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Crypto full form

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Proof-of-Stake (Ethereum) validators are chosen via a lottery system by staking the network's native coins. Your staked coins increase your chance of being selected to validate the latest block, like holding lottery tickets. If you're selected, you'll be assigned a math problem and rewarded in fees. Ethereum does not have a block reward, making it a deflationary digital asset in 2023. The 'block reward' paid to miners is where all cryptocurrency coins originate from. After receiving their reward, these parties can sell their coins on popular exchanges like Coinbase. Cryptocurrency coins and tokens are used for exchange, but they differ: coins represent a blockchain's native asset, while tokens have different uses and characteristics. Only one type of coin per blockchain network exists, with examples including Ethereum's ether (ETH), Bitcoin's bitcoin (BTC), Cardano's ada (ADA), Solana's sol (SOL), Polygon's matic (MATIC), and Binance's bnb (BNB). On the other hand, cryptocurrency tokens operate on a native blockchain and can have an infinite number of tokens. Ethereum is particularly popular for developers to build decentralized applications due to its Turing completeness. Tokens built on Ethereum are interoperable using the ERC-20 standard. Examples of Ethereum-based tokens include Uniswap's UNI, Aave's AAVE, ChainLink's LINK, and MakerDAO's DAI. There are various types of tokens, with two main categories being stablecoins like USDC, USDT, and BUSD, which track the price of another asset class, and utility tokens like LINK, UNI, and LIDU, which allow users to perform specific actions within a protocol. Cryptocurrencies are digital assets that rely on an encrypted network for transaction execution, verification, and recording, operating independently of centralized authorities. While some cryptocurrencies were developed as alternatives to traditional currencies, others have been generated by their respective network algorithms. A network built with distributed-ledger technology (DLT) has no central authority controlling transactions, instead relying on computers verifying and facilitating each "block" within the chain. This decentralized approach ensures security and makes alterations nearly impossible. Multiple computers worldwide verify each transaction, making verification slow and energy inefficient. Ethereum is a vast digital ecosystem where information, applications, and transactions can be seamlessly integrated. The primary goal of cryptocurrency is to create an alternative monetary system that operates independently of traditional financial institutions. Several cryptocurrencies have been developed for different purposes. Some, like Bitcoin and Tether, aim to serve as a medium of exchange, while others, such as Dogecoin and Shiba Inu coin, are primarily novelty items whose value is driven by popularity and trading activity. Many cryptocurrencies were created to address specific challenges within the blockchain ecosystem, including improving transmission speed, scalability, security, energy efficiency, and cost efficiency. Investing in cryptocurrency can be done through various channels, such as cryptocurrency exchanges or financial institutions. Once purchased, users must securely store their coins in a digital wallet, online wallet, or hardware wallet. However, investing in cryptocurrency comes with significant risks, including market volatility, regulatory uncertainty, and security threats. The crypto landscape is rapidly evolving, much like the technology sector in the 1990s. While innovative ideas abound, not all blockchain innovations will gain widespread adoption. Therefore, investors should exercise caution when entering the cryptocurrency market. Given article text here money called ecash.[12][13] Later, in 1995, he implemented it through Digicash,[14] an early form of cryptographic electronic payments. Digicash required user software in order to withdraw notes from a bank and designate specific encrypted keys before they could be sent to a recipient. This allowed the digital currency to be untraceable by a third party. In 1996, the National Security Agency published a paper entitled How to Make a Mint: The Cryptography of Anonymous Electronic Cash, describing a cryptocurrency system. The paper was first published in an MIT mailing list (October 1996) and later (April 1997) in The American Law Review.[15] In 1998, Wei Dai described "b-money," an anonymous, distributed electronic cash system.[16] Shortly thereafter, Nick Szabo described bit gold.[17] Like bitcoin and other cryptocurrencies that would follow it, 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. In January 2009, bitcoin was created by pseudonymous developer Satoshi Nakamoto. It used SHA-256, a cryptographic hash function, in its proof-of-work scheme.[18][19] In April 2011, Namecoin was created as an attempt at forming a decentralized DNS. In October 2011, Litecoin was released, which used scrypt as its hash function instead of SHA-256. Peercoin, created in August 2012, used a hybrid of proof-of-work and proof-of-stake.[20] Cryptocurrency has undergone several periods of growth and retraction, including several bubbles and market crashes, such as in 2011, 2013–2014/15, 2017–2018, and 2021–2023.[21][22] On 6 August 2014, the UK announced its Treasury had commissioned a study of cryptocurrencies and what role, if any, they could play in the UK economy. The study was also to report on whether regulation should be considered.[23] Its final report was published in 2018,[24] and it issued a consultation on cryptoassets and stablecoins in January 2021.[25] In June 2021, El Salvador became the first country to accept bitcoin as legal tender, after the Legislative Assembly had voted 62–22 to pass a bill submitted by President Nayib Bukele classifying the cryptocurrency as such.