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## The path towards virtual currency: Demystifying cryptocurrency

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### Abstract

The advancement of information technologies in recent decades has resulted in significant changes all across the globe. Even small businesses have been greatly impacted by the digital environment, which has necessitated changes in order to adapt to the current investment market dynamics. The rapid growth and increasing applications of Information and Communications Technology (ICT) is the main factor that drives cryptocurrency to be considered as a potential asset in investment portfolios. The purpose of the paper is to explain the meaning of cryptocurrency with rules and regulations as well as how blockchain works. Recent developments of cryptocurrency from Google trends, prices and market capitalization are presented. Authors also strive to filter the benefits, downsides, and SWOT analysis from previous studies and various web sources. The paper concludes that despite the challenges, cryptocurrency can be used for revolutionary financial transactions.

**Keywords:** Cryptocurrency, bitcoin, blockchain, digital currency, decentralized ledger, public key, private key

### 1. Introduction

The world has been continually evolving over the past few decades due to the rapid advancement of digital technologies. Globalization and the advancement of new technology have contributed to the growth of innovation and competitiveness on an unprecedented scale. The global economy has benefited from economic development. Governments, businesses, and ordinary citizens are becoming increasingly reliant on technology, which enables increased productivity and a higher standard of living. Simultaneously, investment preferences are shifting. It may be a means of gaining a competitive advantage in the financial industry. Because of increased reliance on digital technology, scientists and practitioners in the field of fintech are being asked how well prepared stakeholders are to deal with the issues brought by digital technology.

Cryptocurrency has emerged as one of the most talked-about issues in recent economic and financial news. Since the Dotcom bubble burst, internet commerce (ecommerce) has exploded, and the retail industry has been transformed as more and more tech customers purchase online. Despite doubts about the future of the Internet after the dotcom bubble burst and major concerns about the safety of online buying using credit cards, stock market investors' demand for ecommerce shares looked insatiable, since investments in internet retailers were tremendously inflated. Prior to the introduction of the first cryptocurrency, Bitcoin, in 2009, internet commerce was mostly handled by financial institutions acting as trusted third parties to process electronic payments. Although this system was adequate for most transactions, it was sluggish to respond due to financial institution regulations (privacy and trust issues), and it was fairly costly (transaction and commission costs).

#### 1.1 Plan of study

This article begins with a description of digital innovation and technological advancement and its significance in the development of virtual currency. Section two discusses the meaning of cryptocurrency and followed by the history of cryptocurrency in the next section. Section four explains the rules and regulations, followed by working of blockchain

technology in section five. Section six delves into the trends and prices of cryptocurrency; section seven highlights advantages and drawbacks with SWOT analysis. Finally, this paper concludes with implications in section eight and way forward for further exploration for researchers in order to add to the existing body of knowledge in section nine.

## 2. Meaning of Cryptocurrency

Cryptocurrency is a modern-day practice in the exchange of goods and services. In reality, it is having a tremendous impact not only on the technology and coding industries, but also on how nations throughout the world view currency. A cryptocurrency, also known as a crypto-currency or crypto, is digital money that functions as a means of exchange over a computer network and is not supported or maintained by any central authority, such as a government or bank. Individual currency ownership records are kept in a centralized database, which is an electronic database that uses strong encryption to secure transaction records, control coin creation, and verify ownership transfers [15, 56, 53]. Unlike their name, cryptocurrencies are not rightly intended to be currencies in the conventional sense, and while they have been classified as commodities, securities, and currencies, they are widely viewed as a distinct asset class in reality [4, 10, 23]. Validators are used in several crypto schemes to keep the cryptocurrency running. Owners of tokens put up their tokens as collateral in a proof-of-stake arrangement. In exchange, they gain control over the token in proportion to their stake. Token stakers typically gain increased ownership in the token over time as a result of network fees, freshly created tokens, or other compensation mechanisms [17]. Cryptocurrency is not issued by a central power and does not exist in tangible form (like paper money). In contrast to central bank digital money, cryptocurrencies often use decentralised control (CBDC) [14]. A cryptocurrency is deemed centralized if it is minted or manufactured prior to issuance, or if it is issued by a single issuer. Each cryptocurrency, when implemented with decentralised governance, uses distributed ledger technology, often a blockchain, to act as a public financial transaction database [43]. Bitcoin is the first decentralised cryptocurrency, having been released as open-source software in 2009 [58]. Many other cryptocurrencies have emerged after the launch of bitcoin.

According to Jan Lansky, a cryptocurrency is a system that meets six conditions [32]:

- The system does not require a central authority; its state is maintained through distributed consensus.
- The system keeps an overview of cryptocurrency units and their ownership.
- The system defines whether new cryptocurrency units can be created. If new cryptocurrency units can be created, the system defines the circumstances of their origin and how to determine the ownership of these new units.
- Ownership of cryptocurrency units can be proved exclusively cryptographically.
- The system allows transactions to be performed in which ownership of the cryptographic units is changed. A transaction statement can only be issued by an entity proving the current ownership of these units.
- If two different instructions for changing the ownership of the same cryptographic units are simultaneously entered, the system performs at most one of them.

