enforced to qualify for property rights protection. If cryptocurrencies are considered protected property, potential interferences may include deprivation (such as significant devaluation through blacklisting), regulation of their usage (such as confiscation/seizure), or other factual repercussions affecting their possession/control. Even users who store their bitcoins in third-party wallets may be entitled to the same property rights protections.

According to Black's Law Dictionary (11th ed 2019), property refers to the collective rights to a valuable resource, such as land, chattel, or intangible assets. Property is commonly referred to as a "bundle of rights." These rights include the right to possess and use, to exclude and the right to transfer—also known as a bundle of rights. Any exterior property with rights of possession, use, and enjoyment. GAAP(Generally Accepted Accounting Principles) created by FASB(Financial Accounting standards Board) categorizes Cryptos to be intangible assets. According to IndAs 38 of Indian Accounting Standards states “non monetary asset without physical substance is an intangible asset”. Part 16 of Ind AS 21 states that “the essential feature of a non monetary item is the absence of a right to receive a fixed or determinable number of units of currency.” Part 6.1 of Ind AS 26 states that “ an intangible asset is an identifiable non monetary asset, without physical substance, held for use in the production or supply of goods or services for the rental to others or for administrative purposes.” Para 7 of Ind AS 11 says “Monetary items are money held and assets and liabilities to be received or paid in fixed or determinable amounts of money. Non-monetary items are assets and liabilities other than monetary items.” According to the Financial Action Task Force(FATF), recommendations of October 2018, “ A virtual asset is a digital representation of value that can be digitally traded, or transferred and can be used for payment or investment purposes. Virtual assets do not include digital representations of fiat currency, securities and other financial assets that are already covered elsewhere in the FATF Recommendations. For the purposes of applying the FATF Recommendations, countries should consider virtual assets as property proceeds funds, funds or other assets or other corresponding value.”In *AA v Persons*

*Unknown*¹⁷⁹Bryan J's decision brings much-needed clarification to the position of Bitcoin, which has been unknown for some time. It's also fascinating to note how much weight the Judge gives to the UK JT's statement on crypto assets. His sound decision-making could have far-reaching implications. To begin, it means that individuals and corporations susceptible to similar attacks may be able to obtain an injunction freezing stolen digital assets, given that Bitcoin is now considered property under English law. Orders may also be placed with the relevant exchange to identify account holders. In *B2C2 Ltd v Quoine*¹⁸⁰, however, both parties were willing to assume that virtual currencies could be treated as property, and Simon Thorley IJ agreed, holding that cryptocurrencies meet all of the requirements of the classic definition of property, namely, "it must be definable, identifiable by third parties, capable in its nature of assumption by third parties, and have some degree of permanence or stability." He found that while cryptocurrencies are not considered legal tender in the sense of being a controlled currency issued by a government, they do have the fundamental attribute of intangible property, which is an identified thing of value.

Coming to Indian Context, intangible property can be considered as a property. Since virtual currencies have been accepted by many countries as a property, it will come under the intellectual property. In *Lachhman Dass v Jagat Ram & Ors*¹⁸¹, it was held that holding a property was a constitutional right under Article 300A of the Constitution of India and it is also a human right. Therefore, the right to property cannot be taken away except in accordance with the provisions of a statute. A statute on ban of cryptocurrencies will certainly affect this constitutional right. In *K.T Plantation Pvt Ltd v State of Maharashtra*¹⁸²The Supreme Court's Constitution Bench ruled that Article 300A's definition of 'property' encompasses all legal interests, including intangibles such as copyrights and intellectual property. If cryptocurrencies are classified as property under Indian law, Article 300A will apply. The state would be able to control or place restrictions on cryptocurrency ownership, transfer, and use, as long as such measures are legally supported and serve a valid public purpose. Article 300A states

¹⁷⁹ *AA v Persons Unknown who demanded Bitcoin on 10th and 11th October 2019 and others* [2019] EWHC 3556 (Comm)

¹⁸⁰ *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I)

¹⁸¹ *Lachhman Dass v Jagat Ram & Ors*, 2007 (10) SCC 448

¹⁸² *K.T Plantation Pvt Ltd v State of Maharashtra*, 2011 (9) SCC 146

that any deprivation of property must be "by authority of law." A comprehensive prohibition of cryptocurrencies without due process or a well-reasoned decision-making process may violate this Article. The Supreme Court declared in *Maneka Gandhi v. Union of India*¹⁸³ that "the procedure prescribed by law for depriving a person of his property must be fair, reasonable, and just, and not arbitrary, fanciful, or oppressive." In *Minerva Mills Ltd. v. Union of India*¹⁸⁴ The Supreme Court ruled that the reasonableness of a restriction on property rights must be determined by taking into account a variety of factors, including the nature of the right, the purpose of the restriction, and the scope and urgency of the restriction.

If a prohibition on cryptocurrency is deemed arbitrary or without a valid rationale, it may be challenged as a violation of Article 300A. If cryptocurrencies are regarded property and a prohibition effectively deprived individuals of their holdings, the state may be forced to compensate, unless the restriction is justified by particular public interest grounds and fulfills the reasonableness and proportionality standards. While Article 300A establishes a constitutional basis for the regulation of property rights, its application to crypto assets is contingent on their legal status, the specific regulatory measures proposed, and the court's interpretation of the reasonableness and proportionality of such measures in light of public interest and fundamental rights.

THE RIGHT TO LIFE, LIBERTY, AND PRIVACY UNDER ARTICLE 21

Cryptocurrency and blockchain raise severe concerns about privacy, crime, national security, and social welfare. Privacy should be balanced against legitimate state needs such as crime prevention and investigation, as well as national security threats. Social welfare measures are another valid state priority that must be balanced with the Right to Privacy. Because bitcoin contains a social interest component, the state has every right to balance privacy with social welfare while regulating cryptocurrencies for societal benefit, in addition to criminal prevention, investigation, and national security.¹⁸⁵ Article 21 of the Indian Constitution concerns the protection of life and personal liberty. It declares, "No person shall be deprived of his life or personal liberty

¹⁸³ *Maneka Gandhi v. Union of India* 1978 AIR 597

¹⁸⁴ *Minerva Mills Ltd. v. Union of India*, 1980 AIR 1789

¹⁸⁵ Maulik Vyas, Data Privacy will require a balancing act between personal liberty and sovereign securities, ET Bureau, (Jan 26, 2022, 04:26:00 PM IST)

except according to a procedure established by law."The topic of whether cryptocurrencies can be included within the scope of the right to life and personal liberty guaranteed by Article 21 of the Indian Constitution is complex and changing. While there is no clear precedent or case law that expressly addresses this subject, we can analyze it using numerous Supreme Court decisions that have interpreted the scope and application of Article 21. In the landmark case of *Maneka Gandhi v. Union of India*¹⁸⁶ The Supreme Court expanded the scope of Article 21 by ruling that the right to life and personal liberty includes the right to live with human dignity, the right to livelihood, the right to privacy, and the right to personal liberty. The Court stated that the term "personal liberty" in Article 21 has the broadest scope and encompasses a wide range of rights that contribute to man's personal liberties. The Supreme Court ruled that, while the right to property is not a fundamental right under the Indian Constitution, it is a constitutional right and an essential component of the right to life and personal liberty under Article 21.

The right to personal data protection is recognised as part of the right to privacy and private life under Article 8 of the European Convention on Human Rights (ECHR)¹⁸⁷ and Article 7 of the European Union's Charter of Fundamental Rights¹⁸⁸. While Article 8 CFR directly specifies data protection, Article 7 CFR, which addresses respect for private and family life, is construed to include personal data protection due to its connection to Article 8 ECHR.¹⁸⁹ The right to data privacy is violated when public authorities gather, keep, share, or handle any data about an identified or identifiable natural person in a way that interferes with their "private life." Importantly, data privacy safeguards can apply to public data that the government collects and stores on a systematic basis. "Systematic" collection does not always necessitate large-scale data collecting or automation. Even isolated cases, including as taping a suspect¹⁹⁰, publicly

¹⁸⁶ Supra at 184

¹⁸⁷ Christoph Grabenwarter, *European Convention on Human Rights*, München: C.H. Beck, 2014.

¹⁸⁸ The EU Charter of Fundamental Rights, Chapter 2 Article 7, Official Journal of the European Communities, 18.12.2000

¹⁸⁹ Vedsted-Hansen J. In: Peers S, Hervey T, Kenner J, et al. (eds), *The EU Charter of Fundamental Rights*. Verlagsgesellschaft, 2014, Art. 7 CFR.

¹⁹⁰ *Perry v United Kingdom*, 63737/00 Eur. Ct. H.R. (2003)

publishing videos/photos¹⁹¹, or recording protestors¹⁹², have been deemed to violate data privacy rights under Article 8 of the ECHR. However, simply observing public spaces without recording is not deemed a violation.¹⁹³

Applying these concepts to public blockchain data, just browsing or searching the blockchain is unlikely to violate data protection rights. However, law enforcement's systematic collection, storage, and use of blockchain data may violate these rights. Article 17 of the International Covenant on Civil and Political Rights (ICCPR) prohibits arbitrary or unlawful interference with privacy, family, home, or correspondence, as well as attacks on honor and reputation.¹⁹⁴In its General Comment No. 16, the Human Rights Committee construed the right to privacy to include diverse characteristics of physical and informational privacy that are necessary for the safeguarding of human dignity and the enjoyment of other rights.¹⁹⁵The American Convention on Human Rights Article 11 guarantees the right to privacy, which includes the inviolability of the home, communication, and private life.¹⁹⁶The Inter-American Court of Human Rights recognises the intimate relationship between the right to privacy and the right to life, stating that the preservation of privacy is a method to ensure the enjoyment of the right to life. The Court emphasized the close relationship between the right to privacy and the right to life, stating: "The protection of private life encompasses a series of factors related to the dignity of the individual, since the individual has the right to effective protection against arbitrary or unlawful interference with his privacy, family, home or correspondence, as well as unlawful attacks on his honor or reputation."¹⁹⁷According to Article 12 of the Universal Declaration of Human Rights (UDHR), individuals are

¹⁹¹ Chamber judgment in the case of *Peck v United Kingdom*, 44647/98 Eur. Ct. H.R.(2003)

¹⁹² *Sciacca v Italy*, 400 Eur. Ct. H.R.(2006)

¹⁹³ *Pierre HERBECQ and the Association LIGbr DES DROITS DE L'HOMME' v/BELGIUM*, 32200/96 and 32201/96 Eur. Ct. H.R.(1998)

¹⁹⁴ International Covenant on Civil and Political Rights (adopted 19 December 1966, entered into force 23 March 1976) 999 UNTS 171 art 17.

¹⁹⁵ CCPR General Comment No. 16: Article 17 (Right to Privacy) The Right to Respect of Privacy, Family, Home and Correspondence, and Protection of Honour and Reputation, Adopted at the Thirty-second Session of the Human Rights Committee, on 8 April 1988

¹⁹⁶ American Convention on Human Rights, O.A.S. Treaty Series No. 36, 1144 U.N.T.S. 123, *entered into force* July 18, 1978 art 17

¹⁹⁷ *Gudiel Álvarez et al. ("Diario Militar") v. Guatemala* Judgment on Merits, Reparations and Costs, Inter-Am. Ct. H.R. (ser. C) No. 253 (Nov. 20, 2012)

protected from arbitrary interference with their private, family, home, or correspondence, as well as attacks on their honor and reputation¹⁹⁸. Everyone has the right to be protected by the law from such interference or attacks. While the UDHR does not directly associate privacy with the right to life, it does establish privacy as a basic human right that must be preserved. While the African Charter does not directly include the right to privacy, the African Commission on Human and Peoples' Rights has interpreted Articles 4 (the right to life) and 6 (the right to liberty and security of person) to include features of privacy.¹⁹⁹ While the particular terminology and interpretation may change across conventions, it is widely acknowledged that the right to privacy is inextricably tied to the right to life, human dignity, and the enjoyment of other fundamental rights. Violations of privacy can have serious consequences for a person's physical and psychological health, personal autonomy, and general quality of life.

In India, while the right to privacy is not officially mentioned in the Constitution, the Supreme Court has viewed it as an inherent aspect of the right to life and personal liberty guaranteed by Article 21. In *Kharak Singh v. State of Uttar Pradesh*²⁰⁰ The Court made noteworthy observations about the right to privacy, stating: a) "Life" in Article 21 refers not just to bodily existence but also to the right to live with human dignity. b) The right to privacy is a necessary component of personal liberty, and one's home is their "castle." c) The right to privacy is not absolute and may be subject to reasonable constraints for the purpose of preventing crime, maintaining public order, and other legitimate governmental objectives. This decision marked the first time the Supreme Court recognised the right to privacy as part of the greater right to life and personal liberty guaranteed by Article 21 of the Constitution. The Court's remark that the right to privacy is a necessary component of personal liberty paved the way for later privacy-related law in India. While the Court did not directly proclaim privacy to be a fundamental right, it recognised its significance and opened the ground for future judicial interpretation and development of the right to privacy. In the historic decision

¹⁹⁸ UN General Assembly. (1948). Universal declaration of human rights (Art 12). Paris.

¹⁹⁹ Michael Djangi and others v. Cameroon, Communication 39/90, African Commission on Human and Peoples' Rights [Af. Comm'n HPR] (Oct 1997)

²⁰⁰ *Kharak Singh v. State of Uttar Pradesh*, AIR 1963 SC 1295

of *Justice K.S. Puttaswamy v. Union of India*²⁰¹, the Supreme Court determined privacy to be a fundamental right, holding that it is inextricably linked to the right to life and personal liberty guaranteed by Article 21. The Court ruled that privacy is an inherent aspect of the right to life and personal liberty, and it is required for full enjoyment of both rights. The Court also recognised three dimensions of the right to privacy: (i) the right to be alone; (ii) the right to protect personal information; and (iii) the right to make private decisions. This decision represents a watershed moment in Indian constitutional law since it expressly recognised the right to privacy as a basic right, overturning previous rulings and outlining a thorough framework for its protection. It increased the ambit of Article 21 (right to life and personal liberty) to include the right to privacy, increasing India's protection of individual liberties. The decision has far-reaching consequences for many elements of daily life, including data protection, monitoring, and other areas where individuals' privacy concerns are concerned. In *Jayalakshmi & Ors v State of Tamil Nadu & Ors*,²⁰² the Madras High Court held that Right to Property has a close nexus to right of life within the meaning of Article 21 of the Constitution of India.

In the case of blockchains such as Bitcoin, transaction data comprising public crypto-wallet addresses/keys does not directly identify users. However, this pseudonymous data might be used with other data sources to indirectly identify the people behind certain wallet addresses. While the risk of re-identification is lower than for other types of personal data, Recital 26 of the Data Protection Directive states that the mere possibility of identifying individuals is sufficient to classify blockchain data as personal data protected by the right to privacy.²⁰³ At the same time, the reduced risk of re-identification may make it easier to demonstrate valid grounds for processing this data in accordance with existing laws and legal tests. However, altogether, transaction records and associated data on public blockchains are likely to be classified as indirectly identifying "personal data" subject to data protection laws. This means that authorities aiming to systematically collect, retain, and process this blockchain metadata for law

²⁰¹ Justice K.S. Puttaswamy (Retd.) and Anr. v. Union of India and Ors., (2017) 10 SCC 1

²⁰² *Jayalakshmi & Ors v State of Tamil Nadu & Ors*, W.P No 181 2021.

²⁰³ Kranenborg H. Protection of personal data. In: Peers, S, Hervey, T, Kenner, J, et al. (eds), *The EU Charter of Fundamental Rights*. Baden Baden: Nomos Verlagsgesellschaft, C.H. Beck und Hart Publishing, 2014, Art. 8.

enforcement or regulatory reasons would violate fundamental data privacy rights. Cryptocurrencies' fundamental properties, including as decentralization, pseudonymity, and the use of cryptographic techniques to safeguard transactions, have the potential to impact the right to privacy. The right to privacy encompasses the right to make decisions about one's private life and personal autonomy.²⁰⁴ The decision to use cryptocurrencies for trading or investment could be considered as a matter of personal autonomy and privacy. So, with the banning of cryptocurrencies, there can be a violation of Article 21 of the traders and investors and also the consumers of crypto assets. The concern of the Government is invalid but prohibition is not the only solution. Cryptocurrencies are designed to give a level of privacy and anonymity in financial transactions, potentially protecting users' personal financial information from unauthorized access or observation. From this standpoint, the use of cryptocurrencies could be interpreted as an exercise of the right to privacy in financial transactions.²⁰⁵

RIGHT TO FREE SPEECH AND EXPRESSION UNDER ARTICLE 19(1)(a)²⁰⁶

Freedom of speech and expression, as guaranteed by Article 19(1)(a) of the Indian Constitution, is one of the most valued and fundamental rights in a democracy. It permits people to openly communicate their thoughts, beliefs, and ideas without fear of censure or repercussions. However, this freedom is not total, and it is subject to reasonable constraints imposed by the state under Article 19(2) for specific reasons. Freedom of speech and expression is important because it promotes intellectual growth, fosters an informed population, and facilitates the exchange of ideas and the transmission of information. It serves as a safe channel for expressing dissent, criticism, and grievances against the government or any other entity, fostering accountability and transparency. International human rights legislation recognises freedom of expression as a fundamental human right. Article 19 of the Universal Declaration of Human Rights (UDHR)²⁰⁷ and Article 19 of the International Covenant on Civil and Political Rights (ICCPR)²⁰⁸ protect this right, which includes the "freedom to hold opinions without

²⁰⁴ Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 Harv. L. Rev. 193, 195 (1890)

²⁰⁵ Andreas M. Antonopoulos, *Mastering Bitcoin: Unlocking Digital Cryptocurrencies*, page 72, "O'Reilly Media, Inc.(2014)

²⁰⁶INDIA CONSTI, art. 19, § 1, cl. a

²⁰⁷ Universal Declaration of Human Rights, Dec. 8, 1948 art 19.

²⁰⁸ International Covenant on Civil and Political Rights (adopted 19 December 1966, entered into force 23 March 1976) 999 UNTS 171 art 19

interference and to seek, receive, and impart information and ideas through any media and regardless of frontiers." But these come with restrictions. These international instruments also recognise that exercising freedom of expression entails special duties and responsibilities, which may be subject to certain legal restrictions necessary for respecting the rights or reputations of others, or for the protection of national security, public order, public health, or morals.