[26] In August 2021, Cuba followed with Resolution 215 to recognize and regulate cryptocurrencies such as bitcoin.[27] In September 2021, the government of China declared all cryptocurrency transactions illegal. This completed a crackdown on cryptocurrency that had previously banned the operation of intermediaries and miners within China.[28] On 15 September 2022, Ethereum transitioned its consensus mechanism from proof-of-work to proof-of-stake in an upgrade process known as "the Merge". The founder stated this would reduce energy use and carbon-dioxide emissions by 99.9%.[29] On 11 November 2022, FTX Trading Ltd., a cryptocurrency exchange, filed for bankruptcy. Cryptocurrencies have several key requirements to be considered valid systems. According to Avivah Litan, technology analyst, user experience, controls, safety, and customer service need to be significantly improved. Jan Lansky defines a cryptocurrency as a system that meets six conditions: - The system does not require a central authority. - Its state is maintained through distributed consensus. - It keeps an overview of cryptocurrency units and their ownership. - It defines whether new cryptocurrency units can be created. - If new units can be created, the system defines the circumstances of their origin and how to determine the ownership of these units. - Ownership of cryptocurrency units can be proved exclusively cryptographically. Transactions can only be performed with the current ownership of cryptographic units being proven. If two different instructions for changing ownership are simultaneously entered, the system performs at most one of them. The Merriam-Webster Dictionary added the term "cryptocurrency" in March 2018. Memecoins Memecoins are cryptocurrencies inspired by popular internet memes or jokes. Dogecoin, featuring the Shiba Inu dog from the Doge meme, is a notable example. Memecoins are known for extreme price volatility and are often associated with scams. Some physical cryptocurrency coins have been created as promotional items, while others have become collectibles. These coins typically lack value on their own and are used solely for collecting purposes. Cryptocurrencies are produced by a collective system, with the total supply defined at creation and publicly stated. Unlike traditional currencies, cryptocurrencies do not have central banks or governments backing them. The underlying technology was created by Satoshi Nakamoto. In proof-of-work systems like bitcoin, miners validate transactions and maintain the integrity of the ledger through computational power. ### Blockchain technology enables secure and transparent data exchange between two parties through a decentralized network. This is achieved by using a peer-to-peer protocol that verifies new transactions in real-time. Once recorded, the information cannot be altered without affecting the entire chain, making it virtually tamper-proof. A node is essentially a computer connected to the cryptocurrency network, responsible for relaying or validating transactions and maintaining a copy of the blockchain. Node owners can be volunteers, organizations, or individuals incentivized with rewards. Cryptocurrencies utilize timestamping schemes like proof-of-work (PoW) and proof-of-stake (PoS) to validate transactions without requiring a trusted third-party intermediary. PoW involves solving complex hashing algorithms, while PoS requires demonstrating ownership of a certain amount of currency. Some cryptocurrencies combine both methods for added security. Mining, or transaction validation, is carried out by miners who are rewarded with new cryptocurrency units. However, this process has become increasingly resource-intensive due to the development of specialized hardware and algorithms, leading to concerns about energy consumption and environmental impact. A 2023 study estimates that crypto mining could account for over 1% of global emissions by 2027 if left unchecked. The profitability of mining for hashes has decreased significantly, making it difficult to justify the investment in equipment and cooling systems. Regions with cheap electricity, cold climates, and favorable regulations are popular among miners. In July 2019, bitcoin's energy consumption was estimated at around 7 gigawatts, which is approximately 0.2% of the global total, equivalent to Switzerland's national energy consumption.[71] Miners often pool their resources, sharing processing power over a network to split rewards equally based on their contribution to finding a block. Some mining operations have relocated from China to Canada and Texas after the Chinese government imposed restrictions on virtual currency trading. Companies are now operating data centers for mining in Canadian oil fields due to low gas prices.[73][74] Hydro Quebec proposed allocating 500 megawatts of power to crypto companies for mining in June 2018.[76] Iceland's cheap electricity has made it a haven for cryptocurrency miners, while the city of Plattsburgh, New York implemented an 18-month moratorium on all cryptocurrency mining to preserve natural resources and maintain its character.[78] In 2021, Kazakhstan became the second-biggest crypto-currency mining country, producing 18.1% of the global exahash rate, with a compound containing 50,000 computers near Ekibastuz.[79] The increased demand for graphics cards (GPU) in 2017 led to a significant price increase, with popular models such as Nvidia's GTX 1060 and AMD's RX 570 being sold out or doubling in price.[80][81] Miners regularly buy up entire stockpiles of new GPUs, leading Nvidia to ask retailers to prioritize sales to gamers instead of miners.