In March 2018, the word cryptocurrency was added to the Merriam-Webster Dictionary [34]. Cryptocurrency by definition is a form of payment. But it's not that simple. What differentiates it from the currency used in everyday life is that cryptocurrency often exists within a specific ecosystem. In a nutshell, it functions like tickets used at a carnival to ride the Ferris wheel or play ring toss. But what really makes cryptocurrency such a disruptive force is its incorporation into our digitalized world. The number of cryptocurrencies continues multiplying, and there are no signs of slowing down.

## 3. History of Cryptocurrency

The history of cryptocurrencies can be traced back to the 1980s, when they were called cyber currencies. Many people believe that cryptocurrency is an idea that was conceived and introduced in the previous decade or so, whereas cryptocurrency dates back to 1983; one man is known for such digital money: cryptographer David Chaum [1, 2]. Later, in 1995, he implemented it through DigiCash [55], an early form of cryptographic electronic payments which required user software in order to withdraw notes from a bank and designate specific encrypted keys before it can be sent to a recipient. This allowed the digital currency to be untraceable by the issuing bank, the government, or any third party. The National Security Agency published a paper, How to Make a Mint: the Cryptography of Anonymous Electronic Cash, in 1996, detailing a Cryptocurrency system, first on Massachusetts Institute of Technology (MIT) mailing list [9] and then in the American Law Review in 1997 [40]. Wei Dai described "b-money" as an anonymous, distributed electronic cash system in a paper released in 1998 [66]. Nick Szabo described bit gold shortly after [5]. Bit gold not to be confused with the later gold-based exchange, Bit-Gold was described as an electronic currency system that required users to complete a proof of work function with solutions being cryptographically put together and published, similar to bitcoin and other cryptocurrencies that would follow it.

Satoshi Nakamoto, a supposedly pseudonymous developer, established the first decentralized cryptocurrency, bitcoin in 2009. In its proof-of-work scheme, it utilized SHA-256, a cryptographic hash algorithm [22, 19]. Name coin was launched in April 2011 as an attempt to construct a decentralized Domain Name System (DNS) that would make internet censorship extremely difficult. Litecoin was launched shortly after, in October 2011. Instead of SHA-256, it employed scrypt as its hash function. Peer coin is another well-known cryptocurrency, which employed a proof-of-work/proof-of-stake hybrid [65]. The UK Treasury said on August 6, 2014 that it has commissioned a study into cryptocurrencies and what role, if any, they would play in the UK economy. The goal of the study was to see if regulation should be adopted [11]. Its final report was released in 2018 [7], and in January 2021, it issued a consultation on crypto assets and stable coins [12]. El Salvador became the first country to recognize Bitcoin as legal cash in June 2021, when the Legislative Assembly voted 62–22 in favour of a bill introduced by President Nayib Bukele to define the cryptocurrency as such [3]. Cuba passed resolution 215 in August 2021, recognizing and regulating cryptocurrencies such as bitcoin [8]. The government of China, the world's largest cryptocurrency market, made all cryptocurrency transactions illegal in

September 2021, capping a crackdown on cryptocurrency that had previously prohibited the operation of middlemen

and miners within the country<sup>[6]</sup>. Table 1 shows a timeline of cryptocurrency occurrences.

**Table 1:** Timeline of Cryptocurrency in India

Time	Event
2008	A paper titled 'Bitcoin: A Peer to Peer Electronic Cash System' published by a pseudonymous developer Satoshi Nakamoto, introduced the concept of cryptocurrency to the world
2010	The first Bitcoin transaction, where a consumer exchanged 10,000 Bitcoin for two pizzas.
2011	Other cryptocurrencies, such as Litecoin, Namecoin, and Swiftcoin, began to develop.
2012-2017	Cryptocurrencies started gaining popularity. Bitcoin's price rose from roughly \$5 at the start of 2012 to nearly \$1,000 at the end of 2017.
	The RBI press releases on Crypt currencies
	December 24, 2013- A central bank does not back virtual currencies. Their value is speculative because it is not backed by an asset.
	February 1, 2017- The cryptocurrency boom that followed demonetization in 2016 was an unforeseen outcome of that experiment. The focus on digital payments prompted people to look for alternatives to traditional online banking, which led them to bitcoin exchanges.
	The Finance Ministry and the Reserve Bank of India issued warnings about cryptocurrency, and a committee comprising of the Finance Ministry, RBI and SEBI was formed to make regulations for cryptocurrency
2018	The government issued a circular prohibiting the use of cryptocurrencies. Exchanges appealed to The Supreme court to lift the restriction.
2020	Supreme court overturned the ban on cryptocurrencies in India.
	The price of Bitcoin increased by more than 700 percent, between April 2020 and February 2021
2021	Cryptocurrency prices doubled this year, with Bitcoin reaching \$64,000.
2022	Budget 2022 proposed that gains from virtual digital assets or crypto assets would be subject to a flat 30% tax plus cess and surcharge if aggregate income exceeds \$50 lakh. Additionally the Reserve Bank of India will issue a Digital Rupee beginning in 2022-23, based on blockchain and other technologies.

