BESTMUN'24

G20
STUDY GUIDE

WRITTEN BY:

ALPEREN ARİFOĞLU (Under Secretary General)
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I. Letter from the Secretary-General

As the president of the Beştepe College Model United Nations Club and the Secretary General of the fourth annual edition of BESTMUN, it is my utmost honor to welcome everyone to our conference. Speaking on the behalf of the BESTMUN team as a whole, despite the many challenges we were put under, we believe we were able to present you a wonderful conference.

My name is Ebrar Nazife Korkmaz, I am a junior student at Beştepe College. I have partaken in the previous editions of BESTMUN in different positions and what was once a distant objective became reality. I am more than honored to be the Secretary General for such a prestigious conference with an academic team with enough knowledge and confidence that could conquer a nation. Model United Nations holds a special place in my heart and it always will. Since I first began in 2021, my passion has only strengthened.

Of course, such a conference wouldn't be possible without the aid of a hardworking organization team. I would like to thank my Director General and my best friend Duru Benzer for supporting me evertime and enduring untimely tasks I gave and tantrums I had throughout the preparation period. We began the thought process of BESTMUN'24 as soon as BESTMUN'23 ended and I'm glad we all share the same passion for this conference. To my deputy, Sarina Fidan, you're more than your title holds, a life saver in all periods of the conference.

The aim of this conference is to raise delegates and to provide them with a quality experience that will ensure their acceptance to future prestigious conferences. This conference will prove that Model United Nations is not an overly optimistic play-pretend, but a channel for young diplomats to pursue their goals. Indeed, it is a great way to improve yourself and learn diplomatic courtesy. I would like to thank; everyone who held my hand through the path which led to this conference, my predecessors in MUN who made today's conferences the way they are and finally, I would like to thank you for partaking in our conference. We stay united to overcome.

Kindest Regards,

Ebrar Nazife Korkmaz

II. Letter from the Under Secretary-General

Honorable Attendees, Esteemed Delegates

As the Under Secretary-General of the Group of 20 committee, I extend a warm welcome to you for the Model United Nations Conference of Beştepe College 2024. Allow me to introduce myself. I am Alperen Arifoğlu, a first-year student in the Political Science and Public Administration department at Ankara University.

The committee would be captivated by BESTMUN's inclusion in this year's challenging Group of Twenty. The committee will debate and decide on currency regulation and cryptocurrency markets this year. The agenda may seem simple, but it is complex and requires participants to pay attention to every detail. The committee will discuss and propose regulations for the evolving cryptocurrency industry, as well as the current state of cryptocurrencies and their potential impact on their economies in the future.

In conclusion, I would like to express my gratitude to several individuals, starting with Ebrar Korkmaz, the Secretary-General, who made an exceptional effort for this conference. In addition, the Deputy Director-General, Sarina Fidan, makes it a habit to get in touch with me during the nighttime hours to discuss a variety of distressing issues. Recognizing the contributions of Duru Benzer and Asuman Naz Gürsoy to the organization team, we are moving forward. The final person I would like to mention is Ece Mutlu, who is not only my sister from a different mother but also attended this conference. She did not refuse to attend, which is a testament to her resilience.

If you have any further inquiries, do not hesitate to contact me via: alparifoglu@icloud.com

Yours Sincerely,

Alperen Arifoğlu, Under Secretary-General of Group of 20

III. Letter from the Academic Assistant

Highly esteemed participants,

My name is Ece Mutlu and I would like to welcome you all to the BESTMUN'24 Group of Twenty committee. I am a second year student of Business Administration and Management curriculum at Ca'Foscari University and I'll be serving as the Academic Assistant during the conference.

Together with my Under-Secretary General, Alperen Arifoğlu, we believe that we settled on an agenda that is as cutting-edge and enjoyable as it pushes the boundaries for this committee, which we have been planning for an extensive period of time. We have made an effort to address all of the questions you might have about cryptocurrency and the G20 in this study guide, since we believe that these will serve as the basis of further debates. The delegates are expected to read the entirety of the guide.

If you have queries regarding the committee or the study guide, don't hesitate to contact me at ecemutlu1906@gmail.com.

Kind regards,

Ece Mutlu - Academic Assistant of Group of Twenty

1. Introduction to the Committee

1.1. History

The G20, also known as the Group of Twenty, was formed in 1999 as a direct response to the financial crises that occurred in the late 1990s. Its purpose is to convene prominent developed and developing nations in order to deliberate and synchronise efforts on worldwide economic matters. The G20 initially served as an informal gathering of finance ministers and central bank governors, but it transformed into a platform for heads of state and government in response to the 2008 global financial crisis. The G20 consists of 19 nations, in addition to the European Union. As of 2023, the African Union has also joined as a member. The group addresses a wide range of issues, including international financial stability, climate change, and sustainable development. [1]

1.2. Mandates

The main objectives and aims of the G20 are centered on advancing global financial stability and fostering sustainable economic growth. The group's objective is to promote international economic collaboration by tackling significant matters such as trade, investment, and financial regulation. Furthermore, the G20 prioritizes sustainable development, climate change, and inclusive growth, aligning its actions with the United Nations' 2030 Agenda for Sustainable Development. The G20 also strives to bolster global health security, enhance infrastructure, and provide assistance to low-income and developing nations. [2] The G20 aims to foster a global economy that is both more robust and fair by uniting the world's largest economies. [3]

[1] "G20 (Group of 20) | History & Members | Britannica." 2024. In Encyclopædia Britannica. G20 (Group of 20) | History & Members | Britannica.
[2] The White House. 2023. "FACT SHEET: Delivering an Ambitious Agenda for the G20 | the White House." The White House. The White House. September 9, 2023. FACT SHEET: Delivering an Ambitious Agenda for the G20 | The White House.
[3] "What Does the G20 Do?" 2023. Council on Foreign Relations. 2023. What Does the G20 Do?.