In the case of *Ramesh Yeshwant Prabhoo v. Prabhakar Kashinath Kunte*,²⁰⁹ The Supreme Court ruled that "The freedom of speech and expression includes the freedom of propagation of ideas which is ensured by the freedom of circulation and the right to propagate one's views is within the constitutional protection accorded to freedom of speech and expression." In the case of *Arun Ghosh v. State of West Bengal*²¹⁰ the Court ruled that "The freedom of speech and expression carried immunity not only for the communication of ideas but also for the propagation of ideas, and the propagation of ideas was secured by the freedom of circulation. "The Court ruled that "The freedom of speech and expression carried immunity not only for the communication of ideas but also for the propagation of ideas, and the propagation of ideas was secured by the freedom of circulation." In *S. Rangarajan v. P. Jagjivan Ram*²¹¹ this decision upheld the premise that free speech and expression, including the ability to spread ideas, is a constitutionally protected right under Article 19(1)(a). However, the Court recognised that this freedom is not absolute and may be subject to reasonable constraints imposed by the state on specific grounds, such as public order and state security, as outlined in Article 19(2). This decision confirmed that the right to spread one's ideas is an essential component of freedom of speech and expression under the Indian Constitution, subject to reasonable restrictions imposed by the state in the interests of public order, decency, or morality.²¹² The Supreme Court, while upholding *Khushboo's*²¹³ right to propagate her views, emphasized that this right is subject to reasonable restrictions imposed by the state under Article 19(2) on grounds such as public order, decency, or morality. The

²⁰⁹ *Ramesh Yeshwant Prabhoo v. Prabhakar Kashinath Kunte*, 1996 AIR 1113

²¹⁰ *Arun Ghosh v. State of West Bengal*, AIR 1970 SUPREME COURT 1228

²¹¹ *S. Rangarajan v. P. Jagjivan Ram* 1989 SCC (2) 574

²¹² *Hamdard Dawakhana v. Union of India*, AIR 1960 SC 554

²¹³ *S. Khushboo v. Kanniammal & Anr.*, (2010) 5 SCC 600

Court also referred to various earlier judgments that have recognized the right to propagate ideas as an integral part of the freedom of speech and expression under Article 19(1)(a). The Court ruled that Article 19(1)(a) protects the basic right to free speech and expression, which includes the right to spread and circulate one's own thoughts and ideas. However, the Court observed that this freedom is not absolute and may be subject to reasonable restrictions imposed by the state under Article 19(2) on the basis of public order, decency, or morality. The *Shreya Singhal*²¹⁴ the decision is notable because it reinforced the constitutional protection of the ability to promote and circulate one's opinions and ideas as an essential component of freedom of speech and expression. However, it also stressed that this right is subject to reasonable constraints and might be prohibited by the state on particular grounds outlined in Article 19(2).

Individuals and organizations are free to communicate their thoughts, opinions, and ideas about cryptocurrencies, including campaigning for or against their use, regulation, or legalization. This feature of expression is protected by Article 19(1)(a), subject to reasonable restrictions. The use of cryptocurrency as a medium of exchange or investment may not always fall under the definition of "freedom of speech and expression" under Article 19(1)(a). The regulation or limitation of cryptocurrency transactions may be regarded as a justified restriction imposed by the state in order to regulate the economic and financial system, prevent money laundering, or defend the integrity of the nation's currency and economic security. Governments and traditional financial institutions do not issue or control cryptocurrencies like Bitcoin and Ethereum.²¹⁵ Instead, they use cryptographic techniques and a distributed network of computers to validate and record transactions. It is a new idea and the process of mining requires an individual to try a lot of number patterns which is a hectic job as well. The basic concept and technology of cryptocurrencies constitute a paradigm shift in how we see and use money. They challenge established financial systems and propose a new approach to digital transactions, with consequences for financial inclusion, privacy, and decentralization.

The right to spread one's beliefs and ideas is an essential component of freedom of speech and expression.²¹⁶ It includes the ability to spread, promote, and advocate for

²¹⁴ *Shreya Singhal v. Union of India*, (2015) 5 SCC 1

²¹⁵ Andreas M. Antonopoulos, *Mastering Bitcoin: Unlocking Digital Cryptocurrencies* 1-2 (2014)

²¹⁶ *Supra* note 183

specific ideas, concepts, or ideologies, such as technology developments, economic systems, or alternative financial models. Providing information, conducting seminars, or creating online resources to explain the underlying technology, principles, and potential benefits of cryptocurrencies. Advocating for cryptocurrencies' adoption or integration into financial institutions, pushing for favourable legislation, or marketing cryptocurrencies as a viable alternative to existing currencies. Participating in academic conversations, publishing research papers, and attending public forums to investigate the philosophical, economic, and legal ramifications of cryptocurrencies. Using artistic mediums, such as literature, films, or music, to convey ideas, narratives, or perspectives related to cryptocurrencies. The spread of cryptocurrency ideas could be considered part of the right to free speech and expression because it involves the distribution of information, the exchange of ideas, and the advocacy of alternative economic models.²¹⁷

RIGHTS UNDER ARTICLE 14²¹⁸

Article 14 prevents the state from denying any person equality before the law or equal protection under the law within India's territory. This principle of non-discrimination extends to all individuals, including those engaged in cryptocurrency-related activities. Article 14 of the Indian Constitution guarantees freedom from arbitrary or discriminating state action for all citizens. Arbitrary legislation would be invalidated. Article 14 prohibits arbitrariness, irrationality, lack of a deciding principle, excessiveness, and disproportionality.²¹⁹ The statement must be substantiated by relevant material facts.²²⁰ Article 14 ensures non-discrimination by requiring equal administration of the law and treating likes alike. Any legal distinctions between individuals must be based on comprehensible differences that are rationally related to the Act's purpose.²²¹ In 2013, the Supreme Court overturned a Maharashtra Act that prohibited dance performances in hotels and restaurants. The State found insufficient evidence to determine that dancing at forbidden establishments would harm public

²¹⁷ *Palko v. Connecticut*, 302 U.S. 319, 327 (1937)

²¹⁸ INDIA CONSTI art 14

²¹⁹ *Shayara Bano v Union of India*, (2017) 9 SCC 1

²²⁰ *Shri Sitaram Sugar Co. Ltd. v Union of India*, (1990) 3 SCC 223

²²¹ *Special Courts Bill, 1978*, In re, (1979) 1 SCC 380

morality.²²² The Court ruled that categorizing exempted businesses (gymkhanas and 3-star or better hotels) from forbidden establishments (all others) was not permitted. Morality and decency cannot be determined by a person's social class. This case was applied in the IMAI case about the RBI circular on virtual currencies. Crypto-asset users have the right to be free from state-imposed restrictions on their behavior.

The Supreme Court ruled that Article 14's guarantee of equality does not bar the state from creating appropriate classifications for legislative or regulatory purposes.²²³ However, such classifications must be based on intelligible differentia and have a rational connection to the goal to be achieved. In the context of cryptocurrency, the state may impose regulations or restrictions based on reasonable classifications, such as distinguishing between different types of cryptocurrencies, differentiating by the purpose or scale of cryptocurrency transactions, or treating institutional and individual investors differently. However, these classifications must be logical and serve a specific purpose, such as protecting customers, preventing money laundering, or ensuring financial stability. Any state-imposed controls or restrictions on Bitcoin must be commensurate to the legitimate goals sought to be achieved. The restrictions should not impose an undue or disproportionate burden on individuals or companies engaged in legitimate cryptocurrency-related activity.

The principle of proportionality is a well-established doctrine in Indian constitutional law, which states that any restriction or limitation on basic rights must be carefully tailored and balanced against the goal to be attained.²²⁴ In the context of cryptocurrency, this means that any regulations or restrictions imposed by the state must be necessary, appropriate, and narrowly tailored to achieve the stated goal, while not unduly infringing on the rights and freedoms of individuals or entities engaged in legitimate cryptocurrency activities. Furthermore, the Supreme Court has recognized the horizontal applicability of several fundamental rights, notably the right to equality, in limited circumstances.²²⁵ In the case of cryptocurrencies, this principle may be significant if private businesses, such as cryptocurrency exchanges or platforms, engage in discriminatory activities or arbitrarily restrict services to specific individuals

²²² *State of Maharashtra v Indian Hotel and Restaurants Assn.*, (2013) 8 SCC 519 as discussed by *Indian Hotel and Restaurant Assn. v State of Maharashtra*, (2019) 3 SCC 429

²²³ *State of W. Bengal v. Anwar Ali Sarkar*, AIR 1952 SC 75, 80

²²⁴ *Om Kumar v. Union of India*, (2001) 2 SCC 386, 399

²²⁵ *I.M.A. v. Union of India*, (2011) 7 SCC 179, 198

or groups without a justifiable cause. For example, if a cryptocurrency exchange discriminates against users based on their race, religion, or gender, or denies access to its services to certain individuals without a legitimate and reasonable basis, such actions may be challenged under Article 14's horizontal application. However, the scope and extent of horizontal applicability of fundamental rights are still being interpreted by courts and may differ based on the circumstances of each case. It is critical to recognize that Article 14 rights are not absolute and may be subject to reasonable limitations imposed by the state in the interests of public order, morality, or other legitimate goals. However, any such restrictions must be appropriate, non-discriminatory, and founded on sound reasoning. The state may put limitations or laws on cryptocurrency to address concerns about financial stability, consumer protection, anti-money laundering, or national security. However, any regulations must be carefully drafted and calibrated to achieve the desired results while not unnecessarily encroaching on the rights and freedoms of individuals or businesses engaged in legal cryptocurrency-related activity.

Chapter 4

CRYPTOCURRENCY AND INDIA'S STAND ON IT

An online medium of exchange that facilitates monetary transactions via the use of cryptographic functions is known as a crypto or cryptocurrency. Immutability refers to the capacity of a block chain ledger to remain unchangeable, unaltered, and indelible; transparency, decentralisation, and cryptocurrencies all benefit from this property of block chain technology. Many routine tasks have been computerised, making them more efficient and adaptable, thanks to the rapid development of information and communication technologies²²⁶ (ICT). Many internet users have moved their activities online, and the advent of cryptocurrencies has sparked a new economic phenomenon: the buying and selling of digital assets. Virtual worlds, online games, social networks, and peer-to-peer networks are just a few examples of the many online networks and applications that use crypto. Over the years, cryptocurrency has found widespread use in various systems.

CRYPTOCURRENCY IN INDIA

Crypto has recently gained a lot of attention from the general public. Investors that prioritise privacy and the generation of money are finding cryptocurrencies to be a more comfortable option in today's technologically advanced society. People are exhibiting interest in purchasing cryptocurrencies like Bitcoin, Ethereum, Ripple, Litecoin, etc., which is causing them to trend in the financial market. The use of cryptocurrency has the ability to significantly impact people's and businesses' financial situations in emerging nations like India. In order to facilitate cross-border payments, cryptocurrency has the potential to reduce processing and transaction costs. This is great news for P2P lending, international trade, and remittance payments. When it comes to cryptocurrency, India is among the world's most rapidly expanding markets. A new analysis claims that India's cryptocurrency²²⁷ market is expanding at a faster rate

²²⁶ Shukla, V., Misra, M. K., & Chaturvedi, A., Journey of Cryptocurrency in India in View of Financial Budget 2022-23, arXiv preprint arXiv:2203.12606 (2022).

²²⁷ Singh, S. K., Cryptocurrency in India: Need for an Unconventional Policy, 16 NICE J. Bus. (2021).

than any other country in the globe. Recent years have seen a tremendous acceleration in its rate of development, putting it ahead of other countries.

To this day, Bitcoin has failed to persuade the Indian government. There are several negative aspects of Bitcoin that the Indian government and central bank are worried about. Crypto assets' potential to facilitate terrorist financing and money laundering was one of these concerns. It was in 2017 when the Indian central bank warned that digital currencies could not be used as legal money in the country. Having said that, virtual currency was not outright forbidden. In 2019, the Reserve Bank of India (RBI) decreed that cryptocurrency mining, trading, holding, or transfer/use might result in a monetary fine and/or jail time of up to ten years in India. A possible future legal tender in India is the e-rupee, often known as the digital rupee, which the Reserve Bank of India has hinted at. The Supreme Court of India overturned the Reserve Bank of India's (RBI) prohibition on cryptocurrencies in 2020²²⁸. A thirty percent tax deduction will be available for the transfer of any cryptocurrency or virtual money in 2022, as stated explicitly in the union budget for 2022–23. The recipient is responsible for paying taxes on any virtual assets or cryptocurrency given as a gift. Citing "destabilizing effects" on the country's fiscal and monetary health, the RBI proposed a cryptocurrency prohibition in July 2022.

THE IMPACT OF CRYPTOCURRENCIES ON INDIAN ECONOMY

India has a huge economy to oversee because it is a developing nation. We anticipate greater good effects on our economy from the legalization of cryptocurrencies, even though few economists have had a chance to voice their opinions on the matter. Since it will allow them to expand their company horizons, most new investors and businesses have expressed their happiness. About 50,000 people work in crypto. A recent forecast predicts 800,000 sector jobs by 2030. India has many qualified IT and Fitch professionals²²⁹. The expertise is also priced affordably. As the bitcoin industry grows, India might become a global hub. This will create many new banking, financial

²²⁸ Chakravaram, V., Ratnakaram, S., Agasha, E., & Vihari, N. S., Cryptocurrency: Threat or Opportunity, in Proceedings of the 3rd International Conference on Communications and Cyber Physical Engineering 747-754 (2021).

²²⁹ Kashyap, S., & Chand, K., Impact of Cryptocurrency in India, 2 Int'l J.L. Mgmt. & Hum. 69 (2019).

services, IT, and customer service jobs. Current bitcoin market conditions contribute to rising national employment. Cryptocurrency increases transparency by making transaction origins easy to track. The block chain technology behind cryptocurrency is also immutable. Therefore, transaction histories cannot be deleted or modified. Since data cannot be altered, corruption can be greatly reduced.

The government wants to create one official cryptocurrency, eliminating the need for third-party, private, and foreign cryptocurrencies. Ethereum, Bitcoin, Dogecoin, and other prominent cryptocurrencies are currently abroad. The national cryptocurrency will be developed domestically, reducing reliance on others. Helping the government accomplish "Atmanirbhar Bharat" in the cryptocurrency sector, investors, traders, and others would have one coin for all their needs. Trading with cryptocurrency saves time and money. No third party is engaged; thus, senders and recipients can interact instantly²³⁰. Each transaction no longer incurs bank and payment processor fees. This reduces transaction costs and saves money on every purchase. Cryptocurrency transfers could improve digital payments by lowering costs and timeframes. India has a big pool of qualified IT experts, as said. IT banking integration offers virtually endless commercial prospects and foreign currency inflows. Due to the government's rigorous regulations and digital currency law, huge foreign investments will also flow in. This will transform financial technology and the Indian economy.²³¹

But, cryptocurrencies are volatile; therefore investors shouldn't let one transaction hurt their portfolio. As long as concern prevails, investors—especially normal people—will avoid cryptocurrency trading. On April 1, 2023, the high tax slab will cut investors' net profit in half with the 115BBH virtual currency laws. Indian income tax is based on assets, not their acquisition, so taxing cryptocurrencies does not legalize the asset class. The Reserve Bank of India warns that this may damage the banking sector because consumers may store their savings in these currencies, leaving banks²³² with

²³⁰ Singh, A. K., & Singh, K. V., Cryptocurrency in India-Its Effect and Future on Economy with Special Reference to Bitcoin, 8 Int'l J. Res. Econ. & Soc. Sci. 115-126 (2018).

²³¹ Nischal Shetty & Siddharth Sogani, The India Crypto Asset Report 2023, at 45-47 (CREBACO Global 2023)

²³² Thakur, D. S., Varma, R. A., & Hake, D. M., Regulation of Cryptocurrency in India: Issues and Challenges, J. Positive Sch. Psychol. 8921-8929 (2022).

less money to lend. In the long term, the crypto bubble crash will cost people their life savings, officials said.

THE GOVERNMENT STAND ON CRYPTOS

After much debate about legalising or banning cryptocurrencies, the Indian government has made a positive move towards regulating digital currencies. The Ministry of Corporate Affairs requires companies to report cryptocurrency trading and investments during the fiscal year. Experts predict taxation regulations to follow a positive trend. Many in India believe this is the first step towards cryptocurrency laws. Crypto assets are being accounted for to counteract illegal activity and black money circulation. Corporate governance can benefit from reporting transparency. The Centre has assured cryptocurrency stakeholders that digital currencies²³³ will not be banned while the government considers the issue. Finance minister Nirmala Sitharaman says the national government is not limited to trying new technology.

India allows cryptocurrencies. Currently, India has no cryptocurrency rules. On November 2, 2017, the government established an IMC to study digital currencies. The Group's report and Draft Bill highlighted distributed-ledger technology's merits and suggested many usage in India's banking and financial sectors. However, the Indian government wanted to ban it due to abuse. Recent reports suggest India may not outlaw cryptocurrency. A Centre panel may regulate them soon. Several bitcoin exchanges persuaded the Centre to regulate virtual currencies instead of banning them, so it did. Digital assets are not legal cash, thus people can buy, sell, and hold them but not use them for normal purchases or payments.

The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021, will complicate matters. The bill's future is uncertain, but it may restrict private cryptocurrency, adding murky area. Despite regulatory uncertainties, good indicators are emerging. The Telangana Web3 Sandbox shows how the Indian government is seeing blockchain's potential²³⁴. Regulated cryptocurrency marketplaces may

²³³ Agarwal, M., India on Cryptocurrency, 1 Jus Corpus L.J. 215 (2020).

²³⁴ Umair, M., The Emergence of Cryptocurrency in India and Its Implications on Investments, in Emerging Insights on the Relationship Between Cryptocurrencies and Decentralized Economic Models 44-56 (2023).

eventually enter India's monetary system. Indian cryptocurrency investors must be cautious. The market's volatility and changing regulations increase hazards. Due to worries about security breaches and scams, all crypto activity should have strict security standards.

CRYPTO REGULATION IMPORTANT IN INDIA

India is crucial to the global crypto debate due to its economic power. Its fluctuation impacts the local market and global crypto regulatory debate. Even if India's cryptocurrency laws are ambiguous, the financial industry needs well-designed regulations. We want to protect consumers, prevent crime, and stabilize the economy, not stifle innovation. Regulations provide oversight, KYC enforcement, and market manipulation and scam prevention. Transparency²³⁵ and stability might help lower crypto market volatility. Clearly, regulation and innovation must be balanced. We can analyse other countries' successes and failures to inform India's policy.

PROTECTION AGAINST FINANCIAL CRIME

Protecting people is one of many perks. Unregulated bitcoin exchanges can fund terrorists and launder money. If money laundering and terrorism financing are illegal, cryptocurrency exchanges and government agencies can collaborate better. Cryptocurrency should be taxed transparently to prevent tax avoidance and ensure a fair contribution to the government. Financial stability is also crucial. Unregulated bitcoin markets may threaten the financial system. Regulations reduce these risks by enforcing investor protection and capital-adequacy requirements.