#### 4. Rules and regulations

Many financial disasters have marred the history of cryptocurrencies, and the current state of affairs is riddled with regulatory uncertainty. Nonetheless, the underlying technologies, as they are currently being explored around the world, have promising characteristics, and if world economies can get past the 'ifs and buts,' they will have a technical feat in front of them, ready to be harnessed for its potential benefits to financial, administrative, as well as many other aspects of efficient and profitable governance, there is a genuine and pressing need for sound cryptocurrency laws<sup>[59]</sup>.

There is currently no rule or prohibition in place in the country regarding the usage of cryptocurrencies or virtual currency. The Supreme Court of India overturned the Reserve Bank of India's (RBI) ruling prohibiting banks from enabling crypto transactions in March 2020<sup>[67]</sup>. The government's stance towards it will be clear only when the impending bill titled "The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021" will be made available to the public<sup>[68]</sup>.

##### 4.1 The history of cryptocurrency regulation in India: Cryptocurrency has been regulated since its inception as mentioned below

**2013-2017 (warning circulars):** The Reserve Bank of India (RBI) released a circular in 2013 cautioning people against using virtual currencies. Users, holders, and traders of virtual currencies have been warned by the bank about the financial, operational, legal, customer protection, and security dangers they are taking. However, while banks continued to authorize transactions on cryptocurrency exchanges, the RBI issued another circular on February 1, 2017, expressing its worries about virtual coins. By the end of 2017, the RBI and the finance ministry had issued a warning, stressing that virtual currencies are not legal money<sup>[67]</sup>.

**2018-2020:** The Central Board of Digital Tax (CBDT) submitted scheme to the finance minister in March 2018 to prohibit the use of virtual currencies. The RBI then issued a circular prohibiting banks and financial institutions from providing financial services to virtual currency exchanges a month later. On April 6, 2018, the Reserve Bank of India (RBI) issued a circular titled, "Statement on Developmental and Regulatory policies" prohibiting commercial and cooperative banks, payments banks, small financing banks, NBFCs, and payment system providers from dealing in virtual currencies or giving services to any entity that deals with cryptocurrency exchanges. Once the order was passed, cryptocurrency values plummeted, exchanges froze, and withdrawals ceased.

The finance ministry appointed-committee produced a draught bill for virtual currency regulation in April 2018, but did not advocate a ban. The committee, however, produced a new draught measure in February 2019 that advocated a blanket ban. This circular was charged before the Supreme Court of India by way of writ petition in 2018. The ruling came in favour of petitioners on 4 March 2020. The Supreme Court of India removed the RBI's restriction on cryptocurrency transactions, which prevented banks and financial institutions from providing banking services to anyone who transacted in crypto assets<sup>[69]</sup>.

**2021:** "A high-level Inter-Ministerial Committee (IMC) constituted under the Chairmanship of Secretary (Economic Affairs) to study the issues related to virtual currencies and propose specific actions to be taken in the matter recommended in its report that all private cryptocurrencies, except any virtual currencies issued by the state, will be prohibited in India," Finance Minister Sitharaman said in Rajya Sabha on February 9. In November 2021, the Standing Committee on Finance, chaired by BJP member Jayant Sinha, met with officials from crypto exchanges, the Blockchain and Crypto Assets Council (BACC), and others,

and concluded that cryptocurrencies should not be prohibited, but rather regulated.

The government has listed a bill titled “The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021” for the Winter Session of Parliament to ban all private cryptocurrencies and facilitate the introduction of a central bank digital currency (CBDC). According to Lok Sabha Bulletin, the purport of the cryptocurrency bill is “to create a facilitative framework for the creation of the official digital currency to be issued by the RBI and the bill also seeks to prohibit all private cryptocurrencies in India, however, it allows for certain exceptions to promote the underlying technology of cryptocurrency and its uses” [70].

**2022:** The following laws regarding electronic currency were implemented in 2022:

**4.2 Digital Rupee:** The introduction of the Central Bank Digital Currency (CBDC) will provide the digital economy a significant boost. In addition, digital currency will result in a more efficient and cost-effective currency management system. As a result, it is planned that the Reserve Bank of India will issue a Digital Rupee beginning in 2022-23, based on blockchain and other technologies.