1.3. Members

The G20, also known as the Group of Twenty, consists of 19 nations and the European Union. The participating nations include Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Türkiye, the United Kingdom, and the United States. These individuals are representatives of the largest economies in the world, which collectively contribute to approximately 85% of the global Gross Domestic Product (GDP) and 75% of international trade. The European Union is symbolized by the European Commission and the European Central Bank. In 2023, the African Union became a member of the group, thereby increasing its representation. [4]

2. Overview of the Cryptocurrencies

2.1. History and Evolution of Cryptocurrencies

The history of cryptocurrency is an intriguing voyage that commenced in the latter part of the 20th century with the investigation of secure digital transactions by pioneers in the field of cryptography. In 1983, American cryptographer David Chaum proposed the concept of digital currency, which entailed a framework for anonymous cryptographic electronic money. In 1995, this concept developed into a preliminary form of digital currency known as Digicash. It involved the use of user software and encrypted keys to carry out transactions. [5]

The real breakthrough came in 2008 when an individual or group using the pseudonym Satoshi Nakamoto published the Bitcoin white paper, outlining a decentralized digital currency system. Bitcoin's first block, known as the "genesis block," was mined on January 3, 2009, marking the birth of the first cryptocurrency. [6] The first real-world Bitcoin

[4] "G-7 and G-20." 2021. U.S. Department of the Treasury. May 20, 2021. G-7 and G-20 | U.S. Department of the Treasury.
[5] "A Brief History of Cryptocurrency." 2024. CryptoVantage. July 11, 2024. A Brief History of Cryptocurrency: Explained for 2024.
[6] "The History of Cryptocurrency." 2023. Bitstamp Trusted Crypto Exchange. 2023. The history of cryptocurrency

transaction occurred in 2010 when Laszlo Hanyecz bought two pizzas for 10,000 BTC, an event now celebrated as Bitcoin Pizza Day. [7]

Following Bitcoin's success, numerous other cryptocurrencies emerged, each with unique features and improvements. Notable examples include Litecoin, introduced in 2011, and Ethereum, launched in 2015, which brought smart contracts to the blockchain. Over the years, the cryptocurrency market has grown exponentially, with thousands of cryptocurrencies now in existence and widespread adoption across various industries. [8]

2.2. Purpose and Scope

Cryptocurrencies have diverse applications and encompass a wide range of possibilities. Its main purpose was to enable secure and decentralized digital transactions, eliminating the need for intermediaries such as banks.[9] The decentralization is accomplished by utilizing blockchain technology, which guarantees transparency and security by documenting transactions on a distributed ledger. Cryptocurrencies such as Bitcoin and Ethereum facilitate peer-to-peer transactions, allowing for the direct transfer of value between individuals worldwide. [10]

In addition to facilitating transactions, cryptocurrencies have progressed to encompass a diverse array of functions. For example, Ethereum implemented smart contracts, which are contracts that can execute themselves and have their terms written directly in code. Smart contracts have enabled the creation of decentralized applications (dApps) and decentralized finance (DeFi) platforms, which offer financial services without depending on conventional intermediaries. Furthermore, cryptocurrencies are progressively being utilized as investment

[7] "The History of Cryptocurrency." 2023. Bitstamp Trusted Crypto Exchange. 2023.
[8] "History of Cryptocurrency: Tracing the Evolution of Digital Money." 2023. Dan Pearson. May 21, 2023. https://danpearson.net/history-of-cryptocurrency/.
[9] "Cryptocurrency Explained with Pros and Cons for Investment." 2024. Investopedia. 2024. Cryptocurrency Explained With Pros and Cons for Investment.
[10] Leech, Jordan. 2024. "What Is Cryptocurrency?" The Block. The Block. June 5, 2024. What is cryptocurrency? | The Block.

vehicles, as numerous individuals acquire and retain them with the expectation of their future appreciation in value. [11]

2.3. Varieties of Cryptocurrencies

2.3.1. Bitcoin

The inaugural and widely recognized digital currency, devised by Satoshi Nakamoto in 2009. It functions as a form of electronic currency and a means of preserving wealth. [12]

2.3.2. Altcoins

Altcoins are the other varieties of cryptocurrencies than Bitcoin. To cite several examples,

- **Litecoin:** Developed as a more expedient alternative to Bitcoin, offering faster transaction times.
- **Ethereum:** Renowned for pioneering smart contracts, which are autonomous contracts with the terms explicitly encoded into software. [13]
- **Ripple (XRP):** Emphasizes the facilitation of instantaneous, international payment systems.

2.3.3. Stablecoins

Cryptocurrencies are created with the intention of reducing price fluctuations by being tied to a reserve asset, such as fiat currency or commodities. Notable examples include Tether (USDT) and USD Coin (USDC).

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[11] Rosen, Andy. 2018. "Cryptocurrency Basics: Pros, Cons and How It Works." NerdWallet. January 11, 2018. Cryptocurrency Basics: Pros, Cons and How It Works - NerdWallet.
[12] "10 Types of Cryptocurrency Explained | Definition & Examples." 2024. Finbold. January 5, 2024. https://finbold.com/guide/types-of-cryptocurrency/.
[13] Tardi, Carla. 2022. "Understanding the Different Types of Cryptocurrency." SoFi. SoFi. July 12, 2022. https://www.sofi.com/learn/content/understanding-the-different-types-of-cryptocurrency/.