Regulated crypto alternatives may also help unbanked areas access financial services. Without clear restrictions, creativity and progress are impossible. By attracting respectable businesses and entrepreneurs, they boost the bitcoin ecosystem. India's efforts to attract blockchain specialists and investors will benefit from its stronger position in the global cryptocurrency industry.

LEGAL STATUS OF CRYPTOCURRENCY IN INDIA

Since India has not taken a definite stance on cryptocurrencies like other nations, many perceive the regulatory landscape as ambiguous. On October 26, 2023, the legal

²³⁵ Soni, N., An Analysis of Cryptocurrency and Their Functioning, Available at SSRN 3683771 (2020).

position of cryptocurrencies in India is unclear. Currently, cryptocurrencies are not legal money in the country. Although crypto assets can be owned and exchanged, they can't be used for daily purchases. Because a bill banning private cryptocurrency is under progress, the situation is more unstable. Indian crypto enthusiasts are naturally concerned about this law's potential repercussions. If this bill passes, private cryptocurrencies could be banned, casting a shadow over the market. Crypto markets are notoriously unstable and prone to security breaches and fraud, therefore vigilance is advised.

CHALLENGES OF CRYPTOCURRENCY ADOPTION IN INDIA

The digital frontier of banking, bitcoin, offers great potential but also major challenges. We face several challenges in our cautious and diligent investigation of regulation to broad acceptance in India.

- As India adopts Bitcoin, these dangers must be identified and mitigated. Managing money and making smart choices are essential in the digital age.
- Cryptocurrency safety is paramount. Cybercriminals²³⁶ are continually looking to steal or produce fake virtual cash, leaving you with regret. Avoid questionable websites to protect your digital assets.
- Unlimited virtual money manufacturing sounds good, but it threatens real-world economies. Unregulated issuing can cause inflation and collapse. Investors in unknown coins should weigh the risks and rewards before diving in.
- As the usage of cryptocurrencies for everyday transactions grows, what impact will it have on traditional money? Find a balance to sustain the real and virtual economies.
- Beware of gold farming, when players sell in-game money for real money. Since this unregulated process involves deception, spending real money on virtual things should be avoided.

²³⁶ Sood, R., Cryptocurrency-What It Is and Its Legal Status in India and Globally?, 2 Indian J.L. & Legal Rsch. 1 (2021).

- The popularity of virtual communities determines their financial worth. Users lose interest, lowering value. Diversification protects your wealth from a single virtual asset that may fail.
- Because of its decentralisation and pseudo-anonymity, cryptocurrency may attract criminals. Platforms that convert virtual cash into physical currency enhance money laundering risk. Choose reliable platforms to protect your digital assets.
- Fake accounts complicate crypto transactions. Without verification, tracking illegal activity is harder. Do your research before making internet purchases.
- Gaming platforms have created underground virtual currency exchange markets. Avoid doing business in these unsavoury regions by using legitimate and safe platforms.

BANNING OF CRYPTOCURRENCY & REGULATION OF OFFICIAL DIGITAL CURRENCY BILL, 2019²³⁷

As a decentralised digital money system, cryptocurrency allows immediate online payments and worldwide trade without middlemen²³⁸. Everyone must accept traditional currency issued by a government. This makes the currency legal tender. Most cryptocurrencies lack sovereign guarantees, hence they cannot be used as money. Legal tender transaction data is usually stored centrally by banks. However, all network users may monitor and verify cryptocurrency transactions. If the recipient accepts cryptocurrency, it can be payment. Since their values fluctuate against the US dollar, they are also traded. Additionally, utility tokens can be used to access a company's goods and services. As of October 2019, there were over 3,000 cryptocurrencies in circulation with a daily trading volume of over USD 50 billion.

Many concerns have arisen over the years, including bitcoin abuse and consumer protection. Countries regulate cryptocurrency differently. Some governments regulate cryptocurrencies due to anti-money laundering regulations. These include Japan,

²³⁷ Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019 (India)

²³⁸ Yadav, S. R., Cryptocurrency: The Future of Money and Its Journey So Far in India, Multi-Disciplinary Res. For Saving 187 (2022).

Canada, and Switzerland. Japan recognises various digital currencies as payment alternatives. Saudi Arabia and China ban their use as money.

From 2013 to 2017, the Ministry of Finance and RBI issued many recommendations on cryptocurrency security, customer safety, and financial issues. RBI banned virtual currency trading in April 2018 for its licenced entities. The Ministry of Finance's Inter-Ministerial Committee (IMC) reviewed virtual currency concerns. It raised concerns about cryptocurrencies' price volatility, money laundering risk, and financial stability. Given these concerns, it advised India ban all cryptocurrencies save government-issued ones. It also advocated a national digital money and cryptocurrency ban.

Key Features

- **Cryptocurrency:** A cryptocurrency is defined in the draft bill as any digitally represented information, number, code, or token that serves as a unit of account, a store of value, or is useful in commercial activities.

Regulation of cryptocurrency

- **Ban on cryptocurrencies:** To put it simply, the proposed bill forbids the usage of cryptocurrencies as money or legal tender. The act outlaws cryptocurrency in all its forms, including mining, acquisition, storage, sale, dealing, issue, disposal, and use. The goal of mining is to create new cryptocurrencies²³⁹ and/or verify existing cryptocurrency transactions.
- I. Using it as a medium of exchange, store of value, or unit of account; (ii) making payments with it; (iii) offering services like registering, selling, trading, or clearing cryptocurrency to individuals; (iv) trading it with other moneys; (v) issuing financial products related to it; (vi) by means of it as a basis of credit; (vii) raising funds; and (viii) investing in it.
- **Exemptions:** Certain activities may be exempted by the central government if deemed necessary for the public interest. Any academic, experimental, or pedagogical use of the underlying processes or technology of cryptocurrency is welcome.

²³⁹ Batheja, K., & Goel, P., Cryptocurrency in India, 1 Jus Corpus L.J. 98 (2020).

- **Digital Rupee:** The digital rupee might be officially recognised as legal money if the central government and the RBI central board reach an agreement. Additionally, a foreign digital currency may be flagged as such by the RBI. When we talk about digital currencies that are accepted as legal tender in other countries, we're talking about foreign digital currency.

Offences and Penalties

- The Bill establishes a penalty of up to ten years in prison or a fine of up to one million dollars, or both, for the illegal acquisition, storage, sale, distribution, or use of cryptocurrencies.
- One can be fined up to seven years in prison or both if you publish an ad encouraging others to use cryptocurrencies or if you help them do so. There will be a fine for anyone caught buying, holding, or selling Bitcoin for personal use alone.
- A 90-day transition time from the Act's commencement is provided for in the Bill, during which a person may dispose of any cryptocurrency in their possession according to the government-notified standards.

Working of cryptocurrencies

Money serves as a medium of exchange, unit of account, and store of value. Indian government-backed banks like the RBI issue money with a sovereign guarantee. Banks, credit cards, and payment wallets can hold and process money²⁴⁰. Government agencies licence these companies. This means the government has centralised financial monitoring and verification. Several cryptocurrency systems differ from this one. First, they're digital only. No one entity verifies and ensures financial transaction authenticity. Or, other users validate and store transactions securely. Learn the steps here. Unlike monetary notes, digital items are easily reproduced. Thus, digital currencies need to eliminate payment duplication. Cryptocurrencies solve this via "blockchains". Code-names protect privacy while letting system users see each other's account balances. A "block" is a group of simultaneous payments.

²⁴⁰ Gupta, R., India Seeks to Join the Crypto-Bandwagon: Are CBDCs the Way Forward, 3 Int'l J.L. Mgmt. & Hum. 1996 (2020).

By checking the payment recipient's balance, other users confirm the block. The block is valid if most users authenticate all transactions. Now the block is published and cryptographically²⁴¹ linked to the previous block. Blockchains are interconnected blocks that record transactions. This ledger is called distributed ledger technology (DLT) because all users may validate it. Changing transactions in a validated block is complicated due to cryptography. It's hard to change individual blocks without changing all that follow. Multiple ledger copies make it tough to change one at a time. These traits maintain system credibility.

Benefits and risks associated with cryptocurrencies

The Inter-Ministerial Committee (2019) believes distributed ledger technology (DLT), which powers cryptocurrencies, could improve financial access and efficiency. It could enhance loan availability and lower KYC personal identification costs. The IMF and other international authorities have highlighted cryptocurrency's benefits. These currencies may speed up and lower transaction costs. If numerous intermediaries make sending remittances expensive, they can be advantageous for small cross-border transactions. Cryptocurrencies make transactions visible, auditing easier, and payment more secure.

There are various risks associated with cryptocurrency. First, they endanger buyers. Because they lack sovereign backing, cryptocurrencies cannot be used as money. Their speculative nature makes them unpredictable. In December 2017, Bitcoin was worth USD 20,000. The price plummeted to USD 3,800 by November 2018. Unlike online bank accounts, a user's private key cannot be changed, so losing it means losing bitcoin. Technical service providers like wallets and cryptocurrency²⁴² exchanges store private keys, making them exposed to hackers and malware. Second, thieves and money launderers can obtain cryptocurrencies easier. They offer more anonymity than typical payment systems because transaction public keys cannot be linked to a person. Third, central banks cannot influence bitcoin market distribution.

²⁴¹ Kumar, A., A Study of the Impact of Crypto Currency on the Indian Payment System, 12 Asian J. Mgmt. 310-316 (2021).

²⁴² Basu, S., Saha, T. R., & Maity, S. K., Implications of Cryptocurrency: A New Business Proposition of Today's Entrepreneurial Horizon, 2 Int'l J. Recent Trends Bus. & Tourism 64-70 (2018).

Its widespread use could threaten the nation's finances. Transaction validation's energy intensity could threaten the nation's energy security. Bitcoin mining used as much electricity as Switzerland in 2018.

Cryptocurrency regulation in other jurisdictions

Considering these pros and cons, countries regulate cryptocurrencies differently. Canada regulates cryptocurrency under money laundering and terrorism funding legislation. Trading cryptocurrencies on an open exchange is legal and subject to income tax. Also used to buy and sell goods and services. Japan allows cryptocurrency payments. The Financial Services Authority of Japan regulates cryptocurrency exchanges. In New York, bitcoin payments are allowed with a licence. Every licensee must follow anti-fraud, cyber security²⁴³, anti-money laundering, and information security rules.

China, Thailand, Indonesia, and Taiwan forbid cryptocurrencies. Many others allow cryptocurrencies but warn of their risk. For instance, the European securities, banking, insurance, and pension regulators warned that virtual currencies are dangerous and inappropriate for savings, investment, or retirement planning.

Penalties for certain offences may be disproportionate

The Bill proposes a 10-year prison sentence for anyone found guilty of cryptocurrency-related crimes, including mining, owning, selling, issuing, transferring, or utilizing. When contrasted with other comparable economic crimes, this might seem excessive. CRYPTOCURRENCY BILL, 2021: FUTURE OF CRYPTO IN INDIA²⁴⁴

The "Cryptocurrency and Regulation of Official Digital Currency Bill, 2021" represents a significant legislative step in India's approach to the rapidly evolving digital currency landscape. The bill aims to establish a clear regulatory framework for

²⁴³ Harit, P., Cryptocurrency and Social Justice: A Study of Indian Taxation Laws on Emerging Virtual Challenges, Available at SSRN 3615059 (2020).

²⁴⁴ Financial Express, Cryptocurrency Bill 2021: New crypto bill to be introduced in Parliament after Cabinet approval, <https://www.financialexpress.com/money/cryptocurrency-bill-2021-live-updates-crypto-bitcoin-ban-regulation-official-digital-currency-parliament-highlights-key-points-2374661/> (last accessed on 18-05-2024)

cryptocurrencies while promoting the development of an official digital currency issued by the Reserve Bank of India (RBI).

Objectives of the Bill

The primary objectives of the 2021 bill are multifaceted

- To create a regulatory environment that addresses the legal, financial, and technological aspects of cryptocurrencies.
- To prohibit the use of all private cryptocurrencies within India, allowing exceptions for promoting the underlying technology and its applications.
- To facilitate the creation and regulation of an official digital currency issued by the RBI.
- To protect consumers from fraud and other risks associated with cryptocurrency transactions.
- To prevent the misuse of cryptocurrencies in money laundering, terrorism financing, and other illegal activities.

Key Provisions

The 2021 bill includes several key provisions designed to meet its objectives

The law defines private cryptocurrencies and proposes a prohibition on their use in India, with noncompliance punishable by penalties. It establishes guidelines for the operation and regulation of the official digital currency that the RBI may develop and issue²⁴⁵. Although private cryptocurrencies are prohibited, the legislation promotes the advancement and implementation of distributed ledger and blockchain technologies across a range of applications.

Penalties stipulated in the bill encompass imprisonment and sanctions for individuals and entities involved in the trade or utilization of private cryptocurrencies, which constitute violations of its provisions. The governing bodies tasked with supervising the execution of the provisions of the law are designated as the RBI and other pertinent entities.

DIFFERENCES FROM THE 2019 BILL

²⁴⁵ Halder, D., & Saiyed, A. A., Legal Challenges to Cryptocurrency and Its Guardian-less Victims in India: A Critical Victimological Analysis, 60 Int'l Ann. Criminology 79-98 (2022).

While the two bills have certain commonalities, the 2019 version, "Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019," differs in important ways

All cryptocurrency-related activities, including mining, trading, and holding, were suggested for a more comprehensive restriction in the 2019 draft. The bill for 2021 is still too expensive, but it makes more exceptions for blockchain technology.

The development and management of an official digital currency by the RBI has given increased prominence in the 2021 law, which provides a precise framework for its creation. While the 2019 bill primarily aimed at imposing restrictions, the 2021 bill recognizes the promise of blockchain technology and actively encourages its growth, even beyond cryptocurrency uses.

In contrast to the 2019 draft, the 2021 bill provides more explicit information about penalties and enforcement methods.

CRITICISMS AND SUPPORT FROM STAKEHOLDERS

The 2021 bill has elicited a mixed response from various stakeholders

Criticisms

Some think that a complete prohibition on private cryptocurrencies will limit development in a potentially lucrative industry. Possible legal issues and difficulties in implementing the measure are brought up by its expansive definitions and harsh punishments. Investors who have put a lot of money into cryptocurrencies are worried about the consequences for their wealth.

Support

The emphasis of the bill's proponents is on safeguarding consumers against fraudulent activities and financial setbacks that may arise from unregulated cryptocurrencies. The provisions of the law aimed at curbing the illicit use of cryptocurrencies²⁴⁶ are perceived favourably through the lens of national security. Advocating for blockchain technology is considered a progressive strategy that harmonises innovation and regulation.

²⁴⁶ Sharma, A., Cryptocurrency Impact on India's Monetary Policy (2024).

ECONOMIC AND LEGAL IMPLICATIONS

The 2021 bill has several economic and legal implications

Economic Implications

- The ban on private cryptocurrencies could lead to a significant outflow of investments from the cryptocurrency market, impacting startups and exchanges operating in this space.
- The promotion of blockchain technology could foster innovation and support the growth of new startups leveraging this technology for various applications.
- The introduction of an official digital currency by the RBI could enhance monetary policy effectiveness and reduce the costs associated with cash handling²⁴⁷.

Legal Implications

- The bill provides a clear regulatory framework for the use of digital currencies, reducing legal uncertainties and providing guidelines for compliance.
- Implementing the ban on private cryptocurrencies and ensuring compliance could present significant enforcement challenges for regulators.
- The bill's provisions for consumer protection could enhance legal recourse for individuals affected by cryptocurrency-related fraud and scams.

ARGUMENTS AGAINST A COMPLETE BAN

Economic Benefits of Cryptocurrency

Cryptocurrencies offer several economic benefits that can significantly impact India's financial landscape:

- Cryptocurrencies can provide financial services to unbanked and underbanked populations, enabling access to banking, credit, and investment opportunities. This can be particularly impactful in rural and remote areas where traditional banking infrastructure is lacking²⁴⁸.

²⁴⁷ Shakya, V., Kumar, P. P., & Tewari, L., Blockchain Based Cryptocurrency Scope in India, in 2021 5th International Conference on Intelligent Computing and Control Systems (ICICCS) 361-368 (2021).

²⁴⁸ Rani, S., Scope and Challenges of Crypto-Currency in India in Special Reference to Bitcoin, 20 NeuroQuantology 5489 (2022).

- India is one of the largest recipients of remittances globally. Cryptocurrencies can facilitate faster, cheaper, and more efficient cross-border transactions compared to traditional remittance services, reducing transaction costs and increasing the amount received by families.
- The cryptocurrency industry can contribute to economic growth by attracting foreign investment, fostering innovation, and creating jobs in sectors such as technology, finance, and cybersecurity. The development of cryptocurrency exchanges²⁴⁹, payment processors, and blockchain startups can stimulate economic activity.
- Cryptocurrencies provide new avenues for investment, offering diversification beyond traditional assets like stocks and bonds. This can attract a new class of investors, including retail and institutional participants, boosting overall investment in the economy.
- By regulating and taxing cryptocurrency transactions, the government can generate additional tax revenues. This can be used to fund public services and infrastructure projects, contributing to broader economic development.

Technological Advancements and Innovation

- Cryptocurrencies are underpinned by blockchain technology, which offers several technological advancements and opportunities for innovation
- Blockchain provides a decentralized, transparent, and secure way to record transactions. Its applications extend beyond cryptocurrencies to areas such as supply chain management, healthcare, real estate, and voting systems, promoting transparency and efficiency.
- These self-executing contracts with the terms directly written into code can automate and streamline various business processes, reducing the need for intermediaries and lowering transaction costs.
- Decentralized Finance (DeFi) platforms use blockchain technology to offer financial services like lending, borrowing, and trading without traditional intermediaries. This can democratize access to financial services and drive innovation in the financial sector.

²⁴⁹ Kashyap, A. K., Tripathi, K., & Rathore, P. S., Integrating Cryptocurrencies to Legal and Financial Framework of India, 10 J. Global Pol'y & Governance 121-137 (2021).

- The cryptocurrency and blockchain space encourages the development of new technologies and business models, fostering an ecosystem of startups and innovators. This can position India as a global leader in fintech and digital innovation.