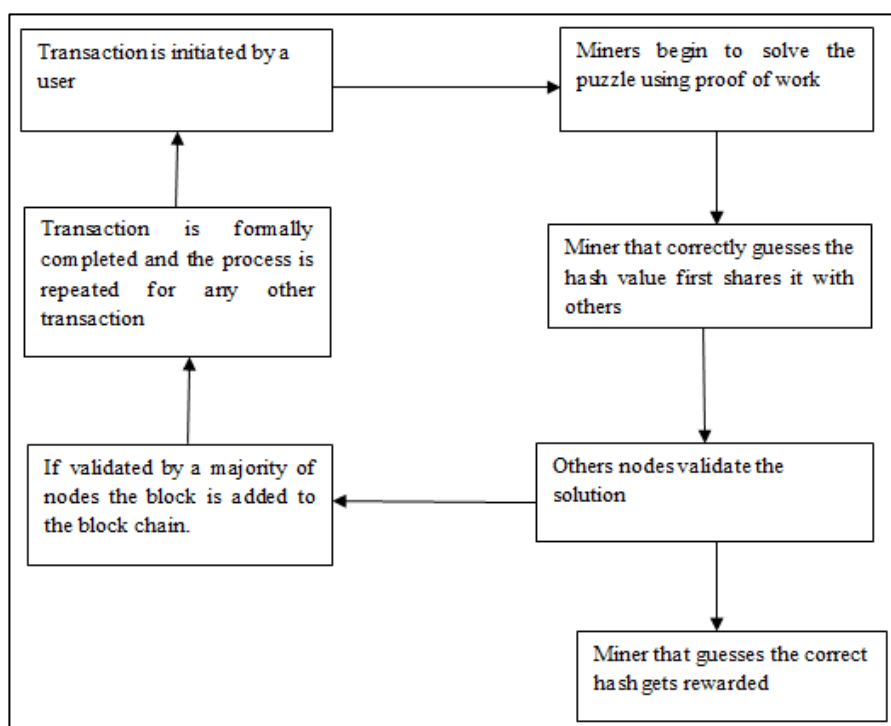
**4.3 Scheme for taxation of virtual digital assets:** The number of transactions in virtual digital assets has skyrocketed. Because of the size and frequency of these transactions, it is necessary to establish a specific tax structure. Hence any income from transfer of any virtual digital asset shall be taxed at the rate of 30 per cent [71].

**4.4 Advertisement of Virtual Digital Asset:** In the words of Mr. Subhash Kamath, chairman of ASCI "Advertising of virtual digital assets and services needs specific guidance, considering that this is a new and as yet an emerging way of investing. Hence, there is a need to make consumers aware of the risks and ask them to proceed with caution".

Advertisers will be required to include the disclaimer; Cryptocurrencies and non-fungible tokens are unregulated and can be extremely dangerous. There could be no regulatory remedy for any losses incurred as a result of such transactions. The disclaimer should take up a fifth of the advertising area in a print or static ad, while it should be placed at the end of a film against a plain background with a voice over reading out the words at normal speed. In video advertising, the disclaimer must stay on screen for at least 5 seconds, and it should appear at the beginning and end of extended format ads longer than two minutes. Similarly, the disclaimer guidelines cover audio, social media posts, disappearing stories, and social media posts. In formats where there is a limit to characters; a shortened disclaimer is used to inform users that these are unregulated and risky. Advertisers are not allowed to use terms such as "currency" or "securities" in their advertisements for VDA products and services [72].

**5. Working of Blockchain**

Cryptocurrencies work on the blockchain principle, which uses a decentralized ledger to record all transactions [42]. Blocks and transactions are the two components of the Blockchain system. Any action taken by any user on the network is represented by a transaction. The blocks function as memory blocks, storing transaction, creation, and other information [61]. Blockchain can be private or public [39]. Anyone who is a part of the network can join in a public blockchain without requiring permission or verification. Because it is impossible to forge records of transactions for everyone in the network without disrupting the network, public blockchains are regarded incredibly secure [61]. Only confirmed and authorized individuals can participate in private blockchains. These aren't completely decentralized, and they rely on a central authority to run the network. Only the users who are transacting have access to the transaction information in private blockchains [39]. Flowchart in Fig. 1 represents the working of blockchain [61].



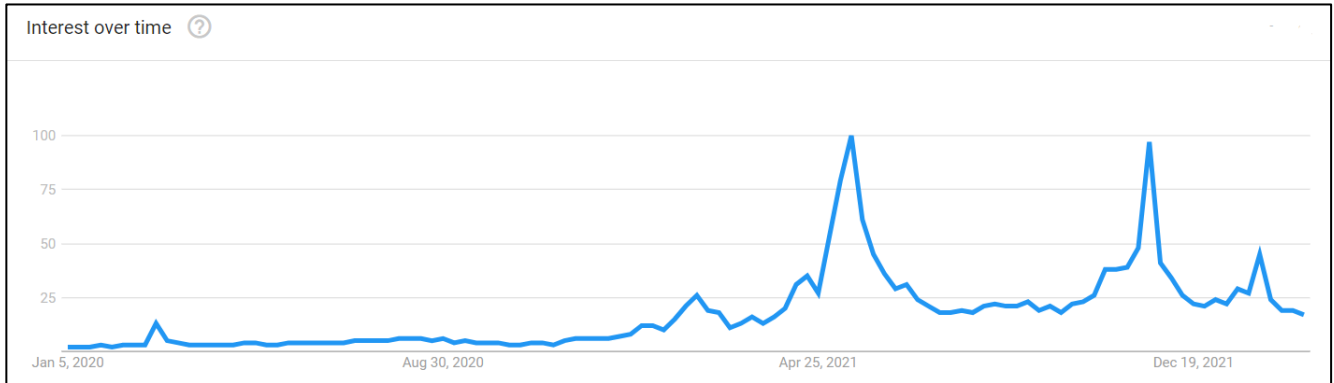
**Fig 1:** Working of Blockchain

### 6. Recent Trends in Cryptocurrency in India

This section explains the interest of individuals in cryptocurrency overtime and by sub-regions. It also puts forth the top five cryptocurrencies popular in India.