2.3.4. Tokens

These digital assets are generated on pre-existing blockchains, with a primary focus on Ethereum. They possess the ability to symbolize a multitude of assets and serve diverse purposes. [14]

- **Utility Tokens:** Grant users access to a specific product or service within a blockchain ecosystem, such as the Basic Attention Token (BAT).
- **Security Tokens:** Tokens symbolize ownership in an asset, such as stocks or real estate, and are bound by federal securities regulations.
- **Governance Tokens:** Enables holders to participate in decision-making processes within a blockchain project, such as Uniswap (UNI), by granting them voting rights.

2.3.5. Meme Coins

Cryptocurrencies like Dogecoin and Shiba Inu are derived from internet memes and jokes. [15]

2.3.6. Non-Fungible Tokens (NFTs)

Distinct digital assets that symbolize possession of particular items, such as artwork, music, or virtual property.

2.4. Market Dynamics and Trends

The cryptocurrency market exhibits fluid and progressive patterns, influenced by diverse factors and advancements. Below are several fundamental categories of market dynamics and trends:

- **Market Capitalization and Domniation:** Bitcoin remains the dominant cryptocurrency in terms of market capitalization, exerting substantial influence on overall market trends. Nevertheless, alternative digital currencies such as Ethereum,

[14] Tardi, Carla. 2022. “Understanding the Different Types of Cryptocurrency.” SoFi. SoFi. July 12, 2022
[15] “10 Types of Cryptocurrency Explained | Definition & Examples.” 2024. Finbold. January 5, 2024.

Binance Coin and more recent altcoins are experiencing substantial popularity and acceptance. [16]

- **Decentralized Finance (DeFi):** DeFi platforms are transforming conventional financial systems by providing decentralized financial services, including lending, borrowing, and trading, without the need for intermediaries. The growth of this trend is accelerating, with Ethereum emerging as a significant participant owing to its advanced smart contract capabilities. [17]
- **Institutional Adoption:** The market growth is being propelled by the growing interest and investment from institutions in cryptocurrencies. Prominent financial institutions and corporations are incorporating cryptocurrencies into their investment portfolios and payment systems, thereby bolstering their credibility and stability.
- **Regulatory Developments:** The regulatory framework for cryptocurrencies is constantly changing. Global governments and regulatory bodies are developing frameworks to guarantee investor safeguarding, deter fraudulent activities, and incorporate cryptocurrencies into the financial system.
- **Stablecoins and CBDCs:** Stablecoins, which are tied to fiat currencies, are becoming increasingly popular due to their stability and utility in financial transactions. Furthermore, numerous countries are currently investigating Central Bank Digital Currencies (CBDCs) as a digital representation of their national currency. [18]
- **Cross-Border Payments and Remittances:** Cryptocurrencies are being utilized more and more for cross-border payments and remittances because they offer lower fees and faster transaction times compared to traditional methods.

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[16] Mordor Intelligence. 2024. "Cryptocurrency Market - Analysis, Size & Industry Overview." Mordorintelligence.com. 2024. Cryptocurrency Market - Analysis, Size & Industry Overview.
[17] Technavio. 2024. "Cryptocurrency Market Analysis North America, Europe, APAC, South America, Middle East and Africa - US, China, UK, Germany, Switzerland - Size and Forecast 2024-2028." Technavio.com. 2024. Cryptocurrency Market Report Size, Forecast 2024-2028.
[18] "Cryptocurrency Market Size, Share, Industry [2032]." 2021. MarketsandMarkets. 2021. Cryptocurrency Market Size, Share, Industry [2032].

3. Methods of Verification and Consensus Mechanisms

3.1. Abstract

In order to comprehend cryptocurrency transactions, it is necessary to examine the functioning of the system. Continuing with the recent illustration, "Person X transfers a significant amount of bitcoin to Person Y". Firstly, X desires to encrypt the action. Miners are required to perform encryption and decryption operations in order to facilitate the progress of the system. Ensuring anonymity provides protection and enables the acquisition of additional coins.

3.2. Proof-of-Stake

The first one is "Proof-of-Stake". Proof-of-Stake is a consensus mechanism used to facilitate transactions and generate new blocks in a blockchain. Proof-of-stake decreases the computational workload required for block and transaction verification. A group of individuals is selected at random to collaborate on the same transition, thereby preventing centralization and dominance within the system. Additionally, it exhibits high energy efficiency and significantly faster performance. Individuals who engage in Proof-of-Stake are referred to as validators. [19]

3.3. Proof-of-Work

The second mechanism is Proof-of-Work, which is a consensus mechanism used to facilitate transitions or create new blocks in a blockchain. However, unlike Proof-of-Stake, this mechanism requires the participation of a network of devices to carry out the necessary computational efforts. Bitcoin, the first publicly available cryptocurrency, utilizes the Proof-of-Work consensus mechanism to ensure the security of its network and facilitate transactions. The high expenses associated with Proof-of-Work, including equipment and energy costs, impose limitations on the accessibility and security of blockchain. The miners

[19] "What Does Proof-of-Stake (PoS) Mean in Crypto?" 2024. Investopedia. 2024. https://www.investopedia.com/terms/p/proof-stake-pos.asp#:~:text=What%20Is%20Proof%2Dof%2DStake%20vs.,new%20blocks%20to%20the%20blockchain.

are being rewarded with coins for their actions. This is the process by which newly minted coins are made available to the market in a timely manner.

3.4. Proof-of-Authority

Lastly, the third included consensus mechanism is Proof-of-Authority. Following the initial establishment of two consensus mechanisms, namely Proof-of-Work and Proof-of-Stake, additional consensus mechanisms began to be formulated. The Proof-of-Authority mechanism is an effective means of enhancing security and improving the speed of private blockchains. Proof-of-Authority is a validation method in which individuals and devices that have been pre-authorized are responsible for organizing the blockchain system. Although it offers enhanced security compared to Proof-of-Work and Proof-of-Stake, it also enables a higher volume of transactions while utilizing fewer resources for the same operation. [20]

The coin's publisher is currently determining the mechanism that will be utilized for coin processing. Bitcoin employs the Proof-of-Work consensus mechanism for its operations, whereas Ethereum utilizes both Proof-of-Work and Proof-of-Stake simultaneously. eBay and other specialized companies employ the Proof-of-Authority mechanism for their operations.