CHAPTER 5

**INTERNATIONAL EXPERIENCE OF CRYPTOCURRENCY
REGULATION IN BRIC COUNTRIES OTHER THAN INDIA**

In the contemporary academic setting, cryptocurrency has already been reviewed in a large number of articles. The phenomena are examined from several angles, including legal²⁵⁰, financial²⁵¹, and economic²⁵². They also look at the benefits and drawbacks of cryptocurrencies, as well as the factors that encourage and hinder their use and the security of Bitcoin transactions.²⁵³ However, there aren't many studies that try to figure out what makes a cryptocurrency lawful—without which, discussing legal regulation of cryptocurrencies is moot.²⁵⁴ One cannot discuss controlling the emission and turnover of cryptocurrencies through legal rules before they have a clear knowledge of what they are as a legal category. Since cryptocurrencies are defined as commodities, transactions involving their sales must be taxed on the added value.²⁵⁵ Trades involving Bitcoin for products are governed by law as barter transactions.²⁵⁶ If bitcoin exchanges are acknowledged as securities or other financial instruments, their operations, like those of stock exchanges, require a state license.²⁵⁷ Therefore, before any steps are taken to legalize cryptocurrencies, the state must first define the legal nature of cryptocurrencies as the foundation for their legal status.²⁵⁸

BRAZIL

Brazil passed Law No. 14,478 (the Crypto Assets Act) in December 2022; it went into effect on June 20, 2023. Except for electronic money, loyalty points, certain regulated

²⁵⁰ Diudikova E I Blockchain in the national payment system: essence, notion and ways of using Innovative development of economy 4(34) 139-149(2016)

²⁵¹ Sidorenko E L Cryptocurrency as a new juridical phenomenon Society and Law 3 (57) p 193-197 (2016)

²⁵² Presthus W, O'Malley N O Motivations and Barriers for End-User Adoption of Bitcoin as Digital Currency Procedia Computer Science 121 p 89-97 (2017)

²⁵³ Fauzi M R R, Nasution S M, Paryasto M W Implementation and Analysis of the use of the Blockchain Transactions on the Workings of the Bitcoin IOP Conference Series: Materials Science and Engineering 260(1) 012003 (2017)

²⁵⁴ Nasdaq, Cryptocurrency Regulation Marches On, <https://www.nasdaq.com/articles/cryptocurrency-regulation-marches-on> (last accessed on 17-06-2024)

²⁵⁵ Shaidullina V K, Cryptocurrency as a new economic and legal phenomenon, Journal of the State University of Management, 2, 137-142 (2018)

²⁵⁶ Liao, M. A survey of blockchain technology applied to digital asset trading. Journal of Business Research, 136, 509-516 (2021).

²⁵⁷ Kshetri, N. Blockchain's roles in meeting key supply chain management objectives. International Journal of Information Management, 39, 80-89 (2018).

²⁵⁸ CATO, Money Across Borders: How Cryptocurrency Has Opened Global Exchange, <https://www.cato.org/publications/money-across-borders-how-cryptocurrency-has-opened-global-exchange> (last accessed on 17-06-2024)

financial assets, and national and foreign currencies, virtual assets are defined as digital representations of value used for investments or payments. This legislation sets guidelines for virtual asset services and their providers.²⁵⁹

Key points of the Act include:²⁶⁰

- Service Provision Requirements: Requires prior authorization for virtual asset services.
- Guiding Principles: Establishes the foundational principles for the activity.
- Virtual Asset Service Providers (VASPs): Defines the services provided by VASPs.
- Criminal Responsibilities: Sets new penalties for fraudulent activities, particularly those related to money laundering and organized crime.

Although asset segregation between providers' and customers' resources is not required by the Act, the Central Bank of Brazil (BCB) endorses this practice and has been granted authority to oversee and regulate virtual asset services by Decree No. 11,563. VASPs will be subject to general BCB regulations; additional specialized restrictions are anticipated in Q3 2023, following a public consultation.²⁶¹

Steering cryptoassets that are deemed securities is still the responsibility of the Securities and Exchange Commission of Brazil (CVM), which issues guidelines in the form of Official Letters CVM/SSE 06/23 and Guidance Opinion CVM No. 40/2022. These documents, which do not modify the authority now held by CVM or the frameworks about consumer protection, set forth the regulatory strategy and classification for various categories of tokens, including asset-backed, utility, and payment tokens.²⁶²

The services pertaining to virtual assets that will be regulated are listed in the cryptoassets Law. These services include asset issuance, exchange, transfer, sale, and custody. That being said, the Central Bank of Brazil (BCB) has not yet provided

²⁵⁹ Brazil: New Law Regulates Cryptocurrency, Library of Congress, <https://www.loc.gov/item/global-legal-monitor/2023-01-31/brazil-new-law-regulates-cryptocurrency/> (last accessed on 17-06-2024)

²⁶⁰ *ibid*

²⁶¹ Brazil prepares to launch digital currency by early 2025, EIU, <https://www.eiu.com/n/brazil-prepares-to-launch-digital-currency-by-early-2025/> (last accessed on 17-06-2024)

²⁶² Blockchain & Cryptocurrency Laws and Regulations 2024, Global Legal Insights, <https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/brazil/> (last accessed on 17-06-2024)

detailed regulations regarding this statute. Notably, however, the Brazilian Revenue Service Normative Instruction No. 1,888, of 2019 specifies that any legal entity—even one that is not a financial entity—that provides services related to crypto-assets, such as intermediation, negotiation, or custody, and has the ability to accept payment in any form, including other crypto assets, is subject to reporting requirements.²⁶³

In addition to officially registering as a business in Brazil and reporting to the Financial Activities Control Board (COAF), the Central Bank of Brazil (BCB), and the Securities and Exchange Commission of Brazil (CVM), depending on their activities, virtual asset service providers (VASPs) will require a license to operate as cryptocurrency exchanges. The Central Bank of Brazil (BCB), which oversees virtual asset services, will make available information about the requirements for obtaining a license, the associated fees, and the approximate time frame for completing the procedure. With the Cryptosystems Act coming into effect in June 2023, the BCB will need to give current service providers a minimum of six months' notice to comply with any new requirements.²⁶⁴

Based on the current licensing procedure for other organizations under the BCB's supervision, a new license should take around a year to be granted and cost about BRL 2 million in initial capital. As of right now, all VASPs are exempt from licensing requirements unless their operations come under the purview of traditional banking, payments, or securities legislation.²⁶⁵

Brazil's Virtual Asset Service Providers (VASPs) are subject to BCB Circular No. 3,978/2020, which requires KYC/KYP/KYE procedures, governance structures, transaction recordkeeping, internal risk assessments, monitoring of suspicious operations, and policies against money laundering and terrorist financing. Although participation in the Brazilian Association of Cryptoeconomics (ABCripto) is optional, the organization encourages self-regulation and best practices for the cryptocurrency sector. ABCripto prioritizes information control, adhering to its AML/FT Manual and Self-Regulatory Code, and preventing fraud and corruption. Reporting suspicious

²⁶³ Gov.br, Brazilian Financial Sector Regulatory Structure, http://antigo.cvm.gov.br/subportal_ingles/menu/about/jurisdiction.html (last accessed on 17-06-2024)

²⁶⁴ Banco Central do Brasil, <https://www.bcb.gov.br/en/financialstability/nationalfinancialsystem> (last accessed on 19-06-2024)

²⁶⁵ Fernando Lemos, Gustavo Felipe de Sousa, Thiago Said Vieira, Treatment of Crypto Assets in Brazil's Balance of Payments, IMF, [file:///C:/Users/User/Downloads/session-iv-fernando-lemos%20\(1\).pdf](file:///C:/Users/User/Downloads/session-iv-fernando-lemos%20(1).pdf) (last accessed on 19-06-2024)

activity to the Financial Activities Control Board (COAF) is another of these requirements.²⁶⁶

In Brazil, the only income tax that applies to the sale of cryptocurrency assets is capital gains tax, which is the difference between the purchase price and the disposal value. Gains up to BRL 5 million are subject to a 15% tax rate for individuals. These rates are gradually raised between 15% and 22.5% based on the size of the gain. Capital gains are subject to corporate income tax computation in line with the tax system that the Brazilian legal entity has chosen and are taxed like regular income. Under Normative Instruction RFB No. 1,888/2019, the tax authorities have mandated reporting requirements for investors and the exchanges that operate as middlemen in transactions. There isn't currently a special tax for crypto assets.²⁶⁷ Local demand for cryptocurrencies has turned towards stablecoins, according to Roberto Campos Neto, Governor of Banco Central do Brazil, with consumers utilizing cryptocurrencies more for payment than just investing.

RUSSIA

Digital financial assets (DFA) are defined and cryptocurrency is regulated under a new law in Russia titled "On digital financial assets, Cryptocurrency and Making Changes to Certain Legislative Acts of the Russian Federation,"²⁶⁸ which goes into effect on January 1, 2021. DFA encompasses digital rights that are controlled by blockchain technology, including participation rights in non-public firms, rights under securities, and receivables. The law does not specifically address utility tokens, which grant access to particular goods or services, but instead focuses on security tokens, which are digital assets that offer investment rights including ownership and dividends.^{269,270}

²⁶⁶ Fabio Plein, Tom Duff Gordon, Brazil takes important step towards developing a leading crypto asset regulatory framework, Coinbase, <https://www.coinbase.com/blog/brazil-takes-important-step-towards-developing-a-leading-crypto-asset> (last accessed on 19-06-2024)

²⁶⁷ Brayden Lindrea, Brazil's tax dept to summon info from foreign crypto exchanges: Report, Cointelegraph, <https://cointelegraph.com/news/brazil-tax-authority-summon-foreign-crypto-exchanges> (last accessed on 19-06-2024)

²⁶⁸ Federal Law 259-FZ "On Digital Financial Assets, Cryptocurrency and Making Changes to Certain Legislative Acts of the Russian Federation" http://www.consultant.ru/document/cons_doc_LAW_358753/ (accessed 19-06-2024).

²⁶⁹ *ibid*

²⁷⁰ V. Arshinova, Adopted but not really. The Law on the digital financial Assets, LFA Academy. <https://lfacademy.ru/sphere/post/prinyali-no-ne-sovsem-zakon-ocifrovyyh-finansovyh-aktivah> (accessed on 19-06-2024)

A set of electronic data that can be used as a payment mechanism but not as legal tender, money, or an investment is known as cryptocurrency. According to the law, Bitcoin is considered an asset and cannot be used as payment by Russian citizens, foreign company branches operating in Russia, or Russian corporations.²⁷¹ This strategy is in opposition to that of nations like Sweden and Japan, who accept cryptocurrency as payment.²⁷² The Central Bank and Ministry of Finance in Russia are among the authorities concerned about cryptocurrency's potential to aid in money laundering and the funding of terrorism.²⁷³ The law limits the use of cryptocurrencies and requires owners to declare their holdings to tax officials, but it does not outright outlaw them. This circumspect approach strikes a balance between total prohibition and control, reflecting the opinions of nations like Brazil and Canada.²⁷⁴

At first, the Russian government took a negative stand on cryptocurrencies, arguing that they should be outlawed since they are illegal.²⁷⁵ But with time, their stance changed to one that was more impartial. Seeing the potential benefits of incorporating Bitcoin into the global financial system and its widespread acceptability, they decided to regulate it instead of openly rejecting it, all the while retaining official control.²⁷⁶ In Russia, the only officially recognized form of legal currency is fiat money issued by the state. The use of cryptocurrencies as an official form of payment is forbidden under federal laws and the Constitution, which state that the Ruble is the only recognized form of money and that issuing any other form of money is forbidden. Despite this, if cryptocurrencies are utilized for accumulation and turnover, they may still be employed profitably as money in legal transactions. Legal interpretations of

²⁷¹ E. Dorokhov, A. Borzov, *Digital Transformation of the Economy: Global Trend and Russian Trends*. <https://www.amazon.com/dp/6202684275> (accessed 19-06-2024)

²⁷² Ekaterina Dorokhova, Elena Dorokhova, Tatyana Belykh, Galina Koren'kova, *Economic and Legal Aspects of Cryptocurrency Usage in Russia*, Proceedings of the 3rd International Conference Spatial Development of Territories (SDT 2020), 327,327-332, 14 Jul 2021

²⁷³ Anna Zharova, Ian Lloyd, *An examination of the experience of cryptocurrency use in Russia*. In *Search of better practice*, Volume 34, Issue 6, *Computer Law & Security Review*, December 2018, Pages 1300-1313

²⁷⁴ Aleksandr P. Alekseenko and Matthew O. Gidigbi, *Legal regulation of a cryptocurrency used in Nigeria and Russia: a comparative study*, Vol. 2, No. 2, *International Journal of Blockchains and Cryptocurrencies*, 30 Sep 2021

²⁷⁵ Golenko, Alina Andreevna, and Irina Alexandrovna Kislaya. *A wonder of scientific and technological progress—Cryptocurrency*. *New Science: Strategies and Vectors of Development* 1: 78–81 (2017)

²⁷⁶ *ibid*

cryptocurrencies, however, differ greatly; some see them as electronic money, some as commodities, and still others as valuable property or information.²⁷⁷

In Russia, cryptocurrency is not accepted as legal tender. In contrast to fiat currency, which is produced by the Bank of Russia, cryptocurrency is created by users of the network (miners).²⁷⁸ Unlike other forms of payment that need permission from creditors, legal tender in Russia enables the settlement of any monetary obligation as required by law.²⁷⁹ It's common to mistake cryptocurrencies for electronic money. But these are the main distinctions:

1. Denomination: Unlike electronic money, which is given by one person to another to satisfy financial commitments, cryptocurrency is not denominated in any conventional currency.²⁸⁰
2. Intermediaries: While electronic money transactions need an operator to confirm the payment, cryptocurrency transactions do not involve intermediaries.²⁸¹

The trend towards digital currencies and the desire to do away with government and bank middlemen spur debates about the legality of accepting cryptocurrencies as a means of payment. But there are a lot of obstacles to overcome, including the volatility of cryptocurrencies and the massive regulatory changes required to incorporate them into the current financial system. Since cryptocurrencies are not classified as electronic money or payment systems under current Russian regulations, such as the Federal Law "On the National Payment System," legal recognition of cryptocurrencies is difficult and unlikely to occur absent significant legislative reforms.²⁸²

²⁷⁷ Arkhireeva, Anastasia Sergeevna, and Alexey Pavlovich Podolyan. *The Problem of Legal Regulation of Cryptocurrency in the Russian Federation*/Epomen. pp. 28–35 (2020)

²⁷⁸ Grishaev, Sergey Pavlovich. 2015. *Evolution of Legislation on Objects of Civil Rights*. Available online: <http://www.consultant.ru> (accessed on 19-06-2024)

²⁷⁹ Pekhtereva, Elena Alexandrovna. *Prospects for the use of blockchain technology and cryptocurrency in Russia*. *Economic and Social Problems of Russia* 1: 71–95 (2018)

²⁸⁰ See part 3 of article 1 of the Federal Law of July 31, 2020, N 259-FL "On digital financial assets, digital currency and on amendments to certain legislative acts of the Russian Federation". Available online: www.consultant.ru (accessed on 19-06-2023)

²⁸¹ See article 3 of the Federal Law of 27.06.2011 No. 161-FL (as amended on 18.07.2017) "On the National Payment System". Available online: www.consultant.ru (accessed on 19-06-2023).

²⁸² Federal Law of 27 June 2011 No. 161-FL (as amended on 18 July 2017) "On the National Payment System". Available online: www.consultant.ru (accessed on 19-06-2023)

CHINA

China has taken a very strict regulatory approach to cryptocurrencies. In an effort to reduce the risks associated with cryptocurrencies, some Chinese financial authorities have released legislation since 2013, categorising them as unlawful for use in public financing and related activities. Nevertheless, some sites register users abroad in order to get around these restrictions. Recent actions in 2021 placed even more emphasis on the illegality of virtual currency transactions and the importance of educating the people about the dangers involved.

The passing of the Data Security Law (2021), the Personal Information Protection Law (2021), and the Cryptography Law (2020) are important legislative initiatives. The purpose of these legislation is to guarantee legal control and govern blockchain-based information services. The first steps towards blockchain supervision were taken in 2019 when the Cyberspace Administration of China started registering domestic blockchain information services. Regulating well is essential to balancing innovation with risk, as evidenced by previous P2P financial problems. For blockchain oversight and investor suitability for digital assets, legal frameworks are required.²⁸³

Due to operational risks, market volatility, and regulatory loopholes, cryptocurrencies pose a threat to financial stability and regulation. Regulations must keep up with the explosive growth of digital finance while maintaining financial stability and utilising innovations such as distributed ledgers and blockchain.²⁸⁴

China can learn from the UK's regulatory sandbox approach, which was unveiled in 2015. It offers a regulated setting for fintech developments, enabling legal flexibility and promoting communication between regulators and businesses.²⁸⁵ By establishing a regulatory sandbox, China may provide guidance to blockchain-related financial companies, lessen regulatory ambiguity, and foster innovation. China's experience with third-party payment platforms, such as WeChat Pay and Alipay, demonstrates how

²⁸³ De Filippi, Primavera, and Aaron Wright. *Blockchain and the Law: The Rule of Code*, 300. Harvard University Press, 2018.

²⁸⁴ Huang, Ying, and Maximilian Mayer. "Digital Currencies, Monetary Sovereignty, and US–China Power Competition." *Policy and Internet* 14 (2): 324–47 (2022)

²⁸⁵ Deloitte. 2018. *A Journey through the FCA Regulatory Sandbox: The Benefits, Challenges, and Next Steps*. Centre for Regulatory Strategy EMEA.
<https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-fca-regulatory-sandbox-project-innovate-finance-journey.pdf> (accessed 19-06-2024).

inclusive finance may flourish under lax regulation.²⁸⁶ China's supervision of digital currencies can benefit from this strategy. Future legislation can be improved by creating a national digital financial supervision sandbox and taking lessons from past mistakes and triumphs.²⁸⁷ In January 2020, China opened its regulatory sandbox, which included a variety of organizations and technological advancements. The goal of this project is to combine innovation and risk management while studying the fundamentals of global financial markets. Consumer protection, fintech innovation assistance, and economic growth can all be achieved by ongoing regulatory technology (RegTech) optimization and cooperation amongst regulators.²⁸⁸

Expert in criminal law Zhang Mingkai of Tsinghua University claims that the crime of theft includes both specifically defined property and property interests. He lists the following three requirements for the item being stolen: it must be valued, manageable, and transferable.²⁸⁹ A cryptocurrency that satisfies these requirements is Bitcoin. Bitcoin may be exchanged and transferred, its value is very volatile²⁹⁰ but has continuously been large, typically tens of thousands of dollars per Bitcoin, and its holders can control and manage their Bitcoin through private keys. Stealing Bitcoin is therefore considered theft.²⁹¹ The same crimes that apply to traditional property also apply to Bitcoin, such as fraud and illicit embezzlement. Therefore, taking possession of someone else's cryptocurrency illegally may be regarded as a related property offense.²⁹²

SOUTH AFRICA

²⁸⁶ Review and Outlook of China Banking Industry 2018, Deloitte, <https://www2.deloitte.com/cn/en/pages/financial-services/articles/listed-chinese-banks-results-analysis-for-2018.html> (last accessed on 19-06-2024)

²⁸⁷ Leinonen, Harry.. "Wholesale Central Bank Digital Currency vs Traditional Real-time Gross Settlement: Benefits beyond a New Acronym?" *Journal of Payments Strategy and Systems* 17 (1): 68–85 (2023).