**6.1 Interest over time:** Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means, the term is half as popular. A score of 0 means there was not enough data for this term.

India's relationship with cryptocurrency is strange as the government had planned to introduce a crypto bill twice that would have banned "all private cryptocurrencies" but it back stepped. Meanwhile, as a result of the epidemic, demand of the digital assets has surged across the country, particularly in 2021. According to a Chainalysis research from October, India's crypto industry expanded 641 percent from July 2020 to June 2021, helping to make a region covering central and southern Asia and Oceania into one of the world's fastest-growing cryptocurrency economies [74].



Source: Google trends [76]

Fig 2: Interest in cryptocurrency overtime

**6.2 Interest by Sub-region:** See in which location your term was most popular during the specified time frame. Values are calculated on a scale from 0 to 100, where 100 is the location with the most popularity as a fraction of total searches in that location, a value of 50 indicates a location which is half as popular. A value of 0 indicates a location

where there was not enough data for this term. A higher value means a higher proportion of all queries, not a higher absolute query count. For example a tiny country where 80% of the queries are for "bananas" will get twice the score of a giant country where only 40% of the queries are for "bananas".

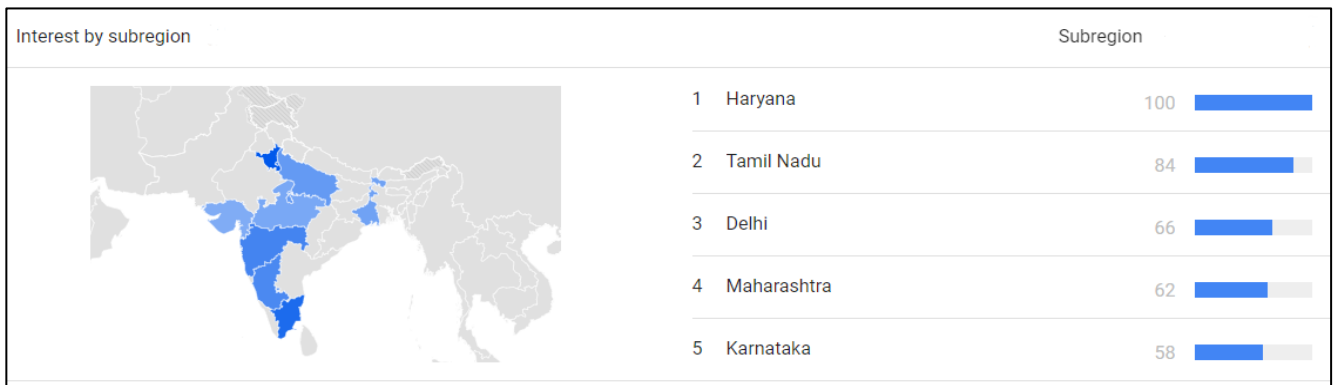







Fig 3: Interest in cryptocurrency by sub-region

**6.3 Top five cryptocurrency in India:** Table shows top five cryptocurrencies in India according to their market capitalization. Bitcoin is the most well-known cryptocurrency with a market capitalization of 62.5 Trillion, Satoshi Nakamoto, a pseudonym, first described this coin in 2008. Ethereum comes second with a market capitalization of 26.4 Trillion; it was launched in 2015 by Buterin and Joe Lubin, the founder of the blockchain software start-up (ConsenSys). Tether was first introduced as Real Coin in

July 2014, and then Tether Ltd rebranded it as Tether, its market capitalization is 6 Trillion. Binance Coin comes fourth with a market capitalization of 5.1 Trillion, it was launched in July 2017 as part of an initial coin offering (ICO) with a cap of 200 million BNB tokens. USD Coin is a stablecoin backed entirely by US dollars and assets denominated in US dollars, its market capitalization is 4.1 Trillion.

**Table 2:** Top five cryptocurrencies in India

Coin Name (Code)	Price	Market Cap
Bitcoin (BTC) 	₹ 34,12,577	₹ 62.5T
Ethereum (ETH) 	₹ 2,28,034	₹ 26.4T
Tether (USDT) 	₹ 79.11	₹ 6.0T
Binance Coin (BNB) 	₹ 32,133	₹ 5.1T
USD Coin (USDC) 	₹ 79.90	₹ 4.1T

Source: [75] on March 3, 2022

## 7. Advantages, Disadvantages and SWOT Analysis

This section explains the advantages, drawbacks and undertakes SWOT analysis of cryptocurrency.