[82] Companies have developed dedicated crypto-mining accelerator chips with improved price-performance over CPU or GPU mining. The process of storing cryptocurrency keys or seeds involves various methods such as paper wallets, hardware wallets, digital wallets, exchanges, and plaintext storage. This allows users to manage their private keys, public addresses, and wallet information securely. Despite being pseudonymous, bitcoin transactions are publicly recorded on the blockchain, making it possible for anyone to track ownership and movement of funds. Some cryptocurrencies like Monero, Zerocoin, and CryptoNote prioritize privacy by implementing zero-knowledge proofs. To improve privacy, researchers have proposed new cryptographic schemes and mechanisms for hiding IP addresses. Cryptocurrencies operate outside traditional banking and governmental institutions, and are traded online. Proof-of-work currencies like bitcoin incentivize miners with block rewards, which increase the supply of the cryptocurrency. The verification process requires significant processing power and electricity, making it costly enough to validate the public blockchain. The current value of the cryptocurrency supports the reward scheme, but this may not always be the case. In 2018, bitcoin's design was estimated to cause a welfare loss compared to an efficient cash system due to large mining costs. However, users are willing to accept a cash system with high inflation rates before being better off using bitcoin as a means of payment. Optimizing coin creation rates and transaction fees can significantly boost the bitcoin system's efficiency. Additionally, modifying the consensus protocol may eliminate inefficient mining activities altogether.[96] Transaction fees for cryptocurrencies depend on the network capacity versus demand from users for faster transactions.[97] However, allowing users to set custom fees manually often depends on their wallet software used, with most central exchanges not supporting this feature.[citation needed] Some cryptocurrency exchanges, like LiteBit, have offered preset transaction fee options during currency conversions. The recommended network fee can vary by time of day due to network load, and for Ethereum, it's influenced by computational complexity, bandwidth use, and storage needs, while bitcoin fees differ by transaction size and SegWit usage.[101][100] Some cryptocurrencies, such as Nano (XNO), have no transaction fees and rely on client-side proof-of-work for prioritization and anti-spam mechanisms.[102][103][104] Cryptocurrency exchanges allow customers to trade between different digital currencies or conventional fiat money. However, they do not guarantee optimal prices, making price arbitrage possible across multiple markets as of 2020.[106] Atomic swaps enable direct cryptocurrency exchange without the need for a trusted third party, such as an exchange.[107] The first bitcoin ATM was launched in the United States on February 20, 2014, by Jordan Kelley, founder of Robocoin. This kiosk uses scanners to read government-issued identification and confirm users' identities. Initial coin offerings (ICOs) have raised funds for new cryptocurrency ventures but are often considered a means to avoid regulation. Securities regulators in many jurisdictions consider ICOs that fit the "investment contract" definition as securities, subject to regulatory oversight.[citation needed] In an ICO campaign, a percentage of the cryptocurrency is usually offered to investors with a reasonable expectation of profit based on entrepreneurial or managerial efforts. Cryptocurrency market trends show significant fluctuations in value, often influenced by factors such as speculation and technological limitations. ICO projects are regulated in Switzerland, with a focus on protecting investors and maintaining financial system integrity. The total cryptocurrency market capitalization is calculated based on the number of coins in circulation and can be significantly affected by bitcoin's value, which is largely driven by speculation and blockchain rewards. Market trends often follow patterns such as the "halving" effect, where cryptocurrency prices increase before decreasing. Volatility in cryptocurrency prices is higher compared to traditional financial assets like stocks. Cryptocurrencies like bitcoin have been associated with various ideologies and movements, including libertarianism and right-wing extremism. Some critics view cryptocurrencies as a form of disruptive populism that takes control away from central authorities, while others see them as a way to separate money from the state. The idea behind bitcoin is rooted in libertarian philosophy, which advocates for a free market in the production, distribution, and management of money. This concept has been explored by economists such as Friedrich von Hayek, who argued for a complete denationalization of money. However, the rise of cryptocurrencies has also led to concerns about regulation and the need for protection of users. In response, governments and regulatory bodies have taken steps to establish standards and guidelines for the use of cryptocurrencies. The Financial Action Task Force (FATF) has defined cryptocurrency-related services as "virtual asset service providers" and recommended that they be regulated with anti-money laundering (AML) and know-your-customer (KYC) requirements. The European Commission has also published a digital finance strategy, which includes a draft regulation on Markets in Crypto-Assets (MiCA). This proposal aims to provide a comprehensive regulatory framework for digital assets in the EU. Similarly, the Basel Committee on Banking Supervision has proposed that banks holding cryptocurrency assets must set aside capital to cover potential losses. The global regulatory landscape for cryptocurrencies is still evolving, with various countries and agencies proposing new laws to address the risks and benefits associated with digital assets. According to Tobias Adrian, IMF's financial counsellor, establishing common global regulations is a long-term process, but starting now can help achieve stability while harnessing technological innovations. In recent years, several developments have taken place in the US Congress, including the introduction of the Financial Innovation and Technology for the 21st Century Act, which aims to provide clarity on regulatory responsibilities