²⁸⁸ Cheng, Le, Jiakuan Qiu, and Yi Yang. "Constructing Cybersecurity Discourse via Deconstructing Legislation." *International Journal of Legal Discourse* 8 (2): 273–97 (2023)

²⁸⁹ Mingkai, Zhang. "On theft of property interests [J]." *Chinese and Foreign Law* 6 (2016).

²⁹⁰ Liu, Jinan, and Apostolos Serletis.. "Volatility in the Cryptocurrency Market." *Open Economies Review* 30: 779–811(2019)

²⁹¹ Cheng, Le, and Xiuli Liu. "From Principles to Practices: The Intertextual Interaction between AI Ethical and Legal Discourses." *International Journal of Legal Discourse* 8 (1): 31–52, 2023

²⁹² Hu, Ming, Xitao Hu, and Le Cheng. "Exploring Digital Economy: A Sociosemiotic Perspective." *International Journal of Legal Discourse* 6 (2): 181–202 (2021)

In South Africa, where there is a comparatively pro-crypto atmosphere and legality for its use by both individuals and corporations, cryptocurrency is lawful.²⁹³ Regarding cryptocurrency legislation and the creation of favorable trading frameworks, South Africa has been among the forefront countries in the area. The country has eliminated a great deal of regulatory uncertainty through its proactive approach to regulation. Investment is the primary use case for cryptocurrency in South Africa²⁹⁴. In recent years, the nation's citizens have exchanged digital currency valued at billions of dollars. The government of South Africa is working with other members of the BRICS alliance to do research into blockchain's potential to facilitate commerce and other forms of economic growth.²⁹⁵ In the meantime, the biggest financial institution on the continent, Standard Bank, has joined Marco Polo, a blockchain-based trade finance network, which will facilitate access to blockchain financing in each of the 20 African nations where it conducts business.

A number of important institutions are leading the charge in South Africa to regulate cryptocurrency. In order to monitor financial market behaviour and guarantee consumer safety, the Financial Sector Conduct Authority (FSCA) is essential. Recognizing the potential hazards and increasing appeal of cryptocurrencies, the FSCA has moved decisively to include crypto-related operations inside its regulatory purview.²⁹⁶ The Intergovernmental Fintech Working Group (IFWG), which is composed of representatives from several South African regulatory agencies, including the Financial Intelligence Centre (FIC), the National Treasury, the South African Reserve Bank (SARB), and the Financial Services Commission of Africa (FSCA), is another important organization.²⁹⁷ An organized regulatory strategy has been formulated in

²⁹³ An overview of the cryptocurrency regulations in South Africa, Cointelegraph, <https://cointelegraph.com/learn/cryptocurrency-regulations-in-south-africa> (last accessed on 19-06-2024)

²⁹⁴ J. Jepkoech and C. A. Shibwabo, "Implementation of blockchain technology in Africa," *European Journal of Computer Science and Information Technology*, vol.7, no. 4, , pp. 1-4 (2019)

²⁹⁵ C. M. M. Kotteti and M.N.O.Sadiku, "Blockchain technology," *International Journal of Trend in Research and Development*, vol. 10, no. 3, pp. 274-276 (2023)

²⁹⁶ Rhoda Adura Adeleye 1, Onyeka Franca Asuzu 2, *, Binaebi Gloria Bello 3, Oluwaseun Peter Oyeyemi 4 and

Kehinde Feranmi Awonuga, Digital currency adoption in Africa: A critical review and global comparison, 21(02), *World Journal of Advanced Research and Reviews*, 130–139 (2024)

²⁹⁷ Alabi, A.M., Oguntoyinbo, F.N., Abioye, K.M., John-Ladega, A.A., Obiki-Osafiele, A.N. and Daraojimba, C., Risk management in Africa's financial landscape: a review. *International Journal of Advanced Economics*, 5(8), pp.239-257 (2023)

large part thanks to the IFWG. A position paper on the suggested regulatory framework for cryptocurrency assets was released by the IFWG in 2021.²⁹⁸

The possibility of using cryptocurrencies for money laundering and terrorist financing is one of the main issues with them. As a result, South Africa has included cryptocurrency regulations into its current AML and CTF framework. Know Your Customer (KYC) processes, also known as customer due diligence (also known as CDD) measures, are now mandatory for cryptocurrency exchanges and service providers. Additionally, any suspicious transactions must be reported by these organisations to the Financial Intelligence Centre (FIC).²⁹⁹

For taxation purposes, cryptocurrencies are regarded as financial assets by the South African Revenue Service (SARS). Due to this classification, both income tax and capital gains tax are applicable to transactions involving cryptocurrencies, including mining, trading, and payments. In order to ensure that the tax implications of digital assets are adequately recorded within the national tax system, taxpayers are required to report their cryptocurrency holdings and transactions in their tax returns.³⁰⁰

According to the IFWG's position paper, any cryptocurrency exchange and wallet provider that does business in South Africa ought to have an FSCA licence and be registered. The purpose of this regulatory action is to formally oversee these organisations and subject them to regulatory scrutiny and compliance obligations. Enhancing accountability and transparency in the cryptocurrency market is another benefit of licencing.³⁰¹

One of the main goals of South Africa's cryptocurrency regulations is to guarantee consumer protection. The FSCA has taken the initiative to inform the public about the dangers and possible frauds connected to cryptocurrency.³⁰² Transparency, just

²⁹⁸ IFWG, <https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2021/fintech/IFWG%20CAR%20WG%20Position%20Paper%20on%20Crypto%20Assets%20Press%20release.pdf> (last accessed on 19-06-2024)

²⁹⁹ IFWG, Position Paper on Crypto, https://www.treasury.gov.za/comm_media/press/2021/IFWG_CAR%20WG_Position%20paper%20on%20crypto%20assets_Final.pdf (last accessed on 19-06-2024)

³⁰⁰ Falcao, Tatiana and Michel, Bob, Towards a Comprehensive Cryptocurrency Income Tax policy for Countries in Africa (December 8, 2023). Available at SSRN: <https://ssrn.com/abstract=4658850> or <http://dx.doi.org/10.2139/ssrn.4658850>

³⁰¹ Supra note 294

³⁰² Banso, A. A., Coker, J. O., Uzougbo, N. S., & Bakare, S. S. The Nexus Of Law And Sustainable Development In South West Nigerian Public Policy: A Review Of Multidisciplinary Approaches In Policy

processes, and the security of client assets are the main goals of regulatory actions.³⁰³ The objective is to reduce the danger of fraud and financial loss while fostering a secure environment for users to interact with digital assets.³⁰⁴

EGYPT

The main regulatory body in charge of Egypt's financial system, which includes cryptocurrencies, is the Central Bank of Egypt.³⁰⁵ The CBE outlawed dealing in cryptocurrencies in 2020, declaring that it is illegal to trade, promote, or set up platforms for trading cryptocurrencies without the required licenses. Concerns over consumer protection, money laundering, and financial stability were the main drivers for this action.³⁰⁶ Another important organization that plays a significant role in overseeing Egypt's financial markets is the Financial Regulatory Authority. Although the FRA's primary focus has been on conventional financial products, it is also becoming more involved in the supervision of emerging financial innovations, such as cryptocurrency.³⁰⁷ Because cryptocurrencies are not issued by a central bank or other legally recognized, accountable centralized issuing authority, they lack any issuing cover that would ensure the stability of such currency and safeguard the rights of its users.³⁰⁸

ETHIOPIA

According to a 2018 study, Ethiopia has a divisive position on cryptocurrencies but also shows indications of ongoing situational awareness.³⁰⁹

Formation. *International Journal of Applied Research in Social Sciences*, 5(8), 308-329 (2023).

³⁰³ Chikwe, C. F., Eneh, N. E., & Akpuokwe, C. U. Conceptual framework for global protection against technology-enabled violence against women and girls. *International Journal of Science and Research Archive*, 11(2), 279-287 (2024).

³⁰⁴ Ajayi, F.A., Udeh, C.A. 'Review of Workforce Upskilling Initiatives for Emerging Technologies in IT',

International Journal of Management & Entrepreneurship Research, 6(4), pp. 1119-1137 (2024)

³⁰⁵ Central Bank of Egypt, <https://www.cbe.org.eg/en/about-cbe> (last visited on 19-06-2023)

³⁰⁶ Egypt Independent, CBE warns against cryptocurrency dealings in Egypt, <https://egyptindependent.com/cbe-warns-against-cryptocurrency-dealings-in-egypt/> (last accessed on 19-06-2024)

³⁰⁷ FinTech Egypt, https://www.cbe.org.eg/-/media/project/cbe/listing/news/english/files/egypt-fint_11_en.pdf (last accessed on 19-06-2024)

³⁰⁸ Central Bank of Egypt, The Fourth (4th) Warning Statement on Cryptocurrencies, <https://www.cbe.org.eg/en/news-publications/news/2023/03/08/warning-statement> (last accessed on 19-06-2024)

³⁰⁹ Ecobank, <https://cdn.crowdfundinsider.com/wp-content/uploads/2018/08/Middle-Africa-Briefing-EcoBank-Note-Digital-African-crypto-regulation-August-2018.pdf>, (last accessed on 19-06-2023)

Ethiopian authorities have not yet publicly endorsed cryptocurrency as of yet.³¹⁰The Ethiopian government announced a direction shift in August 2022. A directive has been released by the Information Network Security Agency (INSA) mandating that all cryptocurrency operators register with them. INSA stated, "There is interest among individuals and entities in providing crypto services including mining and transfer," but it also threatened to penalize unregistered cryptocurrency players. This signaled a change from a complete prohibition to a more cautious strategy that aims to control the cryptocurrency market while safeguarding the public from possible dangers. The potential advantages of cryptocurrencies, such as their ability to ease cross-border payments and transform digital identity, were also acknowledged by the Ethiopian government. INSA and other organizations are currently developing rules to provide thorough oversight over the operations, financial consequences, and environmental effects of the crypto assets.³¹¹ Ethiopia came in fourth place among the top destinations for Bitcoin mining rigs in 2023, after the United States, Hong Kong, and Asia, according to statistics from Bitcoin mining services provider Luxor Technologies.³¹²

IRAN

Iran approved cryptocurrency mining as a legitimate industry in 2018 so that the country could keep an eye on and control the mining farms that were already up and running.³¹³ The administration of President Hassan Rouhani announced in July 2018 that it planned to introduce a national cryptocurrency.³¹⁴ A news agency connected to the Central Bank of Iran detailed the cryptocurrency's features and mentioned that it would be supported by the rial, the Iranian national currency.³¹⁵³¹⁶ Despite the trade

³¹⁰ Ibid

³¹¹ EMURGO, Ethiopia: From Crypto Ban to Crypto Regulation, <https://www.emurgo.africa/blog/posts/ethiopia-from-crypto-ban-to-crypto-regulation> (last accessed on 19-06-2023)

³¹² Abubakar Nur Khalil, Ethiopia To Become The First African Country To Start Bitcoin Mining, Digital Assets <https://www.forbes.com/sites/digital-assets/2024/02/21/ethiopia-to-become-the-first-african-country-to-start-bitcoin-mining/> (last accessed on 19-06-2023)

³¹³ Atlantic Council, Iran's muddled relationship with cryptocurrency is self-inflicted, <https://www.atlanticcouncil.org/blogs/iransource/irans-muddled-relationship-with-cryptocurrency-is-self-inflicted/> (last accessed on 19-06-2023)

³¹⁴ FP, Iran Has a Bitcoin Strategy to Beat Trump, <https://foreignpolicy.com/2020/01/24/iran-bitcoin-strategy-cryptocurrency-blockchain-sanctions/> (last accessed on 19-06-2024)

³¹⁵ The New York Times, How Bitcoin Could Help Iran Undermine U.S. Sanctions, <https://www.nytimes.com/2019/01/29/world/middleeast/bitcoin-iran-sanctions.html> (last accessed on 19-06-2023)

³¹⁶ Iran International, Iranians Warned To Be Wary As Daily Crypto-Currency Trade Reaches \$20 Million, <https://old.iranintl.com/en/iran-in-brief/iranians-warned-be-wary-daily-crypto-currency-trade-reaches-20-million> (last accessed on 19-06-2024)

embargo, Iranians may be able to conduct foreign transactions thanks to the cryptocurrency. Iranians were trading between \$16 and \$20 million in 12 different cryptocurrencies every day as of December 2020. Nearly \$1 billion worth of bitcoin is mined annually in Iran.³¹⁷

Iran outlawed the ownership and trading of cryptocurrencies in 2018 over worries about money laundering and the funding of terrorism.³¹⁸ It was forbidden for any Iranian financial institution—including banks, credit unions, and currency exchanges—to deal with cryptocurrencies or advertise them.³¹⁹ But in 2019, the government started to lift this prohibition since the penalties were severely damaging their national currency. It was thought that using cryptocurrency could help avoid depending so heavily on the US dollar.³²⁰ The Central Bank of Iran has implemented new regulations that permit the ownership and mining of cryptocurrencies, but prohibit the use of digital currency as a means of payment.³²¹

Furthermore, "it prohibits Iranians in the same way that they are officially prohibited from holding more than 10,000 euros from holding large amounts of global cryptocurrencies."³²² In late 2020, with the price of Bitcoin skyrocketing and the Iranian stock market and currency plunging to all-time lows, the Iranian government started to consider reinstating additional cryptocurrency controls.³²³ Thus far, the only modification made to the legislation is the imposition of stricter limitations on cryptocurrency miners that use excessive amounts of energy.

UNITED ARAB EMIRATES

With its cryptocurrency initiatives, the UAE has set the worldwide standard, but the race is far from over. More popular avenues into digital investing have been made

³¹⁷ Reuters, Iran uses crypto mining to lessen impact of sanctions, study finds, <https://www.reuters.com/technology/iran-uses-crypto-mining-lesser-impact-sanctions-study-finds-2021-05-21/> (last accessed on 19-06-2024)

³¹⁸ Reuters, Iran central bank bans cryptocurrency dealings, <https://www.reuters.com/article/us-cryptocurrencies-iran/iran-central-bank-bans-cryptocurrency-dealings-idUSKBN1HT0YN/> (last accessed on 19-06-2024)

³¹⁹ Ibid

³²⁰ Aljazeera, Iran's central bank issues draft rules on cryptocurrency, <https://www.aljazeera.com/economy/2019/1/29/irans-central-bank-issues-draft-rules-on-cryptocurrency> (last accessed on 19-06-2024)

³²¹ Ibid

³²² Ibid

³²³ Aljazeera, Bitcoin backlash: Iran cracks down on crypto exchanges, <https://www.aljazeera.com/economy/2021/3/12/bitcoin-backlash-iran-cracks-down-on-crypto> (last accessed on 19-06-2024)

possible by recent rulings by the US Securities and Exchange Commission to permit investment in spot bitcoin exchange-traded funds (ETFs) and the London Stock Exchange to accept applications for bitcoin and Ethereum ETNs.³²⁴ The local populace has a 10%³²⁵ acceptance rate for cryptocurrencies, although that number is quickly climbing. Data from April 2024 showed that the average daily count of cryptocurrency traders in the area exceeded 500,000 in February, indicating a 51% increase in comparison to the same month last year.³²⁶ With a 68% growth of daily traders over the same one-year period, the UAE leads the world in adoption per capita.³²⁷

In 2018, by introducing bitcoin and digital asset guidelines, Abu Dhabi Global Markets (via the Financial Services Regulatory Authority) established a precedent for regulations.³²⁸ Hub71 is a global technology system that Abu Dhabi launched. The center aims to foster innovation while housing investors and start-ups. It declared plans to provide \$2 billion in funding for Web3 projects in 2023.³²⁹ In the year 2022, UAE saw many regulations taken up for trading in cryptocurrencies and to control the crimes relating to the crypto assets. The UAE passed a penal code in January that is intended to supplement current AML regulations.³³⁰ The UAE was listed on the FATF's grey list in March.³³¹ The first independent regulator for digital assets was established by the DIFC and is known as the Virtual Asset Regulatory Authority (VARA). VARA implemented a full market product (FMP) regulatory framework in December. This came after a few months during which it gave virtual asset service providers (VASPs) interim licenses that allowed them to establish offices and recruit employees but refrain from engaging in customer-facing activities. Subsequently, it established a minimum viable product (MVP) licensing framework that permits particular suppliers to function

³²⁴ Accounting and Business, UAE cultivates crypto hub credentials, <https://abmagazine.accaglobal.com/global/articles/2024/mar/business/uae-cultivates-crypto-hub-credentials.html> (last accessed on 19-06-2024)

³²⁵ CoinDesk, Abu Dhabi: A Wealthy Middle-East Capital Creating a Bridge From TradFi to Crypto, <https://www.coindesk.com/consensus-magazine/2023/06/27/abu-dhabi-a-wealthy-middle-east-capital-creating-a-bridge-from-tradfi-to-crypto/> (last accessed on 19-06-2024)

³²⁶ Cryptonews, Crypto Adoption Surges 166% In Middle East As UAE Leads: Bitget, <https://cryptonews.com/news/crypto-adoption-middle-east.htm> (last accessed on 19-06-2024)

³²⁷ Ibid

³²⁸ Forbes, How The UAE Became A Crypto Hub Poised For Explosive Growth, <https://www.forbes.com/sites/digital-assets/2023/11/16/how-the-uae-became-a-crypto-hub-poised-for-explosive-growth/?sh=667c494c32a8> (last accessed on 19-06-2024)

³²⁹ Supra note 321

³³⁰ Vistra, Analysing the UAE's removal from the FATF's grey list, <https://www.vistra.com/insights/analysing-uaes-removal-fatfs-grey-list> (last accessed on 19-06-2024)

³³¹ Ibid

in restricted ways inside approved market sectors. The evolution of this work was shown by the FMP.³³² The ADGM revised its AML and penalties guidelines and policies that same month. Provisions pertaining to digital assets with the FATF's travel regulation have been modified.³³³ In 2023, the UAE cabinet unveiled the first federal law regulating virtual assets in January. The purpose of this regulatory framework is to safeguard investors and oversee the industry.³³⁴ Financial institutions that deal with virtual assets should refer to the AML and counterterrorism funding guidelines released by the UAE Central Bank in May.³³⁵ The Distributed Ledger Technology (DLT) Foundations Regulations 2023 were published by the ADGM in November. It gives DLT foundations and decentralised autonomous organisations (DAOs) a complete framework within which they can function and create tokens.³³⁶ In 2024, the DIFC declared in March that its Digital Assets Law had been passed. In addition, the zone aims to stay up with technology advancements by introducing new laws and amending old ones to provide investors more clarity.³³⁷ Following two years of improvements to its financial regulatory system, the UAE was taken off the FATF's grey list in April.³³⁸