### 7.1 Advantages of Cryptocurrency

Crypto is a new asset class that started in 2009 with the development of the Bitcoin blockchain. The main advantage of Bitcoin and most other blockchain-based cryptocurrencies is that they lack a central authority, payment processor, or firm owner. In crypto network there is peer-to-peer transaction in which users can deal with one another directly. Many of cryptocurrency's additional advantages arise from its decentralised and peer-to-peer structure. Some positives of cryptocurrency are follows [77]:

**7.1.1 No financial intermediary:** Cryptocurrencies are a new, decentralised money paradigm. To enforce trust and govern transactions between two individuals, centralised intermediaries such as banks and monetary organisations are not required in this system. As a result, a system based on cryptocurrencies reduces the risk of a single point of failure [34], such as a huge bank, triggering a global crisis, similar to the one generated in 2008 by the failure of institutions in the United States [18].

**7.1.2 Easy transaction:** Cryptocurrencies promise to make it easier to move funds between two parties without the use of a trusted third party such as a bank or credit card provider. Public and private keys, as well as various incentive schemes such as proof of work and proof of stake, are used to secure such decentralised transfers [48].

**7.1.3 Short settlement times:** It transfers between two transacting parties are faster than traditional money transfers since they do not employ third-party intermediaries. Flash loans are a nice illustration of decentralised transfers in decentralised finance [60]; which are not backed by collateral, can be completed in seconds and are employed in trading.

**7.1.4 Cross border payments:** One of cryptocurrency's most notable use cases is the remittance industry such as Bitcoin are used as intermediary currencies to facilitate cross-border money transfers. As a result, a fiat currency is changed to Bitcoin (or another cryptocurrency), then sent across borders and converted back to the target fiat currency [47]. This method simplifies and reduces the cost of money transfers.

**7.1.5 Incredible security:** Decentralized currencies are secure forms of payment since they are built on

cryptography and blockchain security [25]. This is one of the most certain advantage of cryptocurrencies; the hash rate is a big factor in crypto security. The more computer power required breaching the network, the greater the hash rate [31]; by far the most secure cryptocurrency is Bitcoin, which has the highest hash rate of any network.

**7.1.6 Exponential industry growth:** The cryptocurrency sector has been one of the most rapidly growing markets so far. Working with firms on the cutting edge of the internet in the 1990s and early 2000s may be compared to working with companies on the cutting edge of the internet now [57].

**7.1.7 Massive returns:** Bitcoin had almost no value when it started in 2009. It would climb to a fraction of a penny, then tens of thousands of dollars over the next few years [13], this shows that there is gain of millions of percentage points.

**7.1.8 Private transactions:** Although privacy is one of the advantages of cryptocurrencies, it isn't as private as some people believe. Blockchain generates a permanent public ledger of all transactions [28]. While this ledger just exposes wallet addresses, tracking transactions becomes possible if an observer can link a user's identity to a specific wallet [46]. There are various ways to make transactions that are more anonymous while most crypto transactions are pseudonymous. Coin mixing services group transactions in such a way that it's difficult to pick them apart, which can be confusing to outside observers.

**7.1.9 Portfolio diversification:** Cryptocurrency has earned the reputation of being a non-correlated asset class. Markets of cryptocurrency operate substantially independently of other markets, and their price action is influenced by factors other than those that drive equities, bonds, and commodities [20]. Any asset that has increased by millions of percentage points in just twelve years, as many crypto coins have, is clearly unrelated to anything else. However, it's worth mentioning that, in recent years, cryptos have started to trade in tandem with stocks for short periods of time [37].

**7.1.10 Inflation hedge:** Bitcoin, Litecoin, and Monero, to name a few, are mineable cryptocurrencies with a restricted supply ceiling that are regarded to be strong inflation hedges. Because monetary inflation occurs when central banks and governments produce more money, increasing the supply, scarcer items rise in value; more and more fresh dollars are pursuing fewer and less coins, the price of these fixed-supply coins, measured in dollars, is more likely to rise. Furthermore, regardless of what happens with

monetary policy, the Bitcoin protocol, for example, is designed to keep those coins scarce.

**7.1.11 More inclusive financial system:** Some of cryptocurrency's advantages are available to people who do not have access to traditional financial systems. One of the advantages of cryptocurrencies is that everyone can join due to its decentralised and permission-less nature <sup>[16]</sup>.

**24/7 Markets:** Crypto markets, on the other hand, trade 24 hours a day, seven days a week, without exception [30]. Some of the only things that could interrupt a person's ability to trade cryptocurrency would be a power outage, internet outage, or centralized exchange outage <sup>[38]</sup>.

## 7.2 Disadvantages of Cryptocurrency

Cryptocurrencies, have a number of flaws that have led some (including well-known investor Warren Buffet) to label them as the next "bubble" <sup>[24]</sup>. As a result, it's critical to recognise and comprehend the disadvantages and roadblocks that may prevent widespread adoption of these technologies.

**A. Legal and Regulatory Concerns:** Cryptocurrency has following legal and regulatory concerns:

**Regulatory uncertainty:** Unregistered digital assets, such as cryptocurrencies, have the potential to generate enormous returns. However, neither the assets nor the firm are registered with the regulatory authorities or securitized <sup>[36]</sup>. As a result, the asset being sold to the public lacks credibility in the absence of a registered prospectus authenticating the security, information about the management, or financial statements.