In summary, there are multiple methods available for executing transitions and establishing new blocks for cryptocurrencies. The distinction between Proof-of-Stake and Proof-of-Work can be summarized as follows: Proof-of-Stake utilizes a selection process that randomly chooses validators to verify transactions and create new blocks. The Proof-of-Work mechanism employs a competitive validation approach to verify transactions and append new blocks to the blockchain. Cryptocurrencies are decentralized because they are operated by independent entities, either companies or individuals. Proof-of-Authority can be defined as

[20] Antolin, Mike. 2022. “What Is Proof-of-Authority?” Coindesk.com. CoinDesk. June 2, 2022. What is Proof-of-Authority? Understanding PoA Consensus Mechanisms.

the utilization of pre-authorized individuals and devices to carry out validations within a closed blockchain that is specifically designed for a company or system.

4. Cryptocurrency Infrastructure

4.1. Introduction

Cryptocurrencies possess an intricate yet comprehensible infrastructure. It would be more advantageous to analyze the fundamental components of cryptocurrencies.

4.2. Blockchain Technology

The blockchain is the central component of any cryptocurrency infrastructure. A blockchain is an autonomous, dispersed register that documents all transactions throughout a network of computers. By employing cryptographic techniques, it guarantees transparency, immutability, and security. Every block consists of a collection of transactions, and these blocks are interconnected in a chain. Different cryptocurrencies function on distinct blockchains. [21]

4.3. Nodes and Clients

Nodes are indispensable constituents of a blockchain network. They verify transactions, maintain records of the blockchain, and engage in network governance. Various programming languages can be used to construct clients, which determine the manner in which these functions are executed. The Ethereum network is mainly composed of Geth and Parity nodes, whereas eth2 is compatible with multiple clients such as Prysm, Lighthouse, Teku, Nimbus, and Lodestar.

4.4. Staking

Validators have a crucial function in proof-of-stake networks. They verify transactions, generate blocks, and receive rewards. In order to become an active validator, a

[21] "What Is Blockchain Infrastructure?" 2022. @Coinbase. Coinbase. 2022. What is blockchain infrastructure? | Coinbase.

specific quantity of cryptocurrency needs to be staked, or locked, within the node. Staking guarantees the security of the network and provides incentives for individuals to participate.

4.5. Writing Nodes

These nodes authenticate transactions, retrieve information, and record data (such as transfers or smart contract interactions) onto the blockchain. They enable the exchange of information between users and the blockchain.

4.6. Sentry Nodes

Sentry nodes, also referred to as proxy nodes, serve as intermediaries connecting participation nodes with the blockchain. They safeguard participation nodes by establishing an extra barrier that shields them from potential attacks originating from the public internet.

5. Legitative Landscape of Cryptocurrencies

5.1. Current Global Frameworks

The current global frameworks for regulating cryptocurrencies are undergoing rapid development as governments and international organizations strive to tackle the distinct challenges and opportunities posed by digital assets. The European Union has implemented the Markets in Crypto-Assets Regulation (MiCA), a comprehensive regulatory framework for cryptocurrencies. This framework includes provisions for licensing, consumer protection, and anti-money laundering measures. MiCA's objective is to establish a standardized regulatory framework across EU member states, guaranteeing that companies involved in the issuance or trading of cryptocurrencies adhere to uniform regulations. [22]

The Financial Innovation and Technology (FIT) for the 21st Century Act in the United States seeks to provide clarity in the regulatory environment by establishing clear criteria for determining whether a cryptocurrency should be classified as a security or a commodity. This legislation, in conjunction with the Blockchain Regulatory Certainties Act, aims to enhance

[22] Ian, radiate. 2024. “How Are Crypto Regulations Changing around the World?” World Economic Forum. May 2, 2024. Cryptocurrency regulations are changing across the globe. Here's what you need to know.

supervision of the industry and elucidate the responsibilities of various regulatory entities in governing cryptocurrencies. However, federal legislative efforts have generally stalled, leaving some uncertainty in the regulatory environment.

Globally, the International Organization of Securities Commissions (IOSCO) has established 18 recommendations for worldwide regulations regarding the management of cryptocurrency and digital assets. These recommendations highlight the importance of maintaining consistency and promoting collaboration across borders, considering the worldwide scope of cryptocurrency markets.[23] The Financial Stability Board (FSB) has additionally released a worldwide regulatory framework for crypto-asset activities, advocating for thorough and uniform regulation to mitigate risks to financial stability. This framework is founded on the principle of "uniform activity, uniform risk, uniform regulation" and encompasses top-level suggestions for the regulation, supervision, and oversight of crypto-asset activities and markets. [24]

5.2. Compliance Challenges

The cryptocurrency industry faces complex and rapidly changing compliance challenges. A major challenge arises from the decentralized nature of cryptocurrencies, impeding regulators' ability to effectively monitor and control transactions. Contrary to conventional financial systems, cryptocurrency transactions lack a central authority that monitors them, which poses difficulties in identifying the parties involved and ensuring adherence to regulations. [25]

Another notable obstacle is the heightened level of anonymity linked to cryptocurrencies. Anonymity can enable illegal activities such as money laundering, tax

[23] "FSB Finalises Global Regulatory Framework for Crypto-Asset Activities." 2023. Fsb.org. July 17, 2023. https://www.fsb.org/2023/07/fsb-finalises-global-regulatory-framework-for-crypto-asset-activities/
[24] Ian, radiate. 2024. "How Are Crypto Regulations Changing around the World?" World Economic Forum. May 2, 2024.
[25] Abdulrahman, Tasneem. 2023. "The Challenges of Cryptocurrency Compliance - How Banks Can Overcome Them." Anaptyss. October 30, 2023. The Challenges of Cryptocurrency Compliance - How Banks Can Overcome Them

evasion, and funding. In order to address these potential dangers, regulatory bodies have established rigorous anti-money laundering (AML) and know-your-customer (KYC) criteria. However, ensuring compliance with these standards in decentralized networks is a challenging endeavor.