Leading the charge in this shift are Abu Dhabi and Dubai, whose regulatory initiatives have been called "supercharged," and which prioritise digital assets in an effort to draw in significant institutional investment.³³⁹ They accomplished this by implementing a two-pronged approach: first, they included digital assets to the existing regulatory frameworks for traditional banking, and then they introduced creative regulation of

³³² Out-Law news, VARA's FMP licence rollout 'firm footing' for growth of UAE virtual assets, <https://www.pinsentmasons.com/out-law/news/vara-fmp-licence-rollout-growth-uae-virtual-assets> (last accessed on 19-06-2024)

³³³ Cointelegraph, UAE regulator revises sanctions, AML policy to enact FATF's Travel Rule, <https://cointelegraph.com/news/uae-revises-sanctions-aml-fatf-travel-rule> (last accessed on 19-06-2024)

³³⁴ Out-Law news, UAE introduces federal level virtual asset regulation, <https://www.pinsentmasons.com/out-law/news/uae-introduces-federal-level-virtual-asset-regulation> (last accessed on 19-06-2024)

³³⁵ Reuters, UAE central bank issues AML/CTF guidance for dealing with virtual assets, <https://www.reuters.com/technology/uae-central-bank-issues-amlctf-guidance-dealing-with-virtual-assets-2023-05-31/> (last accessed on 19-06-2024)

³³⁶ ADGM, World's First Framework for Blockchain Foundations, DAOs, and Web3 Entities, <https://www.adgm.com/dlt-foundations> (last accessed on 19-06-2024)

³³⁷ The Block, Dubai's tax-free economic zone DIFC enacts new Digital Assets Law, <https://www.theblock.co/post/282811/dubai-difc-digital-assets-law> (last accessed on 19-06-2024)

³³⁸ Vistra, Analysing the UAE's removal from the FATF's grey list, <https://www.vistra.com/insights/analysing-uaes-removal-fatfs-grey-list> (last accessed on 19-06-2024)

³³⁹ CoinDesk, QCP and Further Ventures Announce Partnership for Middle East Crypto Expansion, <https://www.coindesk.com/policy/2024/04/17/qcp-capital-and-further-ventures-announce-partnership-for-middle-east-crypto-expansion/> (last accessed on 19-06-2024)

exchanges for digital assets.³⁴⁰ The similar strategy has been followed by both emirates: the establishment of a free-trade zone and an impartial, encouraging regulatory body. In Dubai's case, there is the entirely foreign-owned Dubai International Financial Centre (DIFC), a tax-free zone. Proactive and well-known for striking a balance between innovation and risk is the Dubai Financial Services Authority.³⁴¹ Similar to this, Abu Dhabi established the offshore Abu Dhabi Global Market (ADGM), which has been open for business since 2015 and is drawing a growing number of businesses and investors due to its fintech-friendly mandate.³⁴² Regarding the regulation of digital assets, the Financial Services Regulatory Authority (FSRA) is thought to be very inclusive.³⁴³ It has been said that Abu Dhabi usually concentrates on the institutional sector, whereas Dubai is more consumer-focused.³⁴⁴

³⁴⁰ Supra note 324

³⁴¹ Ibid

³⁴² International Policy Digest, Understanding Abu Dhabi's Rise as a Cryptocurrency Hub, <https://intpolicydigest.org/understanding-abu-dhabi-s-rise-as-a-cryptocurrency-hub/> (last accessed on 19-06-2024)

³⁴³ Supra note 320

³⁴⁴ Ibid

CHAPTER 6

REGULATORY FRAMEWORK FOR CRYPTOCURRENCY

Regulators face new hurdles as a result of the cryptocurrency markets' explosive rise worldwide. A few academics and policymakers have expressed concern that regulations may even stifle the growth of a potentially lucrative new financial asset class by driving trading activity overseas into less regulated areas. Others think that by giving market participants certainty, regulations will increase activity. The argument supporting this disagreement is whether or not either result is desirable. While some think that governments should encourage the growth of the cryptocurrency industry domestically, others see cryptocurrencies as vehicles for fraud and unlawful activity that need to be controlled by stringent laws or even outright prohibitions. However, the majority of these discussions to date have been held in the absence of data regarding how regulations affect market activity.³⁴⁵

The value and appeal of cryptocurrencies, which are decentralized digital assets based on blockchain technology, have increased dramatically over the last ten years. The demand for regulation and legal clarity has grown as these digital currencies have been more extensively incorporated into the world financial system. The regulatory environment surrounding cryptocurrencies is greatly influenced by the courts, which handle matters ranging from consumer protection and taxation to fraud and classification. The rapid change in the technological advancements in cryptocurrency and blockchain can make it difficult for the Courts to apply the existing laws. The jurisdiction is yet another difficulty where determination of the appropriate jurisdiction can be complex as the parties are located in different countries and the crypto assets can acquire both the features of currency as well as property. The third is the complexity involved in understanding the blockchain and cryptography which requires expert knowledge which often poses a challenge for courts and legal professionals.

TESTS USED BY COURTS IN CRYPTOCURRENCY CASES

³⁴⁵ Brian D Feinstein, Kevin Werbach, The Impact of Cryptocurrency Regulation on Trading Markets, *Journal of Financial Regulation*, Volume 7, Issue 1, March 2021, Pages 48–99

For instance, taking the case of *Internet and Mobile Association of India v Reserve Bank of India*, the Court while considering the arguments of both the parties ruled in favor of the petitioners as the circular of RBI failed the proportionality test. In *Modern Dental College and Research Centre v. State of Madhya Pradesh*³⁴⁶, the Supreme Court noted that four tests were established regarding the test of proportionality: (i) that the measure is designated for a proper purpose; (ii) that the measures are rationally connected to the fulfillment of the purpose; (iii) that there are no alternative, less invasive measures; and (iv) that there is a proper relation between the importance of achieving the aim and the importance of limiting the right. The court cited the European Union Parliament's view that regulatory mechanisms are sufficient, making a complete ban on cryptocurrency-related businesses unnecessary. The Supreme Court noted proportionality issues, referencing the Inter-Ministerial Committee's initial recommendation for a legal framework (Crypto-token Regulation Bill, 2018) but ultimate conclusion that a ban would be extreme. The committee suggested regulatory measures could achieve the same goals. Importantly, the RBI hadn't found evidence in over five years that virtual currency exchanges negatively impacted RBI-regulated entities. The court's decision primarily affects VC exchanges, which are prohibited from accessing banking services under the current restrictions.

Due to the lack of a proper regulatory framework, the Courts across the globe had to intervene and propose various legal tests and legal principles for cryptocurrencies. Courts play a crucial role in establishing the cryptocurrency regulatory framework. Courts guarantee that cryptocurrencies are properly classified, safeguard consumers and investors from fraud, uphold AML requirements, settle tax issues, and settle property and contract disputes by using recognised legal principles and standards. It will be difficult for judges to adapt current laws to new technologies as the bitcoin market develops. But in order to maintain a fair and transparent market, safeguard participants, and ensure legal clarity—all of which are essential for the bitcoin ecosystem's healthy development—their choices are vital.

The United States Supreme Court created the Howey Test as a legal criterion in the 1946 decision of *SEC v. W.J. Howey Co.*³⁴⁷ The Howey Test determines if a transaction qualifies as an "investment contract" subject to Securities Act regulation, crucial for

³⁴⁶ *Modern Dental College and Research Centre v. State of Madhya Pradesh* [(2016) 7 SCC 353]

³⁴⁷ *SEC v. Howey Co.*, 328 U.S. 293 (1946)

categorizing financial products, including cryptocurrencies, as securities. It has four criteria:

- Investment of money: Easily met when people buy tokens with fiat or other cryptocurrencies.
- Common enterprise: More complex, typically involving pooled investor funds or dependence on a single project's success.
- Expectation of profit: Often satisfied when investors buy tokens expecting value appreciation, reinforced by marketing materials.
- Efforts of others: Met if project creators or promoters significantly impact the investment's performance and profitability.

Many cryptocurrency projects, especially ICOs, often satisfy these criteria, potentially classifying them as securities.³⁴⁸ This test was used in *SEC v Ripple*³⁴⁹, under the Securities Act of 1933 and the Securities Exchange Act of 1934, it is deemed a security if it satisfies the requirements. It is noteworthy that the existence of an investment contract is contingent upon the "investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others."³⁵⁰ When sold to institutional investors, XRP and other cryptocurrencies are considered securities according to the Howey Test and the ruling in *SEC v. Ripple*. They are not when they are offered to individual investors on exchanges.³⁵¹

The Reves Test examines whether the financial instrument or offering is a "note," and as such, a security under federal securities laws, in contrast to the Howey Test, which concentrates on the examination of an investment contract. The Reves Test is based on the case *Reves v. Ernst & Young*³⁵², which addressed the issue of whether demand notes obtained from a cooperative for agricultural purposes could be classified as securities. Four elements are identified by the Reves Test, the balance of which can determine

³⁴⁸ CNBC TV 18, <https://www.cnbc.tv/18.com/cryptocurrency/crypto-howey-test-and-what-it-means-to-cryptocurrencies-explained-14980081.htm>, Oct 19 2022

³⁴⁹ Sec. & Exch. Comm'n v. Ripple Labs., 20 Civ. 10832 (AT) (S.D.N.Y. Oct. 3, 2023)

³⁵⁰ U.S. Securities and Exchange Commission. "Framework for 'Investment Contract' Analysis of Digital Assets." <https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets> Mar 8, 2023

³⁵¹ Holland & Knight LLP. "SEC v. Ripple: When a Security Is Not a Security.", <https://www.hkllaw.com/en/insights/publications/2023/07/sec-v-ripple-when-a-security-is-not-a-security>, Jul 20, 2023

³⁵² *Reves v. Ernst & Young*, 494 U.S. 56 (1990)

whether a note qualifies as a security or not. These include: 1) the buyer and seller's objectives; 2) the distribution plan; 3) the realistic expectations of the investing public; and 4) any risk-reduction measures.³⁵³ The Reves Test was used by the SEC in its 2021 cease-and-desist action against Blockchain Credit Partners, d/b/a DeFi Money Market ("DMM") and its creators to establish whether the tokens being issued were, in fact, securities. They contended that DMM and its founders sold tokens to raise money for their company, and that customers bought them only to get a predetermined return using the Reves Test's components. The tokens satisfied all four requirements of the Reves Test since they were also made available to the general public and marketed as investments without any additional risk-reducing measures.³⁵⁴ A digital asset will be subject to a wide range of federal and possibly state securities rules and regulations if it qualifies as a security. These rules will determine how it can be distributed, sold, and offered to investors. They will also determine what disclosures may be required, and how infrastructure providers and financial institutions supporting its issuance, management, and trading can handle it. Furthermore, unintentionally triggering the entirety of the U.S. securities laws for its issuers, investors, and other partners who may enable transactions in the asset are digital assets that might be deemed investment contracts or notes. Thus, before starting a digital asset project, it's critical to comprehend the laws governing securities in the United States as well as other applicable guidelines and regulations.³⁵⁵ SIFMA believes that, for the most part, blockchain-based securities, which are also referred to as digital asset securities or security tokens, can be included in the current regulatory frameworks with only minor adjustments needed to account for the special ways that distributed ledger technology and blockchain enable asset ownership to be tracked and transaction history to be recorded.

The Economic Reality Test determines if cryptocurrencies are securities. It considers:

- Investment of money (typically in tokens)
- Pooling of funds (common in ICOs)
- Profit expectation (based on project success)

³⁵³ Ibid

³⁵⁴ William Hinman, Dir., Div. of Corp. Fin., SEC, Digital Asset Transactions: When Howey Met Gary (Plastic), Remarks at the Yahoo Finance All Markets Summit: Crypto (June 14, 2018), <https://www.sec.gov/news/speech/speech-hinman-061418>

³⁵⁵ SIFMA, https://www.sifma.org/resources/news/when-is-a-digital-asset-a-security/#_ftn32

This test focuses on economic substance over form, crucial for proper regulation and investor protection in the complex cryptocurrency market. The Economic Reality Test will continue to be a crucial instrument in the regulatory framework as the cryptocurrency industry develops, ensuring that investor protections keep up with financial innovation.³⁵⁶ Kim Kardashian was charged by the U.S. Securities and Exchange Commission in 2022 for improperly endorsing a cryptocurrency asset security that EthereumMax was selling and offering without revealing that she received payment of \$250,000 to do so on her Instagram account. Kardashian was accused by the SEC of breaking the federal securities laws' anti-touting provision by neglecting to reveal that she received payment to post on her Instagram account about EMAX tokens, a cryptocurrency investment that EthereumMax was offering. Kardashian consented to pay \$1.26 million in penalties, disgorgement, and interest as part of the settlement in October 2022. She also committed to refraining from endorsing any stocks related to cryptocurrency for a period of three years. According to the SEC, the case serves as a reminder that when well-known people recommend investments, they must disclose not only that they are being paid but also the amount of the payment they received for the promotion.³⁵⁷

When it came to Internet domain names in the late 1990s, a lot of courts appeared to be at a loss about how to apply the concept of jurisdiction. A specific instance that perplexed the courts led them to consider the question of deliberate benefit through established Internet-based communication with the forum state's population. The "Zippo test," sometimes referred to as the "Zippo sliding scale" test, is a legal method that courts employ to decide whether it is acceptable to exercise personal jurisdiction over an out-of-state defendant in matters involving online activity. *Zippo Manufacturing Co. v. Zippo Dot Com, Inc.*³⁵⁸, established this criteria. The test evaluates how much the defendant uses their website or other online activities to communicate with the forum state. The three domains of the Zippo test involve active websites, where the websites conduct business over the internet, allowing users to enter

³⁵⁶ Guseva, Yuliya, *The Economic Reality of NFT Securities* (October 9, 2023). CAMBRIDGE HANDBOOK ON LAW AND POLICY ON NFTS, Cambridge University Press, 2024 Forthcoming

³⁵⁷ Jerry W. Markham, *Securities and Exchange Commission vs. Kim Kardashian, Cryptocurrencies and the "Major Questions Doctrine"*, 14 *Wm. & Mary Bus. L. Rev.* 515 (2023)

³⁵⁸ *Zippo Manufacturing Co. v. Zippo Dot Com, Inc.*, 952 F. Supp. 1119 (W.D. Pa. 1997)

into contracts and conduct transactions online; passive websites which merely provide information without allowing users to interact or engage in transactions; and interactive websites which fall between active and passive websites. They will allow some interaction like the exchange of information but will not engage in conducting business transactions. The Zippo Test has gained popularity in online when discussing issues of Internet Jurisdiction. Numerous courts made an effort to use the Zippo Test, but ultimately rejected and criticised it. Because of its degrees of materialism and involvement, it was criticised. The Zippo case is frequently cited by the courts; nonetheless, the use of the sliding scale test outlined in the decision varies widely. Furthermore, the development of technology brought about a number of empirical shifts that confused Zippo and its ancestors regarding the degree to which the rulings needed to be modified in order to resolve the problem.³⁵⁹ Applying the Zippo test to Cryptocurrencies, the first limb test which revolves around active websites, websites, or platforms that let users purchase, sell, exchange, or manage cryptocurrency, among other significant business transactions with users in the forum state. A cryptocurrency exchange that lets citizens of a forum state make deposits, withdraw money, trade cryptocurrencies, and open accounts would probably fall under that state's personal jurisdiction. Following the second limb, websites that offer cryptocurrency information without conducting business or interacting with customers in a forum setting. For example, according to the Zippo test, a blog or educational website on cryptocurrency mining that does not enable transactions or user interactions would probably not fall under the personal jurisdiction of its owners. And the last limb, websites that, while not enabling direct purchases, do permit some degree of user engagement, such as forums, customer service chats, or user account setup. a wallet service that lets users keep track of their cryptocurrency holdings but prevents direct purchases or sales via the website. Jurisdiction would be determined by the degree of interaction and focused involvement with forum state citizens. In the case of GREGORY GREENE, individually and on behalf of all others similarly situated, Plaintiff, v. MARK KARPELES, Defendant³⁶⁰, the Court applied the Zippo test, to decide that Karpeles' online presence properly gave rise to personal jurisdiction over him. It has been described as "a foundational authority regarding personal jurisdiction based upon the functioning of an internet website." The

³⁵⁹ Gladstone, Julia. Determining Jurisdiction In Cyberspace: The "Zippo" Test or the 'Effects' Test?. 10.28945/2607, Jan 1 2003.