**Jurisdictional issues:** One of the most distinguishing characteristics of blockchain technology is that it is not physically situated somewhere <sup>[64]</sup>. Its operation is carried out by nodes on the blockchain's network, which is distributed across multiple jurisdictions <sup>[35]</sup>. Jurisdictional issues arise as a result of this feature, because of the ledger's lack of a physical location, determining the country in which cryptocurrency software "resides" may be challenging.

**Privacy and data protection:** In the cryptocurrency world, data theft is intimately linked to privacy concerns. Because of their apparent anonymity, many users choose cryptocurrency. However, various analytic firms have revealed that this anonymity is frequently exaggerated; for example, Chainalysis, a blockchain analytics firm, claims to be able to trace the vast majority of Zcash and Dash transactions, thereby calling privacy coins' bluff <sup>[45]</sup>.

**Money Laundering:** Criminals utilise a variety of tactics to mask the illicit origin of payments utilising crypto money laundering <sup>[26]</sup>. The most basic kind of bitcoin money laundering relies heavily on the fact that cryptocurrency transactions are anonymous.

**B. Cyber Security Threats:** It can be explained by given subsets:

**Vulnerable Wallets:** When it comes to hacking assaults and theft, bitcoin wallets are extremely vulnerable. According to a report published by a group of experts from Edinburgh University, weak points in hardware wallets can be exploited. Even heavily encrypted hardware wallets were vulnerable due to that flaw, according to the same study <sup>[63]</sup>.

**Exchange Hacking:** The threat of a devastating attack on cryptocurrency exchanges still exists. There have been massive attacks on exchanges in the past, causing significant damage to the value of the cryptocurrencies involved as well as a slew of other consequences <sup>[52]</sup>. The world's largest bitcoin trading exchange, Mt. Gox went bankrupt in early 2014, over 24,000 users lost access to hundreds of millions of dollars in cryptocurrency and cash <sup>[73]</sup>.

**C. Governance Issues:** Governance issues can be categorised into two categories:

**Accountability:** A fundamental concern for regulators in respect to decentralised systems is who should be held accountable for violations of law and regulation. This is analogous to the challenge of identifying accountability before the advent of blockchain on the Internet <sup>[59]</sup>.

**Taxation challenges:** National and international tax authorities have faced considerable hurdles in adapting existing tax regimes to a digitalized economy. Governments have urged that, rather than using existing permanent establishment notions, broad-based "virtual" profit allocation criteria should be used in some circumstances <sup>[59]</sup>.

**D. Intangible, Uninsured Assets:** Cryptocurrencies' intangible and illiquid character makes them difficult to convert and insure. Despite claims of increased insurer interest in the sector, the majority of crypto-assets and crypto-companies remain under-insured or uninsurable by today's standards <sup>[51]</sup>.

## 7.3. SWOT Analysis

It is a framework for assessing competitive position and developing strategic plans. Internal and external elements, as well as existing and future possibilities, are all evaluated in a SWOT analysis <sup>[50]</sup>. Fig.4 shows the strengths, weaknesses, opportunities, and threats of the cryptocurrency.

Strengths of cryptocurrency include decentralized which means that it is not controlled or regulated by any government, bank or centralized authority <sup>[62]</sup>. No single entity has the sole authority. It is an open source and is publicly assessable. Transactions are simple and rapid because they are conducted over the internet. Transaction cost is low as compared to other investment avenues. There is no third-party mediator, institute, or company engaged <sup>[62]</sup>. Cryptocurrencies are acceptable worldwide <sup>[33]</sup>.

Major weaknesses include highly volatile market prices due to demand and supply conditions, government regulations, investor's attitude and media hype <sup>[27]</sup>. Digital currencies have a reputation for being untrustworthy. Mt Gox was the world's main Bitcoin exchange, until it was destroyed by attackers in 2011 <sup>[54]</sup>. Cryptocurrency is not reliable for some individuals due to a lack of information also it is new technology and not completely developed.