between agencies such as the CFTC and SEC. Stablecoins are exempt from these regulations, except for cases involving fraud or registered firms. China has also been actively regulating its cryptocurrency market, with a focus on preventing money laundering and fraud. In September 2017, China banned initial coin offerings (ICOs), leading to temporary negative liquidity changes, but ultimately resulting in positive effects after news broke. However, the Chinese government's crackdown on cryptocurrency transactions, which began in September 2021, has had significant impacts on prices, with some cryptocurrencies falling by up to 44%. The issue of proof of work mining has also been raised, with regulators citing concerns over electricity usage from polluting sources. In a separate development, the Cook Islands government is proposing legislation that would allow "recovery agents" to investigate or recover cryptocurrency allegedly used for illicit activities. However, this plan has been met with criticism from lawyers and experts, who argue it is flawed and could have implications for New Zealand's governance arrangements. In a move against cybercrime, El Salvador introduced bitcoin as its official currency on June 9, 2021, marking it as the first country to do so.[143] The European Union has defined crypto assets as digital representations of value or rights that can be transferred and stored electronically using distributed ledger technology.[145] As of January 17, 2025, the EU's Markets in Crypto-Assets (MiCA) regulation came into effect for asset-referenced tokens (ARTs) and electronic money tokens (EMTs), but allowed non-compliant providers to maintain services until March 2025.[146][147] MiCA excludes unique and non-fungible crypto-assets, as well as those that qualify as financial instruments according to ESMA guidelines published in December 2024.[148][149] India currently has no explicit policy on cryptocurrency investment. A ban was lifted by the Supreme Court in 2020, but tax and regulatory issues remain unresolved. A law regulating or banning cryptocurrency is being considered by the Indian Parliament. A public policy expert suggests that complete prohibition is impractical due to the market's size and involvement of billions of dollars.[155] Regulation over prohibition is preferred, with adherence to IMF and FATF guidelines suggested. South Africa aims to establish a regulatory framework after experiencing significant scams in the cryptocurrency sector. Regulatory environments for cryptocurrencies are becoming increasingly stringent worldwide. In Switzerland, FINMA issued guidance in 2019 adhering to FATF's Recommendation 16 with stricter requirements. VASPs must verify beneficiary identities, setting a high standard for anti-money laundering measures. Meanwhile, Turkey banned cryptocurrency usage for purchases due to significant transaction risks. In the UK, the Financial Conduct Authority requires registration from all cryptocurrency firms as of January 2021. Binance was ordered to cease regulated activities in June 2021. The incoming Labour government confirmed plans to regulate cryptoassets and new requirements are expected to take effect in 2026. The US has seen significant developments with 17 states passing laws and resolutions concerning regulation in 2021. This led the Securities and Exchange Commission to consider steps forward, including legislation focused on "crypto trading, lending, and DeFi platforms." SEC Chairman Gary Gensler expressed concerns over vulnerable investors and unregistered securities, criticizing stablecoins for undermining traditional banking policies. The launch of the first bitcoin-linked exchange-traded fund (ETF) from ProShares in October 2021 marked a significant milestone. This development exposed bitcoin to a broader range of investors and garnered international attention as a major endorsement for the crypto industry. Regulators worldwide are stepping up efforts to mitigate risks associated with cryptocurrencies, including money laundering and sanctions evasion. The Department of the Treasury announced plans to report transfers worth $10,000 or more to the Internal Revenue Service, further tightening oversight. The US government has been working to regulate the cryptocurrency industry, with a focus on preventing illegal transactions and promoting better compliance. In February 2022, the Department of Justice established a National Cryptocurrency Enforcement Team to identify and deal with misuse of cryptocurrencies. The Biden administration issued an executive order in March 2022 to develop regulations for the industry, but faced challenges in balancing the need to restrict illicit activities with the potential benefits of a growing industry. To address these challenges, the government released a Comprehensive Framework for Responsible Development of Digital Assets document in September 2022, which aimed to support the development of cryptocurrencies while restricting their illegal use. The executive order included all digital assets, but focused particularly on cryptocurrencies due to their security risks and economic potential. In recent years, the SEC has taken action against several major crypto exchanges operating staking programs, including Kraken's $42 billion in staked assets globally. The agency has also issued alerts to investors warning that firms offering crypto asset securities may not be complying with US laws. In January 2025, President Trump signed Executive Order 14178, which revoked earlier executive orders and established a group tasked with proposing a federal regulatory framework for digital assets within 180 days. The order also prohibits the establishment of Central bank digital currencies and promotes international engagement on digital assets. Bitcoin scams and ICOs being investigated in US and Canada, with varying regulations worldwide, raise concerns about tax evasion, anonymity, and potential ties to extremist groups. Mt. Gox Hacks Exposed: $1.3 Billion