³⁶⁰ Greene v. Karpeles, 14 C 1437, (N.D. Ill. Jun. 22, 2021)

Zippo scale "ranges from situations where a defendant actively transacts business with residents of a forum state through the use of an interactive commercial website (personal jurisdiction exists) to situations where a website is passive and only makes information available to users in the forum state (personal jurisdiction is not present)". According to that *Pennsylvania decision*, if a defendant's website "repeatedly attracts business from a forum or knowingly conducts business with forum state residents via the site," it has intentionally taken advantage of the right to do business in the state. According to the Court, Mt. Gox was an internet user who was more on the "interactive end of the Zippo spectrum." Users could open and manage accounts, conduct trades and purchases, and deposit and transfer money via the interactive Mt. Gox website. Furthermore, because users had to give Mt. Gox their addresses and other personal information when they registered accounts, Mt. Gox was aware of the addresses of its users. In addition, customers could order "Yubikeys," a hardware authentication device that enables safe account logins, to be delivered to their physical addresses. Over 19,000 users, or about 4% of all Mt. Gox users, registered with addresses; hence, Karpeles' contacts with the forum state were neither random nor isolated. Karpeles claimed that since he is on probation in Japan and cannot leave the country, it would be unfair to force him to defend in the United States. However, the Court rejected this argument, ruling that the burden of defending in Pennsylvania was justified by the interests of the plaintiffs and the forum state.³⁶¹

So, the question that can arise is how is it possible to regulate cryptocurrency than imposing a ban on them? Since cryptocurrencies were intended to be decentralized, they are not governed by a single entity. Since cryptocurrencies are autonomous, they offer an alternative to conventional financial institutions, which are usually centralized and managed by banks and non-bank financial companies. Nevertheless, the decentralized nature of the cryptocurrency sector has given way to increased centralization. Numerous prominent cryptocurrency exchanges, including FTX, Binance, and Coinbase, own a substantial market share and are centrally operated. This centralization trend has taken place for several reasons. One explanation for this is that scaling centralized organizations is often simpler than scaling decentralized ones. In

³⁶¹ Shalia M. Sakona & Philip R. Stein, *Jurisdictional Lessons from Mt. Gox Cryptocurrency Litigation*, Bilzin Sumberg, Sep 05 2019, <https://www.bilzin.com/insights/publications/2019/09/jurisdictional-lessons-from-mt-gox-cryptocurrency>

addition to processing transactions faster and more effectively than decentralized exchanges, centralized exchanges can provide a greater range of features and services, including margin trading and futures contracts. The fact that centralized exchanges have outperformed decentralized ones in terms of platform monetization is another factor. Venture capital funding has been drawn to numerous centralized exchanges, enabling them to develop and flourish. Decentralized exchanges, on the other hand, have had difficulty monetizing their platforms, which has constrained their expansion. At first, the cryptocurrency market was viewed as a reliable and decentralized alternative to established financial institutions, but some scandals and failures, such as those involving FTX, Mount Gox, and OneCoin, have damaged the sector.³⁶²

POTENTIAL FRAMEWORKS FOR REGULATION INSTEAD OF BANNING

India can adopt a regulatory framework that mitigates the risks associated with cryptocurrencies while harnessing their benefits:

- Requiring cryptocurrency exchanges and businesses to obtain licenses and register with regulatory authorities is a significant step towards ensuring the legal and secure operation of these entities within the financial ecosystem.
 1. Enhanced Security and Fraud Prevention: A major driving force for licensing and registering is to improve market security for cryptocurrencies. The risk of fraud, money laundering, and other illicit activities can be reduced by authorities by making sure exchanges and enterprises adhere to strict regulatory regulations. Strong Know Your Customer (KYC) and Anti-Money Laundering (AML) procedures, which support user identity verification and transaction monitoring for questionable activity, are normally mandated for licensed firms. All parties involved benefit from a safer environment and increased market trust as a result.³⁶³
 2. Consumer Protection: Additionally, licencing and registration safeguard customers. Users of unregulated cryptocurrency exchanges run the risk of suffering large financial losses as a result of frauds, hacks, and operational

³⁶² Sauradeep Bag, The G20 and India's role in cryptocurrency regulation, Observer Research Foundation, Jan 05 2023, <https://www.orfonline.org/expert-speak/the-g20-and-indias-role-in-cryptocurrency-regulation>

³⁶³ LexisNexis, Navigating KYC in Crypto: Your Key to Secure Transactions, May 17 2023, <https://www.lexisnexis.com/blogs/gb/b/compliance-risk-due-diligence/posts/kyc-in-crypto>

errors. Authorities can make sure these companies run honestly and transparently by making exchanges follow regulations. This entails actions like keeping sufficient cash reserves, putting robust cybersecurity procedures in place, and giving users clear and accurate information. In cases of fraud or insolvency, regulatory oversight can also help with dispute resolution and the recovery of lost money. Long-term beneficial inventions that support the activities (such distributed ledger technology, or DLT) might be hampered by a blanket prohibition on cryptocurrencies. For example, a number of central banks have started experimenting with DLT because of its apparent advantages for payments and settlements. Other experts in this field think that because DLT is more efficient and requires fewer middlemen and settlement fees, it can help low-income customers in EMDEs complete quick and inexpensive cross-border remittance transactions.³⁶⁴

3. Market Integrity: The growth and legitimacy of cryptocurrencies as a financial system depend heavily on the integrity of their market. Only respectable and law-abiding companies may function in the market thanks to licensing and registration, which helps to screen out unscrupulous actors. As a result, there is a decrease in the frequency of unfair behaviors like insider trading and market manipulation that can erode investor confidence. Moreover, regulatory frameworks can set requirements for the honest and open functioning of exchanges, creating an even playing field for all parties. For example, the Crypto Market Integrity Coalition (CMIC) unites digital asset industry players who are dedicated to facilitating a secure and prudently regulated cryptocurrency ecosystem. CMIC members agree that, despite legal requirements, market activity should be reviewed and monitored on a reasonable ongoing basis to identify and eradicate market manipulation and abuse. They also pledge to uphold the values outlined in this Code of Conduct (the Code) and the CMIC Pledge. Members of CMIC

³⁶⁴ Laura Brix Newbury, Mehmet Kerse, Crypto Consumer Protection: Why ‘Wait and See’ Is No Longer an Option, CGAP, 23 Mar 2023, <https://www.cgap.org/blog/crypto-consumer-protection-why-wait-and-see-is-no-longer-option>

acknowledge that fraud and manipulation are prohibited and pledge to do everything within their power to stop them.³⁶⁵

4. **Regulatory Oversight and Compliance:** Requiring licensing and registration gives regulatory bodies the power to keep an eye on and manage the operations of bitcoin companies. Sustaining the overall stability and integrity of the financial system depends on this oversight. Regulatory agencies have the authority to compel adherence to pertinent rules and regulations, require reports, and carry out audits. Authorities can fine people, cancel licenses, or take other remedial measures when people don't follow the rules. This guarantees that companies who deal with cryptocurrencies stay responsible and follow the law.
5. **Facilitating Innovation and Growth:** A well-crafted legal framework can foster growth and innovation in the cryptocurrency industry, even though regulation is frequently perceived as a barrier to innovation. Businesses may invest and innovate with the certainty that comes from predictable and clear regulations. Regulators can foster an atmosphere that supports the growth of lawful enterprises and the market as a whole by establishing ground rules. Moreover, regulatory compliance can help cryptocurrency companies become more credible in the eyes of institutional investors and increase the uptake of digital assets.
 - Implement strict AML and CTF regulations to prevent the misuse of cryptocurrencies for illicit activities. This includes requiring identity verification (KYC) and reporting suspicious transactions
 1. **Understanding AML and CTF in the Cryptocurrency Context:** Because of its decentralized structure and ability to provide anonymity, cryptocurrencies have drawn interest from people and groups engaged in illicit activities like money laundering, financing of terrorism, and other financial crimes. By making sure that financial institutions, including cryptocurrency exchanges and businesses, abide by rules that detect and

³⁶⁵ CMIC, https://assets-global.website-files.com/617320d94ac9cd15c7c74f3f/64c41497499608c69b6289c9_CMIC%20-%20Code%20of%20Conduct.pdf

prohibit illicit activities, AML and CTF legislation aim to counter these dangers.³⁶⁶

2. Importance of KYC (Know Your Customer): One essential part of AML and CTF rules is KYC procedures. They mandate that financial firms confirm the legitimacy of their clients. Regarding cryptocurrencies, know-your-customer (KYC) entails gathering personal data from users, including name, address, date of birth, and identity documents, to verify their identity.

Preventing Anonymity: KYC lessens the anonymity that encourages illicit activity by tying transactions to validated identities. When criminals' names are public, it becomes harder for them to utilize bitcoins to finance terrorism or launder money.**Enhancing Accountability:** By requiring KYC, people are held responsible for their activities. People are less inclined to participate in illegal activity when they are aware that their identities are traced and validated.

Building Trust: KYC procedures improve regulator and user trust. Platforms that put security and legal compliance first will likely attract more users, which will strengthen the security of the Bitcoin ecosystem.

3. Reporting Suspicious Transactions: Exchanges of cryptocurrencies are required to keep an eye out for any patterns in transactions that might point to the laundering of money or the funding of terrorism. This can include transactions involving high-risk jurisdictions, extremely big transactions, and quick transfers of funds between accounts. An exchange is required to report suspicious activity to the relevant regulatory agency as soon as it becomes aware of it. The transaction's specifics and the grounds for its suspicion are covered in this report.³⁶⁷ The following are some of the advantages of reporting suspicious transactions:

Early Detection: Authorities can investigate and possibly shut down illegal operations before they cause significant harm by identifying and reporting suspicious activities early.

³⁶⁶ Supra note 364

³⁶⁷ National Crime Agency, <https://nationalcrimeagency.gov.uk/what-we-do/crime-threats/money-laundering-and-illicit-finance/suspicious-activity-reports>

Data Collection: SARs add to a database of information that can be used to track and understand criminal networks and activities. This intelligence is invaluable for law enforcement agencies.

Regulatory Compliance: Exchanges that comply with reporting requirements avoid fines and maintain their operational licenses, which guarantees their ability to continue serving customers.

- Establish guidelines to protect consumers from fraud and ensure transparency in cryptocurrency transactions. This can include mandatory disclosure of risks and safeguards for investors.
 1. Mandatory Disclosure of Risks: Mandatory risk disclosure is a basic strategy to safeguard customers in the Bitcoin market. Because of their inherent volatility, cryptocurrencies are frequently misinterpreted by the general public. It can avoid misunderstandings and lower the possibility of large financial losses if investors are fully informed about the possible dangers connected with their investments. Companies and exchanges must be compelled to offer lucid, thorough information regarding the dangers associated with investing in cryptocurrencies.
 2. Implementation of Safeguards for Investors: In order to shield customers from fraud and guarantee the security of their assets, safeguards are crucial. These can involve a range of initiatives intended to improve transaction security and the honesty of Bitcoin enterprises. To safeguard users' money and private data, exchanges and companies should put strong security procedures in place. This entails utilizing multi-factor authentication, cutting-edge encryption technologies, and safe digital asset storage options. Providing insurance for digital assets kept on exchanges can give customers an extra degree of protection. Insurance can assist in covering losses and safeguarding investors if an exchange is compromised or funds are lost in another way. Businesses dealing in cryptocurrencies can be guaranteed to follow best practices and regulatory requirements by regularly conducting audits and compliance checks. By locating and fixing vulnerabilities, these audits can improve overall security and dependability.³⁶⁸

³⁶⁸ Rahul Pagidipati, Building a secure crypto ecosystem: Best practices for investors and crypto exchanges, ET CONTRIBUTORS, May 12 2023,

3. Ensuring Transparency in Operations: To foster trust and prevent fraudulent activity, bitcoin exchanges and businesses must operate with transparency. Customers must feel confident that the platforms they utilize are fair and open to the public. Exchanges should make their business procedures, including how they manage money, their trading algorithms, and their internal security measures, publicly available. Customers are able to evaluate the platform's dependability thanks to its transparency. Transparency can be ensured and fraudulent activity can be discouraged by offering real-time transaction reporting. Users ought to be able to check the accuracy of their records and view their transaction history. Exchanges should create and publish conflict of interest policies to handle possible conflicts of interest. They ought to be open about things like whether they trade on their platform and how they resolve any conflicts that may arise between the exchange's and its users' interests. One such cryptocurrency is Bitcoin and another is Ethereum. By using formal code verification and scientific principles, projects like Cardano and Tezos go even farther in incorporating transparency and verification procedures into their core operational principles.³⁶⁹
 - Develop a clear tax framework for cryptocurrency transactions, including income from trading, mining, and investments. This can generate revenue for the government and promote legal compliance. Creating a transparent tax system for Bitcoin transactions is essential to encouraging legal compliance, bringing in money for the government, and giving taxpayers involved in the cryptocurrency industry some peace of mind.
 1. Income from trading: Gains or losses from cryptocurrency trading should be accounted just like capital gains or losses from regular stock trading. Virtual currencies are recognised as property for federal tax purposes, according to the Internal Revenue Service (IRS) in the US. This implies that any profits or losses resulting from the trade or sale of cryptocurrencies must be declared and subject to the appropriate taxes.³⁷⁰

<https://economictimes.indiatimes.com/markets/cryptocurrency/building-a-secure-crypto-ecosystem-best-practices-for-investors-and-crypto-exchanges/articleshow/100191991.cms?from=mdr>

³⁶⁹ Kanga, The importance of transparency and trust in the cryptocurrency ecosystem, Feb 9, 2024, <https://kanga.exchange/the-importance-of-transparency-and-trust-in-the-cryptocurrency-ecosystem>

³⁷⁰ IRS, Notice 2014-21, https://www.irs.gov/irb/2014-16_IRB#NOT-2014-21

2. Income from mining: The process of verifying transactions and entering them into the blockchain ledger is known as cryptocurrency mining. Usually, freshly minted cryptocurrency units and transaction fees are given to miners as rewards. According to the IRS, a miner's total income should include the fair market value of any cryptocurrency they get as payment for their efforts.³⁷¹
3. Income from investments: Cryptocurrencies can be held as assets, and much like with traditional investments, any gains or losses from their exchange or sale should be governed by capital gains or losses regulations. Guidelines for calculating gains or losses when selling virtual currencies have been made available by the IRS.
4. Taxation of Cryptocurrency Businesses: Businesses operating in the cryptocurrency space, such as exchanges, wallet providers, and payment processors, should be subject to the same tax rules as traditional businesses. They should report their income, expenses, and profits, and pay applicable income taxes, payroll taxes, and other taxes.³⁷²
5. Tax Reporting and Record-Keeping: The date of acquisition, the value at the time of acquisition, the date of disposal, the value at the time of disposal, and any related fees or expenses should all be included in the complete records that taxpayers who trade with cryptocurrencies must keep. These documents ought to be easily accessible for the purpose of filing taxes.
6. International Cooperation and Information Sharing: The worldwide scope of bitcoin transactions necessitates international collaboration and information exchange between tax agencies. Governments should collaborate to create uniform tax laws, exchange data on cryptocurrency ownership and transactions by taxpayers, and stop money laundering and tax evasion. Since cryptocurrency exchanges may relocate to "countries with less regulation" or because customers transferring cryptocurrency "may fall outside the regulatory scope" of national laws, governments should collaborate internationally to prevent the misuse of cryptocurrencies

³⁷¹ *ibid.*

³⁷² Internal Revenue Service, Guide to Business Expense Resources, Feb 2 2023, <https://www.irs.gov/pub/irs-prior/p535--2022.pdf>

and to safeguard their features. Governments should probably forbid combining services with the Tor network.³⁷³

7. **Cryptocurrency Tax Guidance and Education:** The subtleties and distinctions between virtual digital assets (VDAs), such as cryptocurrencies and non-fungible tokens (NFTs), are not taken into consideration by the new taxation framework that the Indian government has instituted. Experts had questioned how VDAs should be classified—as capital assets, cash, securities, etc.—prior to the Income Tax Act change because their nature is essential to creating an understandable and efficient tax system. Even though cryptocurrencies and NFTs differ fundamentally, the Income Tax Act considers all VDAs equally. While NFTs are non-fungible and have a variety of uses, such as ownership certificates and art, cryptocurrencies are fungible. The Act leaves open the question of how certain VDA acquisitions (such as those made through mining) should be taxed, which causes uncertainty and divergent expert opinions. The new taxes appear to be intended to deter investment in virtual currency assets (VDAs), much as the treatment of lottery winners, based on the 30% flat tax rate, the prohibition of deductions (apart from cost of acquisition), the non-permissibility of loss set-off, and the tax deduction conditions. Even if taxes on VDAs are sometimes based on their fair market value, the absence of prescribed valuation techniques for these assets will inevitably cause disagreements and damage public confidence in the Indian tax system. Finally, the fact that VDAs are taxed does not suggest that they are lawful in India, since taxes are levied on even assets obtained illegally or as the profits of criminal activity. Some nations, like the United States, view cryptocurrencies as property and impose taxes on gains made from transfers. The price at which the cryptocurrency was trading on the exchange at the time the transaction was finished is the fair value for the purposes of calculating such gains. Cryptocurrencies may be subject to both income tax and capital gains tax in Canada and the UK, despite the fact that the two countries classify them differently (as capital assets and

³⁷³ Spithoven, A. (2019). Theory and reality of cryptocurrency governance. *Journal of Economic Issues*, 53(2), 385-93.

commodities, respectively). This depends on the specific facts and circumstances, such as whether the cryptocurrency was obtained through hobby mining or professional mining.³⁷⁴

- Encourage the development and adoption of blockchain technology through incentives and support for research and development. This can drive innovation and create economic opportunities. Data blocks created by blockchain technology are kept in a chain. There are two different kinds of blockchain networks: private and public. Anyone can sign up for a public blockchain. But only authenticated users who can examine a digital asset housed on a decentralised blockchain database can access private blockchains. Use of blockchain technology, emphasizes how distributed ledgers, cryptography, consensus algorithms, and technologies like public-key cryptography, timestamping, hash functions, and decentralized data storage enable its key characteristics of resilience, security, and transparency. Four forward-looking scenarios are analyzed regarding how blockchain could: 1) replace centralized applications with decentralized ones, 2) promote financial inclusion, 3) increase efficiency in international digital transactions, 4) become a general-purpose technology driving a new economic revolution alongside other Industry 4.0 technologies like AI and IoT. The following are some actions that nations with varying income levels (low, middle, and high) can take to bolster their innovation systems and put themselves in a position to profit from blockchain: forming expert groups, funding research and education, providing support services, launching pilot projects, formulating national strategies, setting up incubators and hubs, identifying use cases, offering incentives, regulatory sandboxes, etc.³⁷⁵ The global blockchain market will have a significant positive impact on the financial sector in the future, according to a Research Dive report. This is mainly because banks and other financial institutions are incorporating more blockchain applications into payment processes to enable safe and inexpensive international exchanges.³⁷⁶

³⁷⁴ Justin M Bharucha, How Cryptocurrencies Are Taxed In India, Forbes Advisor, May 4 2023, <https://www.forbes.com/advisor/in/investing/cryptocurrency/cryptocurrency-tax-in-india/>

³⁷⁵ Harnessing blockchain technologies for sustainable development (2024). UNCTD. Available at https://unctad.org/system/files/official-document/ciid52_en.pdf (accessed 7 June 2024)

³⁷⁶ Milan Ganatra, The use of blockchain in financial services, TOI, SAT, JUN 08, 2024 | UPDATED 00:36 AM IST

The Bitcoin system is decentralised. Since decentralised cryptocurrencies are in opposition to the current centralised framework of monetary and financial regulation, it is difficult to regulate a dispersed network in a centralised manner, which presents a challenge to the legal systems. A more sophisticated policy prescription is put out for regulatory intervention in the cryptocurrency ecosystem. This recommendation makes use of both emerging and current middlemen and is based on a decentralized regulatory architecture that is built upon the current regulatory infrastructure. It makes the case that regulations should focus on the use cases of cryptocurrencies rather than the technology itself at the code or protocol layer. One way to implement this regulatory strategy is to target intermediaries with regulations. Traditional gatekeepers, like banks, exchanges, and payment service providers, as well as large, centralized node operators and miners, can enforce these regulations.³⁷⁷

Cryptocurrency prohibitions will sound a lot like Internet prohibitions. Honest companies and investors were impacted by this brief restriction. This strategy prevented the investors from realizing significant financial gains. The usage of any private cryptocurrency was outlawed in India from 2018 and 2020 under a general prohibition. Following the embargo, there were several impacts, including: -Brain- Drain where people who were unable to trade with India moved to other nations where transaction exchange is allowed and deprivation of transformative technology which is similar to how major corporations like Amazon and Tesla are using technology, this kind of ban prevented India and its people from utilizing cutting-edge innovations in global adoption. The Ministry of Electronics and IT (MeitY) opposes the RBI's blanket ban, stating that the currency, which uses blockchain technology, is transparent, safe, and capable of being used to support the Indian economy and generate profit.³⁷⁸ All of Bitcoin's positive aspects might be brought to decentralized applications by the blockchain. This will undoubtedly warrant additional impartial, independent analysis, and future study, freed from the hyperbole and monetary self-interest of the Bitcoin community. The broader research questions concern the future of fiat money as well as the potential for social production and sharing with blockchains serving as the

³⁷⁷ Hossein Nabilou, How to regulate bitcoin? Decentralized regulation for a decentralized cryptocurrency, *International Journal of Law and Information Technology*, Volume 27, Issue 3, Autumn 2019, Pages 266–291.