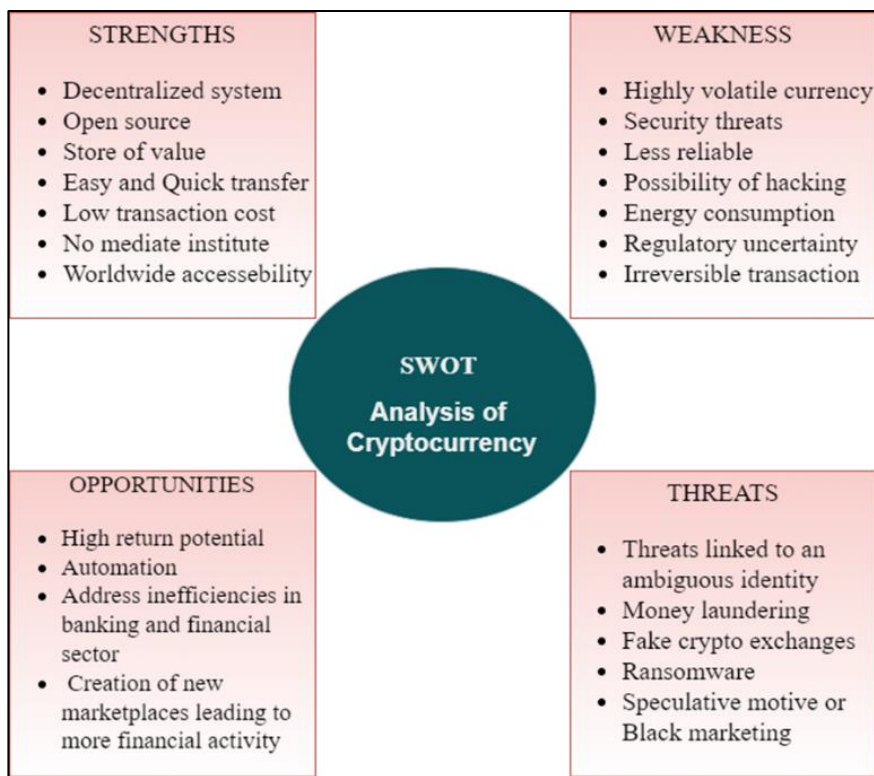


Fig 4: SWOT analysis

Cryptocurrency is based on blockchain technology and is susceptible to breakage by hackers. Miners on the blockchain network are attempting trillion solutions per second in an attempt to validate transactions, consuming a significant amount of computing power<sup>[62]</sup>. In most nations, governments do not control cryptocurrencies. When a transaction is completed on a blockchain and sufficient confirmation is received, the transaction becomes irreversible<sup>[41]</sup>.

Cryptocurrency has a number of opportunities like possibility of a significant return in short span of time. Different new business models, such as real digital currency payment in gaming instead of game points, paywall functionality, and so on, may emerge in the future<sup>[50]</sup>. With growth and more adaptability, it has the potential to become a global reserve currency<sup>[62]</sup>. Bitcoin and other cryptocurrencies are more efficient than the present banking and financial system. As cryptocurrency is not governed by any centralized authority, the entry barrier is extremely low. Threats related to cryptocurrency include ambiguous identity. One of the most distinguishing characteristics of blockchain technology is that it is not physically situated somewhere<sup>[29]</sup>. Criminals utilize a variety of tactics to mask the illicit origin of payments utilizing crypto money laundering<sup>[21]</sup>. By acting as reputable exchanges, fake and unregulated cryptocurrency exchanges defraud potential victims<sup>[44]</sup>. Crypto-ransomware is a sort of malicious software that encrypts files on a computer or mobile device in order to extort money<sup>[49]</sup>. Price of cryptocurrency is highly susceptible to speculation.

## 8. Conclusions, Implications and way forward

The development of Bitcoin has spurred a discussion regarding its and other cryptocurrencies' futures. Despite recent challenges, Bitcoin's success since its introduction in 2009 has sparked the development of rival cryptocurrencies such as Ethereum, Litecoin, and Ripple. A cryptocurrency

that aims to join the mainstream financial system would have to meet a variety of requirements. While that likelihood is remote, it is undeniable that Bitcoin's success or failure in coping with the challenges it faces will have a significant impact on the fortunes of other cryptocurrencies in the years ahead.

The cryptocurrency market is impetuous and unpredictably volatile. Due to the emergence of the digital currency market, investors can make or lose money. Cryptocurrency can be used to conduct revolutionary financial transactions. People have begun purchasing bitcoin in order to protect themselves from the potentially disastrous implications of their national currencies depreciating. Cryptocurrency is used in darknet markets for any type of unlawful economic activity that takes place over digitalization. Cryptocurrency trading has also become popular among institutional investors. Cryptocurrency is unaffected by political interference. It enables payment transmission without revealing real-world identification. Depending on the user, digital currency can be utilized positively or adversely. With the passage of time, the possibilities of embracing this new kind of cash become clearer.

Cryptocurrency is a fascinating notion that has the potential to transform global banking for the better. While Bitcoin is based on good, democratic ideas, it is still a technological and practical work in progress. For the time being, nation-states appear to have a near-monopoly on money production and monetary policy. In the meanwhile, both users and non-users who are interested in the concept's potential must be aware of the concept's practical limits. Any claims that a particular cryptocurrency confers total anonymity or immunity from legal accountability are worthy of deep skepticism, as are claims that individual cryptocurrencies represent foolproof investment opportunities or inflation hedges. Any claims that a particular cryptocurrency provides complete anonymity or exemption from legal liability, as well as claims that individual cryptocurrencies



are flawless investment possibilities or inflation hedges, should be treated with caution.

The world may be affected by the new cryptocurrency movements. Cryptography is used to create the virtual currency, and math protects it. To conduct financial transactions, this digital currency is used over the internet. The blockchain technology has been the main source of blessing for Cryptocurrencies, allowing it to run smoothly without the need for human involvement. Cryptocurrency is utilized for a variety of applications and poses a threat to the traditional financial transaction process. By utilizing cryptocurrency, the entire transaction procedure will be altered

This paper highlighted the potential of adopting virtual currency in the investment portfolio at a theoretical level. In this context, future study could seek to empirically assess the efficacy of such a strategic approach in providing possibilities to individuals in this field.

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