The presence of diverse regulatory frameworks in various jurisdictions further complicates the situation. Cryptocurrency exchanges and businesses face difficulties in operating globally and complying with all relevant laws due to the diverse legal frameworks and regulatory approaches adopted by different countries. [26] Fragmentation can result in regulatory arbitrage, whereby companies opt to conduct business in jurisdictions with more permissive regulations. [27]

Moreover, the swift rate of technological advancement in the cryptocurrency industry frequently surpasses the capacity of regulators to keep pace. Emerging financial products and services, such as decentralized finance (DeFi) platforms and non-fungible tokens (NFTs), pose distinct regulatory hurdles that current frameworks may not sufficiently tackle. [28]

Ultimately, the absence of explicit regulatory directives and the excessive zeal of enforcement initiatives generate a risky atmosphere for compliance officers. In the absence of a cohesive regulatory framework, even sincere attempts to adhere to regulations can be considered inadequate by various regulatory entities.

5.3. Legal Considerations

The legal aspects related to cryptocurrencies are intricate and diverse, reflecting the fast-paced development and worldwide reach of digital assets. Regulatory classification is a key legal concern. Cryptocurrencies are classified differently in various jurisdictions, such as

[26] "What Are the Challenges in Regulation of Cryptocurrency?" 2023. Doubloin. August 31, 2023. What Are the Challenges in Regulation of Cryptocurrency?.
[27] "Crypto and Digital Assets: Regulatory Challenges." 2022. KPMG. 2022. Crypto and digital assets: Regulatory challenges.
[28] greggwirth. 2024. "Compliance Considerations for the Crypto Industry - Thomson Reuters Institute." Thomson Reuters Institute. January 8, 2024. Compliance considerations for the crypto industry - Thomson Reuters Institute.

commodities, securities, or currencies, resulting in a range of regulatory approaches. For example, in the United States, the Securities and Exchange Commission (SEC) categorizes numerous cryptocurrencies as securities, imposing strict regulatory obligations on them. [29]

Taxation is an essential legal factor that must be carefully considered. Cryptocurrencies are classified as property for tax purposes in numerous countries, resulting in the imposition of capital gains taxes on transactions involving cryptocurrencies. Compliance with tax laws necessitates individuals and businesses to engage in meticulous record-keeping and reporting. [30]

The regulations regarding anti-money laundering (AML) and know-your-customer (KYC) are also of great importance. The potential of cryptocurrencies to facilitate anonymous transactions across borders has made them appealing for illicit activities. As a result, regulators have implemented stringent anti-money laundering (AML) and know your customer (KYC) requirements on cryptocurrency exchanges and service providers. The purpose of these measures is to deter money laundering, terrorist financing, and other illicit activities. [31]

Issues related to jurisdiction present an additional obstacle. The decentralized nature of cryptocurrencies allows for transactions to take place in various jurisdictions, which poses challenges for legal enforcement and regulatory oversight. This fragmentation may result in regulatory arbitrage, whereby entities choose to operate in jurisdictions with more relaxed regulations.

The issue of consumer protection is becoming increasingly important, particularly due to the significant instability and susceptibility to fraudulent activities in the cryptocurrency market. Regulators are placing a growing emphasis on ensuring that investors receive

[29] "Cryptocurrency Regulations around the World." 2024. Investopedia. 2024. Cryptocurrency Regulations Around the World.
[30] "What Are the Legal Risks to Cryptocurrency Investors?" 2024. Investopedia. 2024. What Are the Legal Risks to Cryptocurrency Investors?.
[31]

sufficient information regarding risks and that there are established mechanisms to safeguard them against fraud and market manipulation.

6. Economic Implications

6.1. Impact on Traditional Market

The first crucial impact is being projected on centralization. Cryptocurrencies have a substantial influence on conventional banking methods by eliminating the necessity for intermediaries such as banks. Transactions are conducted directly between parties on decentralized networks, resulting in increased speed, enhanced security, and reduced costs. Both customers and banks experience cost savings as a result of decreased processing fees. [32]

Cryptocurrencies facilitate financial inclusion by enabling individuals with internet connectivity to engage in the financial system. Ensuring accessibility is particularly vital for the global populations that do not have access to banking services or have limited access to them.

Conventional banks are confronted with a lack of clarity in regulations concerning cryptocurrencies. The absence of explicit guidelines can impede their acceptance and incorporation into the current banking system. [33]

Although cryptocurrencies bolster security through the use of cryptography, they also present potential hazards. In order to safeguard customer interests and mitigate fraudulent activities, banks must effectively navigate these challenges.

Cryptocurrencies fuel advancements in payment systems, international transactions, and financial services. Financial institutions can gain insights from these advancements and modify their methodologies accordingly.

[32] FinTech Magazine Article. 2023. “Understanding the Impact of Cryptocurrency on Traditional Banking Practices - FinTech Weekly.” FinTech Magazine Article. April 19, 2023. Understanding the Impact of Cryptocurrency on Traditional Banking Practices - FinTech Weekly.