Stolen in Cryptocurrency Heists Cryptocurrency exchanges have faced significant security breaches, resulting in the theft of billions of dollars' worth of digital assets. #### The Mt. Gox Hack In 2014, hackers exploited transaction malleability problems on the Bitcoin network, causing a significant loss to Mt. Gox. This incident led to a sharp decline in the price of Bitcoin from $1,160 in December to under $400 in February. #### Other Cryptocurrency Exchanges Affected Subsequent hacking incidents have affected other exchanges, including Nicehash, where hackers stole over $70 million using a hijacked company computer. Tether suffered losses of $31 million after being hacked in 2017. Bitcoin Gold's transactions were also hijacked and abused by unknown hackers. #### Enforcement Actions Taken In 2018, Homero Josh Garza was sentenced to 21 months of imprisonment for his role in two hacks that year. He had founded cryptocurrency startups GAW Miners and ZenMiner, which were part of a pyramid scheme. The SEC brought a civil enforcement action against Garza, who was ordered to pay $9.1 million plus $700,000 in interest. #### EU Report on Cryptocurrency Security Breaches A 2020 EU report found that users had lost crypto-assets worth hundreds of millions of US dollars in security breaches at exchanges and storage providers. Between 2011 and 2019, reported breaches ranged from four to twelve a year, with over $1 billion worth of assets stolen in 2019 alone. #### Illicit Uses of Cryptocurrency According to a 2020 report produced by the United States Attorney General's Cyber-Digital Task Force, three categories make up the majority of illicit cryptocurrency uses: financial transactions associated with crimes, money laundering, and shielding legitimate activity from tax or legal requirements. The report concluded that addressing these risks is essential for cryptocurrency to realize its transformative potential. Financing risk in the UK related to using cryptoassets such as bitcoin for money laundering and terrorism financing was assessed as "medium" by authorities, a slight increase from the previous year's assessment of "low". Experts suggested that the perceived risks may be overstated. Data from blockchain analysis company Chainalysis showed that illicit activities made up only 0.15% of all crypto transactions in 2021, amounting to $14 billion. In a notable incident, Monkey Kingdom lost $1.3 million worth of cryptocurrencies due to a phishing link used by hackers. In other cases, Sam Bankman-Fried was found guilty on seven counts of fraud related to FTX and sentenced to 25 years in prison. Data from Chainalysis also revealed that criminals laundered $8.6 billion worth of cryptocurrency in 2021, up 30% from the previous year. It seems that cybercriminals rely on a small group of centralized exchanges for illicit activities, with those exchanges receiving 47% of funds sent by crime-linked addresses. Embezzlement from DeFi protocols also occurred, resulting in $2.2 billion worth of cryptocurrencies being stolen in 2021, representing 72% of all cryptocurrency theft that year. The Federation Tower complex in Moscow has been linked to numerous cryptocurrency businesses suspected of facilitating money laundering, including accepting illicit funds obtained through scams and darknet markets. In Russia, dark money has been flowing into the country through a dark web marketplace called Hydra, which is powered by cryptocurrency and generated over $1 billion in sales in 2020. The platform's design makes it difficult for investigators to trace the money. Notably, Russians are also leaders in adopting cryptocurrencies, due to issues with the ruble. In another incident, RenBridge was found to be responsible for laundering at least $540 million since 2020 and is popular among individuals attempting to launder money from theft. Cryptocurrencies have experienced varying levels of acceptance, often tied to their potential as a safe haven during economic crises. However, this has also led to their use in illicit activities such as online black markets like Silk Road. Following the shutdown of the original Silk Road in 2013, the number of prominent dark markets increased significantly, with a corresponding rise in drug listings. The ambiguity surrounding cryptocurrency classification in many parts of the world creates challenges for law enforcement agencies trying to adapt to the evolving landscape of dark markets. In the US, cryptocurrencies like bitcoins are viewed as "virtual assets," but this classification does not provide clear guidance on their legitimacy. Studies have revealed widespread wash trading within crypto-trading platforms, a practice that involves manipulating prices or inflating volume artificially. This has led to concerns about the legitimacy of some exchanges and their impact on market stability. The 2022 conflict between Western nations and Russia drew attention to cryptocurrencies as a potential means of evading economic sanctions. However, American sources warned that some crypto-transactions could be used for this purpose, highlighting ongoing concerns about the misuse of cryptocurrencies. Critics of cryptocurrencies have pointed out several issues, including their lack of stability in price, high energy consumption, and vulnerability to debasement through forking. The Bank for International Settlements summarized these criticisms in Chapter V of their 2018 annual report, drawing parallels with Ponzi schemes, pyramid schemes, and economic bubbles like the housing market bubble. Regulators worldwide have issued warnings against cryptocurrency due to its unpredictable nature and lack of regulation. However, research suggests that these warnings often go unheeded, with many users unaware of the risks involved. A UK study found that only one in ten potential buyers were aware of consumer warnings on the FCA website, while 12% of crypto users didn't realize their holdings weren't protected by statutory compensation. Younger investors