³⁷⁸ Deshant Singh Thakur , Prof. Raj A. Varma , Prof. Damodar Mayappa Hake, Regulation of Cryptocurrency in India: Issues and Challenges, *Journal of Positive School Psychology*, Vol. 6, No. 5, 8921–8929

foundation for transaction records.³⁷⁹ Social production and blockchain proponents believe these platforms might eventually replace sovereign currency, which is seen with suspicion.³⁸⁰ Exaggerated assertions regarding virtual currencies provided by blockchain technology can also be disregarded in the event of a decline in online or offline mass mobilization. Virtual currencies may have their limitations as a site of opposition to free market doctrine, but as a more robust, if specialized, future as an organizing principle for cooperative sharing alongside the sovereign fiat currency capitalist market, similar to how cooperative movements came to live with mass consumer capitalism in the preceding 150 years.³⁸¹

³⁷⁹P. Dini, 2012. "Community currencies and the quantification of social value in the digital economy," London School of Economics and Political Science

³⁸⁰ Y. Benkler, 2011. *The penguin and the leviathan: How cooperation triumphs over self-interest*. New York: Crown Business.

³⁸¹ Guadamuz, Andres and Marsden, Christopher T., *Blockchains and Bitcoin: Regulatory Responses to Cryptocurrencies* (December 7, 2015). *First Monday*, Volume 20, Number 12, 7 Dec 2015

CHAPTER 7

CONCLUSION**INTRODUCTION**

The innovative digital currency known as cryptocurrency functions on a peer-to-peer, decentralized network, doing away with the need for centralized institutions like banks or governments. Bitcoin, which was first introduced in 2009 under the pseudonym Satoshi Nakamoto, was a key milestone because it introduced blockchain technology, a distributed public ledger that securely and transparently records transactions.³⁸² The characteristics of cryptocurrency include:

- Decentralisation: Since cryptocurrency transactions take place directly between peers, no single entity can control or confiscate them.³⁸³
- Transparency and Anonymity: Unlike traditional banking systems, transactions are publicly documented while user identities are kept pseudonymous, improving privacy.³⁸⁴
- Tax Exemption and Low Transaction Fees: Because cryptocurrencies are decentralized, they are frequently free from taxes and can lower transaction costs, particularly for international payments.³⁸⁵
- Stealing Resilience: Cryptocurrency theft is challenging because of the high level of protection provided by private keys and the immutability of blockchain transactions.³⁸⁶

Cryptocurrencies are based on blockchain technology, which offers a decentralised, safe method of recording transactions. Beyond virtual currencies, its ramifications are extensive and could find use in banking, healthcare, and supply chain management. Blockchain has propelled the creation of decentralized finance (DeFi) and non-fungible tokens (NFTs), and popularised the idea of "smart contracts," which are self-executing

³⁸² Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System 1 (2008), <https://bitcoin.org/bitcoin.pdf> (accessed on 23-06-2024)

³⁸³ Andreas M. Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies 1-2 (2nd ed. 2017)

³⁸⁴ Supra note 382

³⁸⁵ Rainer Böhme et al., Bitcoin: Economics, Technology, and Governance, 29 J. Econ. Persp. 213, 215-16 (2015).

³⁸⁶ Don Tapscott & Alex Tapscott, Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World 39-40 (2016).

contracts with the contents of the agreement put directly into code.³⁸⁷ Since cryptocurrencies do not cleanly fit into conventional conceptions of money or currency, several organizations and nations have interpreted and regulated them differently. Definitions that emphasize their digital, decentralized, and cryptographically secure nature are provided by institutions such as the International Monetary Fund (IMF) and the Financial Action Task Force (FATF).³⁸⁸³⁸⁹ Cryptocurrencies are classified differently by different national regulatory agencies as digital assets, property, or commodities, which reflects the ongoing dispute over their legal status.³⁹⁰ The technologies of blockchain and cryptocurrencies are important breakthroughs with broad applications. In addition to their many advantages—decentralization, transparency, and lower transaction costs, for example—they also present difficulties, such as regulatory monitoring, price volatility, and worries about their usage in illegal operations. As technology advances, it will continue to have an impact on many industries and spur additional advancements in finance and other fields.³⁹¹

The *Reserve Bank of India v. Internet and Mobile Association of India* case introduced Bitcoin transactions to the Indian judiciary. The RBI's circular was declared unconstitutional by the Supreme Court in March 2020, providing a boost to the cryptocurrency industry in India and reaffirming the importance of proportionality and equity in regulatory frameworks. If India proceeds to ban cryptocurrencies, it shall affect the fundamental rights of the citizens. So as the hypothesis of this paper goes, instead of adopting a complete ban on cryptocurrencies, it would always be the best choice to regulate them. One of the cryptocurrency marketplaces with the quickest rate of growth in the world is India.³⁹² The Indian central bank and government, meanwhile, have voiced reservations about cryptocurrencies, mainly because of the possibility that

³⁸⁷ Vitalik Buterin, Ethereum White Paper: A Next-Generation Smart Contract and Decentralized Application Platform 1 (2013), <https://ethereum.org/en/whitepaper/> (accessed on 23-06-2024)

³⁸⁸ Int'l Monetary Fund, Virtual Currencies and Beyond: Initial Considerations 7 (2016), <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf>. (accessed on 23-06-2024)

³⁸⁹ Fin. Action Task Force, Virtual Assets and Virtual Asset Service Providers 13 (2019), <http://www.fatf-gafi.org/media/fatf/documents/recommendations/RBA-VA-VASPs.pdf>. (accessed on 23-06-2024)

³⁹⁰ Robby Houben & Alexander Snyers, Cryptocurrencies and Blockchain: Legal Context and Implications for Financial Crime, Money Laundering and Tax Evasion, at 22-30 (European Parliament's Special Committee on Financial Crimes, Tax Evasion and Tax Avoidance, 2018) (accessed on 23-06-2024)

³⁹¹ Arvind Narayanan et al., Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction 173-74 (2016)

³⁹² Nischal Shetty & Siddharth Sogani, The India Crypto Asset Report 2023, at 15 (CREBACO Global 2023)

they would be used for terrorist financing and money laundering.³⁹³ Over time, India's position on cryptocurrency regulation has changed:

- The Reserve Bank of India (RBI) issued a warning regarding digital currencies' lack of legal tender status in 2017.³⁹⁴
- The RBI outlawed cryptocurrency-related activity in 2019.³⁹⁵
- The RBI's restriction was reversed by the Indian Supreme Court in 2020. The government declared in 2022 that transactions of cryptocurrencies would be subject to a 30% tax.³⁹⁶
- The RBI suggested banning cryptocurrencies in July 2022, citing their "destabilizing effects" on the economy.³⁹⁷

Cryptocurrencies have a mixed effect on the Indian economy. Possible advantages consist of generating jobs in the cryptocurrency industry, Enhanced transactional transparency, less reliance on cryptocurrency from abroad, Reduced transaction expenses when using digital payments, and luring in foreign capital for financial technology. Adverse effects could consist of: Investors being impacted by market volatility, Possible negative effects on the banking industry when savings are shifted to cryptocurrency and the Possibility of financial crashes and bubbles. Rather than outlawing cryptocurrencies, the Indian government is thinking about regulating them. Companies are now required by the Ministry of Corporate Affairs to register their cryptocurrency investments and trading.³⁹⁸ The creation of a national digital currency is another idea under investigation by the administration.³⁹⁹ An important development

³⁹³ Reserve Bank of India, Annual Report 2021-22, at 137 (May 27, 2022), <https://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/0RBIAR2021226AD1119FF6674A13865C988DF70B4E1A.PDF> (accessed on 23-06-2024)

³⁹⁴ Reserve Bank of India, Press Release: RBI Cautions Users of Virtual Currencies Against Risks (Dec. 5, 2017), https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=42462. (accessed on 23-06-2024)

³⁹⁵ Reserve Bank of India, Prohibition on Dealing in Virtual Currencies (VCs), RBI/2017-18/154 (Apr. 6, 2018), <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11243>. (accessed on 23-06-2024)

³⁹⁶ Finance Act, 2022, No. 6, Acts of Parliament, 2022 (India)

³⁹⁷ Reserve Bank of India, Report on Trend and Progress of Banking in India 2021-22, at 26 (Dec. 27, 2022), https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/0RTP2022_F3D078985540A4179B62B7734C7B445C.PDF. (accessed on 23-06-2024)

³⁹⁸ Ministry of Corporate Affairs, Gov't of India, Notification G.S.R. 207(E) (Mar. 24, 2021), http://www.mca.gov.in/Ministry/pdf/ScheduleIIIAmendmentNotification_24032021.pdf. (accessed on 23-06-2024)

³⁹⁹ Reserve Bank of India, Statement on Developmental and Regulatory Policies (Feb. 5, 2021), https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=51078. (accessed on 23-06-2024)

in India's policy towards digital currencies is the "Cryptocurrency and Regulation of Official Digital Currency Bill, 2021". Among its main goals are:⁴⁰⁰

1. establishing a framework for cryptocurrency regulations
2. ban on private cryptocurrencies with some exclusions
3. assisting the RBI in establishing an official digital currency
4. shielding customers from dangers like fraud
5. preventing cryptocurrency abuse for illicit purposes

The measure is less restricted and focuses more on advancing blockchain technology beyond cryptocurrencies than its 2019 version. Additionally, it offers a more precise structure for the official digital currency of the RBI. A variety of stakeholders have supported and opposed the law. A total ban on private cryptocurrency, according to critics, may inhibit innovation in a potentially rich sector. Advocates stress how important it is to safeguard customers and stop illegal activity. The regulatory environment surrounding cryptocurrencies differs greatly throughout the world.⁴⁰¹ While some nations, like China, have issued restrictions, other nations, like Canada and Japan, have enacted legislation that permits the use of cryptocurrencies under specific circumstances. Many legal systems permit cryptocurrencies but alert people to the risks they pose. The study also mentions a few complaints about the proposed cryptocurrency law in India, pointing out its sweeping definitions and perhaps unfair punishments in comparison to other financial offenses. It also mentions that there may be difficulties with implementation because the bill's definition of cryptocurrency deviates from global norms.

India is changing how it regulates cryptocurrencies. The nation must strike a balance between cryptocurrencies' potential technological and economic benefits and the need to reduce concerns including financial instability, consumer protection, and illegal activity.⁴⁰² It is necessary to have a thorough regulatory structure that covers consumer protection, licensing, and adherence to anti-money laundering and counterterrorism

⁴⁰⁰ Lok Sabha, Bulletin Part-II (Legislative) (Jan. 29, 2021), <http://loksabhadocs.nic.in/lobulletin/17BS-2.pdf>. (accessed on 23-06-2024)

⁴⁰¹ Global Legal Research Center, Law Library of Congress, Regulation of Cryptocurrency Around the World 1 (2018), <https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf>. (accessed on 23-06-2024)

⁴⁰² Economic times, The future of cryptocurrencies and its legalisation in India, https://economictimes.indiatimes.com/markets/cryptocurrency/the-future-of-cryptocurrencies-and-its-legalisation-in-india/articleshow/104081432.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cp (accessed on 23-06-2024)

regulations.

India needs to embrace global best practices and promote innovation if it wants to become a leader in the cryptocurrency space. To establish a safe, transparent, and dynamic cryptocurrency ecosystem that promotes both technology innovation and economic growth, cooperation between regulators and industry stakeholders is essential.⁴⁰³ The research highlights the need for investors and users to exercise caution and keep themselves updated on the changing legal landscape as India's cryptocurrency regulations continue to change. The success of the government's regulatory strategy in striking a balance between innovation, consumer protection, and economic stability will likely determine the direction of cryptocurrencies in India.

The research paper closely looked into the different approaches made by the governments. This suggests that it is always better to have a regulatory framework in cryptocurrency rather than imposing a ban. The regulation of cryptocurrencies is critical for their safe inclusion into the financial system. By setting clear legal frameworks and enforcing compliance, authorities can safeguard consumers, maintain market integrity, and promote the growth of legitimate Bitcoin activity.

RECOMMENDATIONS AND FUTURE OUTLOOK

The future of bitcoin legality in India is uncertain. This cutting-edge technology needs a clear legal framework to minimise dangers. This framework should cover licencing, registration, AML/CTF compliance, consumer protection, taxation, and blockchain technology promotion. All bitcoin firms must register and get a licence. Institutions will be more transparent and accountable with regulation. AML and KYC requirements in India may curb unlawful cryptocurrency use. Consumer identification verification and suspicious transaction reporting are exchanges' duties. The bitcoin ecosystem can be stabilised and secured. The proposed regulatory structure prioritises consumer protection. Clear regulations should safeguard investors from fraud and market manipulation. Companies must communicate dangers and safeguard client assets in cryptocurrency. Damaged consumers need a strong legal system to complain and seek remedies.

The bitcoin industry's future depends on balancing security and additional features. Regulations must prevent misuse without restricting creativity. Regulators should collaborate with industry to design rules that foster innovation, market integrity, and

⁴⁰³ H. Ward, Liberal democracy and sustainability, 17 (3) , Env. Polit., ,pp. 386-409(2008),

consumer protection. Effective, growth-friendly rules are easier with collaboration. Indian cryptocurrency law may change due to several events. India may amend its laws to fit global norms as the world develops swiftly. International seminars and cooperation may unify legislation and provide valuable ideas. The Reserve Bank of India may create a CBDC to supplement private cryptocurrencies. The financial system would grow. With proactive and comprehensive cryptocurrency regulation, India can lead the globe. India's inventiveness and technology might make it a blockchain and cryptocurrency superpower. India might lead blockchain R&D if it simplifies policies and encourages firms. Finally, a secure, innovative legal framework will determine India's bitcoin industry's destiny. India can learn from global examples and contact professionals to advance blockchain and cryptocurrency. India may expand economically and become a global digital economy player by following this path. A thriving cryptocurrency economy in India is possible with government and industry cooperation.

CONCLUSION

Cryptocurrency, a 21st-century innovation, is a digital currency using encryption for security. It has significantly impacted finance, technology, and the global economy. Its importance stems from its ability to promote financial inclusion, democratize finance, advance technology, and disrupt traditional economic models. Cryptocurrencies democratize finance by operating on decentralized networks, eliminating intermediaries and central authorities. This decentralization can reduce transaction costs, speed up transfers, and increase access to financial services, particularly in underserved areas. It gives individuals more control over their finances through self-managed digital wallets. Financial inclusion is enhanced by cryptocurrencies, providing access to financial services for unbanked and underbanked populations worldwide. With just a smartphone and internet access, people in remote areas can participate in the global financial system. Cryptocurrencies enable microtransactions and offer a faster, cheaper alternative for remittances compared to traditional services.

Blockchain technology, the foundation of cryptocurrencies, has applications beyond finance, including voting systems and supply chain management. Smart contracts, popularized by cryptocurrencies like Ethereum, are transforming legal, real estate, and financial sectors by automating contract execution without intermediaries. Decentralized Finance (DeFi) platforms are challenging traditional financial

intermediaries by offering services like lending and trading without central authorities. Cryptocurrencies are also altering traditional financial markets and economic models. They provide new investment opportunities for both small and large investors. In high-inflation areas, cryptocurrencies like Bitcoin are seen as a hedge against fiat currency depreciation. They're innovating the payments industry, offering safer, cheaper, and faster money transfer methods, particularly for international transactions.

Major companies, including Apple Inc., have begun accepting cryptocurrencies as payment. While India's economy hasn't fully explored cryptocurrencies as a payment method, it's anticipated to gain acceptance soon with support from major corporations. Socially and culturally, cryptocurrencies have fostered thriving communities of developers, investors, and enthusiasts. These communities are often multicultural, global, and collaborative, promoting innovation and adoption. Cryptocurrencies are also being used in philanthropic efforts as a transparent means of transferring funds to those in need.

Cryptocurrencies can promote financial independence and sovereignty, especially in regions with oppressive governments or unstable economies. By offering an alternative to established financial institutions, they can empower individuals and undermine authoritarian control over financial resources. Despite their significance, cryptocurrencies face challenges. For their continued development and widespread adoption, it's crucial to address security concerns, establish clear regulatory frameworks, and ensure accessibility to this innovative technology for all. As technology and regulatory landscapes evolve, cryptocurrencies are expected to play an increasingly important role in the global financial system. They offer new ways to manage, invest, and transfer value, potentially reshaping our understanding and use of money in the 21st century.

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APPENDIX
PLAGIARISM REPORT

1.	NAME OF CANDIDATE	AMRITHA K.H.
2.	TITLE OF DISSERTATION	REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE
3.	NAME OF THE SUPERVISOR	Dr. ATHIRA P.S.
4.	SIMILAR CONTENT IDENTIFIED (IN PERCENTAGE)	7%
5.	ACCEPTABLE MAXIMUM LIMIT	10%
6.	SOFTWARE USED	GRAMMARLY
7.	DATE OF VERIFICATION	25.06.2024

NAME AND SIGNATURE OF THE CANDIDATE	AMRITHA K.H
NAME AND SIGNATURE OF THE SUPERVISOR	Dr. ATHIRA P.S.

DISSERTATION FINAL - Word

MASTER OF LAWS(LL.M.)


 (2023-2024)
 ON THE TOPIC
REGULATION OF CRYPTO ASSETS-A CONSTITUTIONAL PERSPECTIVE
 Under the Guidance and Supervision of
Dr. Athira P.S.
 Assistant Professor
 THE NATIONAL UNIVERSITY OF ADVANCED LEGAL STUDIES
 Submitted by
AMRITHA K.H.
LM0123003
 LL.M. (CONSTITUTIONAL AND ADMINISTRATIVE LAW)

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