[33] r.jalkh. 2023. “The Impact of Cryptocurrencies on Traditional Banking - the Chart Guru.” The Chart Guru. July 13, 2023. https://thechart.guru/cryptocurrencies-impact-on-traditional-banking/.

6.2. Economic Growth

Cryptocurrencies possess the capacity to profoundly influence economic expansion and cultivate innovation. Cryptocurrencies facilitate economic development by providing financial services to individuals who do not have access to traditional banking systems. Individuals globally have the ability to engage in the financial system without being dependent on conventional banking institutions.[34]

Ethereum introduced smart contracts, which are self-executing contracts with the terms of the agreement directly written into code. These contracts automate processes and enable the development of decentralized applications (DApps). These advancements have the potential to completely transform a wide range of industries, including supply chain management and real estate. [35]

6.3. Risks and Benefits for Inventors

6.3.1. Volality

A significant amount of volatility is exhibited by cryptocurrencies. Despite the fact that this volatility has the potential to generate significant profits, it also presents investors with the possibility of potential safety risks. Within relatively short periods of time, there is the potential for significant price fluctuations. [36]

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[34] Moy, Christine, and Jill Carlson. 2021. "How Cryptocurrencies Can Enable Global Financial Inclusion." World Economic Forum. June 9, 2021. How cryptocurrencies can enable global financial inclusion | World Economic Forum.

[35] IFM Correspondent. 2022. "How Can Cryptocurrency Reshape the Global Economy?" International Finance. International Finance. March 21, 2022. https://internationalfinance.com/magazine/banking-and-finance-magazine/how-cryptocurrency-reshape-global-economy/

[36] Jain, Harsh, Shourya Rohilla, Dhairya Vakharia, Neeraj Gangani, and Shalini Wadhwa. 2023. "Risk Factors in Cryptocurrency Investments and Feasible Solutions to Mitigate Them." Sustainable Finance, January, 211–36. https://doi.org/10.1007/978-3-031-29031-2_9.

6.3.2. Regulatory Uncertainity

In the absence of well-defined regulations, investors are left with a sense of uncertainty. Modifications to regulations can have a significant impact on the market, which in turn can influence investment choices. [37]

6.3.3. Security Threats

Within the cryptocurrency industry, there is a high prevalence of cybersecurity risks, which include hacking, scams, and theft. It is imperative that investors exercise caution and implement extensive security procedures.

6.4. Role on Global Trades

Cryptocurrencies are involved in worldwide trade. E-commerce businesses have the ability to access a worldwide market by utilizing cryptocurrencies. By eliminating foreign exchange challenges and cross-border fees, transactions become smooth and effortless. [38]Cryptocurrencies enable cross-border payments, eliminating the need for intermediaries and resulting in cost reduction. This has a positive impact on global trade and business connections. However, there are also various challenges and opportunities that arise. Policymakers should develop comprehensive policies to promote the involvement of small and medium-sized enterprises in e-commerce. Effective regulation can optimize the potential of cryptocurrencies in international trade. [39]

7. Technological Considerations

7.1. Blockchain

In the context of cryptocurrencies, a blockchain is a chain of records that is shared among a network of computers and is recognized for its ability to safely and decentralize

[37] White, Kathryn. 2022. "The Macroeconomic Impact of Cryptocurrency and Stablecoin Economics." World Economic Forum. November 4, 2022. Understanding the macroeconomic impact of cryptocurrency and stablecoin economics.
[38] E-Comm Toolbox. 2023. "Cryptocurrency E-Commerce: A Complete Guide - E-Comm Toolbox." E-Comm Toolbox. October 17, 2023. https://ecomm-toolbox.com/cryptocurrency-e-commerce-a-complete-guide/.
[39] Ahi, Alan A, Noemi Sinkovics, and Rudolf R Sinkovics. 2022. "E-Commerce Policy and the Global Economy: A Path to More Inclusive Development?" Management International Review 63 (1): 27–56. E-commerce Policy and the Global Economy: A Path to More Inclusive Development? | Management International Review.

record-keeping. But its uses go beyond cryptocurrency; it immutably applies to data in a variety of businesses. Because blocks cannot be changed, reliable third parties are no longer necessary, which lowers expenses and eliminates mistakes. Blockchain technology has advanced dramatically since the 2009 debut of Bitcoin, resulting in the creation of several cryptocurrencies, decentralized finance (DeFi) applications, non-fungible tokens (NFTs), and smart contracts. [40]

Similar to a regular database, a blockchain uses programs called scripts to manage operations, including inputting, accessing, saving, and storing information. Transactions on the Bitcoin network are gathered into 4MB blocks. An encryption technique generates a block header hash when a block is completed, and this hash is connected to the following block to build a chain. Before being processed by a miner, transactions are routed to a memory pool. Cryptocurrency puzzles are solved by miners by proposing blocks with distinct transactions and employing a "nonce." The transaction is finished when the block is closed and the hash satisfies the difficulty target. Five more blocks must validate before a block is deemed verified. Different approaches are used by other blockchains, such as Ethereum, which chooses validators at random from among users who have staked ether to validate blocks, which are subsequently verified by the network.

Security and transparency are ensured by the decentralized nature of the Bitcoin blockchain, which prevents attempts to modify records by comparing block hashes among participating nodes. Each node keeps an updated copy of the blockchain on hand, updated whenever new blocks are added and confirmed. With this configuration, all transactions can be transparently examined by downloading the blockchain or by viewing real-time transactions with blockchain explorers. Consequently, it is possible to monitor the flow of any bitcoin across the network.

[40] "Blockchain Facts: What Is It, How It Works, and How It Can Be Used." 2024. Investopedia. 2024. Blockchain Facts: What Is It, How It Works, and How It Can Be Used.