were particularly drawn to cryptocurrency due to social media pressure and competition with friends and family, with 75% of respondents citing these factors as motivations. The widespread adoption of cryptocurrencies has raised concerns among economists, who fear that it may lead to a lack of transparency in financial transactions, making it harder for them to steer the economy. Unlike traditional financial products, cryptocurrency lacks consumer protections against fraud, such as chargebacks. In France, the AMF has listed 16 websites of companies soliciting investment in cryptocurrency without authorization. Research has also shown that bitcoin suffers from systemic risk due to a small number of entities controlling a large portion of its supply. A study by John Griffin and Amin Shams found that the price of bitcoin was inflated using another cryptocurrency, Tether, in 2017. The collapse of FTX has left it facing over $8 billion in claims, highlighting the risks associated with cryptocurrency investments. Non-fungible tokens (NFTs) are digital assets stored on the blockchain and bought/traded using cryptocurrency, raising concerns about their lack of regulation and potential for market manipulation. Cryptocurrencies and Blockchain Technology Adoption Major financial institutions are adopting blockchain technology to enhance operational efficiency. Innovations like Security Token Offering (STO) have enabled new ways of fundraising. Tokenization has the potential to make illiquid assets more accessible to investors by turning them into blockchain-based tokens. Despite regulatory risks, companies such as JPMorgan Chase and Morgan Stanley are actively working on blockchain initiatives. Morgan Stanley announced offering access to bitcoin funds for wealthy clients in March 2021. BNY Mellon also started offering cryptocurrency services to its clients. Venmo added support to its platform to enable customers to buy, hold and sell cryptocurrencies in April 2021. Mastercard is working with Bakkt to allow any bank or merchant on the network to offer cryptocurrency services. However, the environmental impact of proof-of-work blockchains like bitcoin is a concern due to high energy consumption and greenhouse gas emissions. By November 2018, bitcoin was estimated to produce 22.0-22.9 million tons of CO2 annually, rivalling nations like Jordan and Sri Lanka. Critics have identified an electronic waste problem in disposing of mining rigs. Bitcoin is the least energy-efficient cryptocurrency, using 707.6 kilowatt-hours of electricity per transaction. China was previously the primary location for bitcoin mining but forced out operations due to concerns over power usage. The United States has become the top global leader in the industry. XRP is considered the world's most energy-efficient cryptocurrency, using only 0.0079 kilowatt-hours of electricity per transaction.[269] While large proof-of-work (PoW) blockchains consume as much energy as a medium-sized country, proof-of-stake (PoS) networks have an annual power demand equivalent to a housing estate. The Times identified six "eco-friendly" cryptocurrencies: Chia, IOTA, Cardano, Nano, Solarcoin, and Bitgreen.[271] Researchers have studied the energy use and efficiency of blockchains using various methods. A May 2021 study on the largest PoS networks found that Cardano has the lowest electricity use per node, Polkadot has the lowest overall electricity use, and Solana has the lowest electricity use per transaction. In terms of annual consumption, the figures were: Polkadot (70,237), Tezos (113,249), Avalanche (489,311), Algorand (512,671), Cardano (598,755), and Solana (1,967,930). This is equivalent to Polkadot consuming 7 times the electricity of an average U.S. home, Cardano 57 homes, and Solana 200 times as much. The study concluded that PoS networks consume only 0.001% the electricity used by the bitcoin network.[272] University College London researchers reached a similar conclusion.[273] Additionally, variable renewable energy power stations could invest in bitcoin mining to reduce curtailment, hedge against electricity price risk, stabilize the grid, increase the profitability of renewable energy power stations, and accelerate the transition to sustainable energy.[274][275][276][277][278] Variable renewable energy power stations could invest in bitcoin mining to reduce curtailment, hedge against electricity price risk, stabilize the grid, increase the profitability of renewable energy power stations, and accelerate the transition to sustainable energy. There are also technical considerations. For example, technological advancements in cryptocurrencies like bitcoin result in high upfront costs for miners in terms of specialized hardware and software.[279] Cryptocurrency transactions are normally irreversible after a certain number of blocks confirm the transaction. Additionally, cryptocurrency private keys can be permanently lost from local storage due to malware, data loss, or the destruction of physical media. This would effectively remove the cryptocurrency from the markets. Main article: Ledger (journal) In September 2015, the peer-reviewed academic journal Ledger was established. It covers studies on cryptocurrencies and related technologies and is published by the University of Pittsburgh.[281] The journal encourages authors to digitally sign a file hash of submitted papers, which would then be timestamped into the bitcoin blockchain. Authors are also asked to include a personal bitcoin address in the first page of their papers. A number of aid agencies have started accepting donations in cryptocurrencies, including UNICEF.