7.2. Smart Contracts

Blockchain transactions are automated by smart contracts, which are self-executing programs that, once they are started, are irreversible and trackable. It functions similarly to a vending machine in that the contract automatically carries out the required activity when certain requirements are met. Without a centralized authority, judicial system, or outside enforcement, smart contracts allow anonymous participants to engage in safe, reliable transactions and agreements.

Nick Szabo introduced smart contracts in 1994. They are self-executing programs made to automate blockchain transactions without the need for middlemen. Using programming code rather than legalese, Szabo envisioned these as computerized transaction procedures that uphold the conditions of a contract. He also came up with the idea for "Bit Gold," which was a forerunner to cryptocurrencies like Bitcoin, in 1998. When predetermined criteria are satisfied, such as guaranteeing the transfer of assets upon payment, smart contracts automatically take appropriate action. They are adaptable and can be used in a number of industries, including lending, supply chain management, corporate governance, real estate, stock trading, and dispute resolution. These contracts are made up of state variables, which hold data, functions, which specify activities, events, which transmit and receive information, and modifiers, which apply unique guidelines to particular users. [41]

7.3. Future Technological Developments

Distributed ledger technology, or blockchain, has the ability to completely transform application administration, transaction recording, and data storage. Blockchain first became well-known as the technology underpinning cryptocurrencies like Bitcoin. Blockchain was not an overnight sensation; rather, it was the result of several decades' worth of incremental

[41] "What Are Smart Contracts on the Blockchain and How Do They Work?" 2024. Investopedia. 2024. What Are Smart Contracts on the Blockchain and How Do They Work?.

technological advances.[42] Although the first cryptocurrency days were tiny, blockchain technology grew steadily, especially after 2014 when Blockchain 2.0 was introduced. This signaled a change in emphasis from creating only digital currency apps to creating more comprehensive blockchain technologies and decentralized applications.

Financial institutions and organizations from a variety of industries are increasingly investigating the potential of blockchain technology, even if Bitcoin and other cryptocurrencies continue to garner attention. By enabling peer-to-peer transactions worth trillions of dollars, eschewing middlemen, and speeding up transaction times, blockchain has already proven its disruptive power. Blockchain appears to have a bright future ahead of it, with possible uses in cybersecurity, smart contracts, secure cloud storage, and supply chain management. Blockchain is still in its infancy, but it has the potential to drastically change industries like insurance, healthcare, and banking.

8. Case Studies and Examples

8.1. Successful Implementations

- Guardtime company is creating "keyless" signature systems using blockchain which is currently used to secure the healçth records of one million Estonian citizens. [43]
- MedRec is an MIT project involving blockchain electronic medical records designed to manage authentication, confidentiality and data sharing.
- ABRA is a cryptocurrency wallet which uses the Bitcoin blockchain to hold and track balances stored in different currencies.
- Blockverify is a blockchain platform which focuses on anti-counterfeit measures, with initial use cases in diamond, pharmaceuticals and luxury goods markets.

[42] Dawid Siwko. 2024. "Blockchain Future - Predictions and Opportunities." CrustLab. April 17, 2024. https://crustlab.com/blog/what-is-the-future-of-blockchain/

[43] Marr, Bernard. 2021. "35 Amazing Real World Examples of How Blockchain Is Changing Our World | Bernard Marr." Bernard Marr. July 2, 2021. https://bernardmarr.com/35-amazing-real-world-examples-of-how-blockchain-is-changing-our-world/

- Followmyvote.com allows the creation of source, transparent voting systems, reducing opportunities for voter fraud and increasing turnout through improved accessibility to democracy. [44]
- Kodak recently sent its stock soaring after announcing that it is developing a blockchain system for tracking intellectual property rights and payments to photographers.

8.2. Failed Implementations

- El Salvador was the first nation to accept Bitcoin alongside the US dollar as legal tender in September 2021. But a year later, the experiment has not gone well at all. Wallets for cryptocurrencies are used to send less than 2% of remittances, while 86% of Salvadoran enterprises have never transacted using Bitcoin. For many Salvadorans, Bitcoin doesn't really matter for their requirements. Due to Bitcoin's slowness, unreliability, scammability, and absence of regulation, which prevents refunds and chargebacks, the experiment's failure was viewed as inevitable. [45]
- Widespread consequences of the FTX exchange's collapse included the demise of several other well-known platforms. A deficiency in financial record-keeping and a lack of a risk management strategy were major causes in this failure. According to court records, Sam Bankman-Fried, the CEO of FTX, was charged with multiple offenses connected to the failure. Furthermore, it was revealed that the exchange's hedge fund had received billions from its reserves, which resulted in large losses. [46]
- China controversially decided to outlaw cryptocurrency exchanges in 2017, which sent shockwaves through the sector. China was a significant backer of cryptocurrencies and

[44] Marr, Bernard. 2021. "35 Amazing Real World Examples of How Blockchain Is Changing Our World | Bernard Marr." Bernard Marr. July 2, 2021.
[45] Howson, Peter. 2022. "Bitcoin: El Salvador's Failed Experiment Has Important Lessons." Context.news. Context. September 7, 2022. Bitcoin: El Salvador's failed experiment has important lessons | Context.
[46] Hamilton, David. 2024. "Top 10 Crypto Fails of All Time." Securities.io. Securities.io. January 12, 2024. Top 10 Crypto Fails of All Time - Securities.io

mining operations at the time. The restriction coincided with a notable upswing in the use of cryptocurrencies. Chinese officials expressed confusion and anxiety about the new technology following the unexpected emergence of ERC-20 tokens and the subsequent ICO (Initial Coin Offering) boom. These new currencies alarmed the government, therefore it tried to limit its citizens' access to digital assets. [47]