[284] Christopher Fabian, principal adviser at UNICEF Innovation, said the children's fund would uphold donor protocols, meaning that people making donations online would have Bitcoin has been described as a speculative bubble by several Nobel Prize winners in economics and central bank officials. Some notable critics include Paul Krugman, Robert J. Shiller, Joseph Stiglitz, Richard Thaler, James Heckman, Thomas Sargent, Angus Deaton, Oliver Hart, Alan Greenspan, Agustín Carstens, Vítor Constâncio, and Nout Wellink. Investors like Warren Buffett and George Soros have also expressed skepticism, with Buffett calling it a "mirage" and Soros labeling it a "bubble". Business leaders Jack Ma and Jamie Dimon have similarly referred to it as a "bubble" and a "fraud", though Dimon later retracted the latter statement. BlackRock CEO Laurence D. Fink has gone further by calling bitcoin an "index of money laundering." The concept of cryptocurrency has been debated and explored in various forms since its inception. There are over 25,000 digital currencies available today, with more than 40 having a market capitalization exceeding $1 billion. Bitcoin, one of the most well-known cryptocurrencies, was first proposed by an individual or group known as Satoshi Nakamoto. However, the true identity and motivations behind this pseudonym remain unclear. The idea of cryptocurrency predates Bitcoin, with David Chaum proposing the concept of untraceable payments in 1983. Other researchers, such as Nick Szabo, have also explored digital currencies, including "bit gold," a precursor to Bitcoin. Cryptocurrency has been described in various ways, with some considering it a currency, commodity, or asset class. However, its classification remains uncertain. In recent years, the cryptocurrency market has experienced significant fluctuations, with many coins experiencing a decline in value known as "crypto winter." Despite this, interest in cryptocurrency continues to grow, with more people exploring and investing in digital currencies. Sources: * Various academic papers and research studies on cryptocurrency * Online articles from reputable sources such as Forbes, PCWorld, and Ars Technica * Government reports and policy briefs on the topic of cryptocurrency Note: I've paraphrased the text to maintain its original meaning while condensing it into a more readable format. The article appears to be a collection of news and information about cryptocurrencies, also known as "crypto" or "digital currency." It includes mentions of various countries and organizations exploring the potential of virtual currencies, such as the UK launching an initiative to examine their use. The article also touches on regulatory approaches to cryptoassets and stablecoins, with discussions of consultations and calls for evidence from governments. Additionally, it highlights notable events such as the recognition of Bitcoin as legal tender in El Salvador and Cuba's central bank acknowledging certain cryptocurrencies. Furthermore, there are mentions of major financial news outlets, including Forbes, Bloomberg, CNBC, The Wall Street Journal, and Reuters, which have reported on various aspects of the cryptocurrency market. Some articles mention specific companies, such as FTX, a crypto exchange that filed for bankruptcy in 2022. The text also includes references to academic journals and online dictionaries, suggesting that there is a growing interest in understanding and defining the term "cryptocurrency." Overall, the article seems to be an aggregation of recent news and information about cryptocurrencies, regulatory issues, and industry developments. Master's thesis analyzing blockchain rollups was published in July 2021 by Universitat Politècnica de Catalunya. The work explored the development of blockchain technology and its applications. Additionally, various news articles were archived from online sources such as Bloomberg, The New York Times, CNET, and others, providing insight into the world of cryptocurrency, including Bitcoin's surges and falls, the rise of altcoins, and the impact of stablecoins on the market. Moreover, a red notice was issued by Interpol for Do Kwon, the founder of failed cryptocurrency Terra, in September 2022. Regulatory changes are also being implemented to govern stablecoin usage, with Hong Kong's monetary authority introducing new licensing requirements in 2023/2024. Bitcoin's Blockchain Technology and Its Impact on Financial Markets Bitcoin mining has become increasingly energy-intensive, with some estimates suggesting that it may consume more electricity than powering homes this year. This has led to concerns about its environmental impact and potential effects on PC gamers, who are facing higher GPU prices due to high demand for graphics cards used in mining. Several news outlets have reported on the issue, including Bloomberg, which stated that Bitcoin mining is being banned for the first time in an upstate New York town. Additionally, reports from BBC and Polygon have highlighted the growing trend of cryptocurrency mining, with some areas becoming hotspots for large-scale operations. In response to these issues, some companies, such as AMD and Nvidia, are taking steps to address the problem. Nvidia has suggested that retailers prioritize gamers over miners in their graphics card sales, while AMD is exploring alternative solutions to mitigate the impact of cryptominers on PC gaming. Furthermore, experts have weighed in on the topic, with a recent study published in Frontiers in Blockchain discussing the potential for cryptocurrencies to preserve privacy and comply with regulations. Another article from The Wall Street Journal has questioned the myth that Bitcoin transactions are anonymous. Additionally, there has been research into the use of zero-knowledge cryptography and its implications for cryptocurrency users. A study on Monero, a cryptocurrency known for its anonymity features, has highlighted the potential benefits and drawbacks of these technologies. Overall, the text explores various aspects of the Bitcoin ecosystem, including its environmental impact, market trends, and technological developments. **List of sources** This list contains references to various academic papers and articles on cryptocurrency-related topics. 1. A PDF document titled "The Economics of Cryptocurrencies – Bitcoin and Beyond" was archived from its original source in December 2020. 2. A review of Electrum, a cryptocurrency wallet, is available on Wallets.com. 3. Coinbase's help page provides information on adjusting network fees. 4. LiteBit announced the cessation of operations in May 2023. 5. Historical charts of Ethereum and Bitcoin median transaction fees are available on BitInfoCharts. **Academic papers** 1. A comparative analysis of DAG-based blockchain architectures was presented at a conference in 2018 by Pervez et al. 2. Bencic and Podnar Zarko compared blockchain to directed acyclic graph (DAG) technology in a paper published in 2018. 3. Makarov and Schoar's study on trading and arbitrage in cryptocurrency markets was published in the Journal of Financial Economics in 2020. 4. Xu et al.'s game-theoretic analysis of cross-chain atomic swaps with HTLCS was presented at a conference in 2021. **Regulatory news** 1. The Ontario Securities Commission issued a notice on cryptocurrency offerings in August 2017. 2. The SEC issued an investigative report concluding that DAO tokens were securities in July 2017. 3. A company halted its ICO after the SEC raised concerns about registration in December 2017. 4. Switzerland set out guidelines to support initial coin offerings (ICOs) in February 2018. **Other news** 1. The first U.S. bitcoin ATMs were scheduled to open in Seattle and Austin in 2014, according to a Reuters article. 2. A study on the fair market value of Bitcoin was published by Meinkhart in November 2019. Note that this paraphrased version aims to preserve the original information but reorganize it into a more readable format. The article discusses the growing trend of incorporating cryptocurrencies into traditional retirement plans, such as 401(k) plans. Several companies, including Coinbase, have announced plans to allow workers to add cryptocurrency to their retirement accounts. This move has been met with interest and skepticism from financial experts and scholars. Historically, cryptocurrencies were initially met with skepticism and even disdain by some in the financial industry. However, over time, they have gained traction and become more mainstream. In 2018, former White House aide Stephen Bannon invested in Bitcoin, further solidifying its place in popular culture. The article also touches on the concept of virtual currency schemes and decentralized networks, highlighting the work of economists such as Friedrich Hayek and the European Central Bank's guidance on virtual assets. In recent years, cryptocurrencies have experienced significant fluctuations in value, with some experiencing dramatic increases and others plummeting. The article references a 2018 article by Paul Krugman, who expressed concerns about the volatility of cryptocurrency markets. Despite these challenges, cryptocurrencies continue to gain attention from investors and financial experts alike. As the market continues to evolve, it's likely that we'll see more innovative uses of blockchain technology and digital currencies in the future. Some notable mentions include: * The article cites a 2022 Forbes article ranking the top 10 cryptocurrencies by value. * A 2021 article by USA Today reported on Coinbase's plans to allow cryptocurrency investments in 401(k) plans. * A 2018 article by The New York Times discussed the rise of Bitcoin and its potential as an investment opportunity. Overall, the article provides a comprehensive overview of the current state of cryptocurrencies and their growing presence in traditional finance. A review of regulatory standards and market developments related to virtual assets and service providers was conducted over a 12-month period. The FATF revised its standards for virtual assets and service providers, while the European Commission proposed regulations for crypto-assets. Additionally, the Markets in Crypto-Assets Regulation (MiCA) came into effect, applying to all EU member states. Several other regulatory initiatives were also undertaken, including the introduction of a travel rule specification for Bitcoin SV. Meanwhile, there was a crackdown on cryptocurrency-mining and initial coin offerings in China, which led to a sell-off in the crypto market. Regulatory actions have been taken in various countries concerning cryptocurrencies, including India, South Africa, and Turkey. In India, the government has been weighing its stance on cryptocurrency, with some sources suggesting a potential ban. However, as of January 24, 2022, no clear regulations had been put into place. Other countries like South Korea have implemented stricter regulations, while in the United States, there is a growing push for more comprehensive regulatory frameworks. The Indian government has been cautious about cryptocurrencies due to concerns over tax evasion and scams. In contrast, countries like Japan and South Korea have been more welcoming of cryptocurrencies, with Japan even establishing its own cryptocurrency exchange. However, regulatory challenges persist globally, as exemplified by the recent crackdown on Binance in the UK. In the US, there is a growing call for increased regulation to protect investors and combat scams. The SEC has been pushing for greater powers to oversee the cryptocurrency market, while some lawmakers have introduced bills aimed at regulating digital assets more effectively. The White House released a comprehensive framework for responsible development of digital assets in September 2022, outlining key priorities such as consumer protection, financial stability, and innovation. This move marks an important step towards developing clearer regulations and guidelines for the rapidly evolving cryptocurrency industry. The regulatory landscape for cryptocurrencies continues to evolve, with governments and exchanges navigating the challenges of protecting investors and maintaining compliance. A recent $30 million settlement between Kraken, a major cryptocurrency exchange, and the SEC highlights the need for greater oversight in the