- Users of Twitter in 2020 came saw dubious calls for donations from well-known accounts, such as one from Bill Gates that said, "Send $1,000, and I'll send you back $2,000." Before the hoax was discovered, millions of Bitcoin were given, despite the demands being swiftly disproved. After months of phishing, hackers were able to access Twitter's administrative features, which allowed them to plan the attack. The Senate Commerce Committee stepped in to stop such breaches when the incident became widely publicized. Three people were charged in July 2020 in relation to the scheme, proving the growing efficiency of blockchain forensic companies and law enforcement in locating Bitcoin wallet owners

9. Ethical and Social Considerations

9.1. Environmental Impact

The energy, hardware, internet, and worldwide infrastructure needed for cryptocurrency activities are substantial, and this has a noticeable effect on the environment. Mining cryptocurrencies, particularly Bitcoin, uses as much energy as small nations, and there are even worries about water consumption. The hashrate of the network and the effectiveness of the mining rigs determine how much energy is used, and as bitcoin prices rise, more people will likely mine for profit. [48]

The carbon footprint of mining still exists even if certain cryptocurrencies, like Ethereum and Solana, have less of an impact on the environment than Bitcoin because they

[47] Hamilton, David. 2024. “Top 10 Crypto Fails of All Time.” Securities.io. Securities.io. January 12, 2024.
[48] “What’s the Environmental Impact of Cryptocurrency?” 2024. Investopedia. 2024. What's the Environmental Impact of Cryptocurrency?

use less energy-intensive equipment. According to Digiconomist calculations, the annual contribution of Bitcoin alone is equivalent to Oman's 73 million tons of carbon dioxide. The United States, China, and Kazakhstan are the main locations for bitcoin mining, and fossil fuels provide a sizable amount of the energy used. It's important to remember that existing banking systems and the creation and upkeep of fiat currency both demand a substantial amount of energy, notwithstanding these environmental issues. [49]

9.2. Social Impacts and Accessibility

By decentralizing ownership, blockchain technology frees people from depending on institutions to manage their own identities and data. Because of this decentralization, every node is guaranteed a copy of the ledger, which is updated only when all blocks—including newly added ones—have been validated. Blockchain uses cryptographic techniques like zero-knowledge proofs, which allow user authentication without revealing any personal information and fend off potential attacks, to preserve data and privacy. Users also have access to both private and public keys, the former of which is encrypted and cannot be derived from the latter. [50]

Many now rely on blockchain as their main source of income, which is based on the concepts of fairness and equality. Without regard to background standards or discrimination, miners are chosen at random. While there is disagreement on the possible dangers of this unpredictability, it is nevertheless an essential component of blockchain consensus processes.

9.3. Ethical Framework

The great volatility of cryptocurrencies is mostly attributed to speculation. Pegged to external assets, stablecoins are less volatile but have unsolved problems.[51] Because

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[49] "What's the Environmental Impact of Cryptocurrency?" 2024. Investopedia. 2024.
[50] "The Social Impact of Cryptocurrencies: Exploring the Advantages of Blockchain and Crypto." 2022. KnowESG. June 24, 2022. The Social Impact of Cryptocurrencies: Exploring The Advantages of Blockchain and Crypto.
[51] "The Ethical Concerns of Cryptocurrencies." 2023. IESE Insight. January 13, 2023. The ethical concerns of cryptocurrencies | IESE Insight.

cryptocurrency assets are decentralized, there is no central authority or trust, which limits their acceptability globally and raises ethical concerns. Several actions can be made to allay these worries and fully utilize blockchain technology and cryptocurrencies;

- **Encourage Appropriate Investing:** practices and put in place measures to manage bitcoin trading addiction in order to promote financial education
- **Create Regulations:** To stop illegal activity, reduce systemic financial risks, monitor intermediaries, and safeguard investors, create national and international regulations.
- **Reduce Environmental Impact:** To lessen the environmental impact of blockchain technology, adopt consensus techniques that use less energy.
- **Enhance Conventional Systems:** Conventional financial systems can be made better and more efficient by utilizing blockchain technology.
- **Examine Central Bank Digital Currencies:** Examine central bank-issued digital currencies to take advantage of the advantages of digitization while maintaining trust, curbing speculation, and boosting security via government monitoring.
- **Assure Inclusivity:** Make sure that cryptocurrency and blockchain technology are available to everyone and helpful, preventing the emergence of economic disparities.
- **Accountability and Openness:** To stop fraud and abuse, create accountability systems and increase the openness of blockchain activities.
- **Protection of Privacy:** Maintain individual privacy rights while striking a balance between privacy concerns and the requirement for regulatory monitoring to stop unlawful activity. [52]

[52] "The Ethical Concerns of Cryptocurrencies." 2023. IESE Insight. January 13, 2023.

10. The Future of Crypto Market

10.1. Predictions

- **Market Growth:** The worldwide cryptocurrency market is estimated to achieve a value of $51.5 billion USD by 2024 and $71.7 billion by 2028, with a compound annual growth rate (CAGR) of 8.62%. [53]
- **Bitcoin Dominance:** Bitcoin (BTC) is expected to continue being the leading cryptocurrency, while alternative coins (altcoins) are predicted to become more prominent.
- **Regulation:** The implementation of more stringent regulations could arise, influencing the dynamics of the market and the behavior of investors.
- **Institutional Adoption:** Established financial institutions will increasingly enter the cryptocurrency market, thereby confirming its legitimacy. [54]

10.2. Potential Global Acceptance

- **Increased Adoption:** Cryptocurrencies will experience greater acceptance for transactions, money transfers, and investment.
- **Central Bank Digital Currencies (CBDCs):** Multiple nations are currently investigating Central Bank Digital Currencies (CBDCs), which have the potential to completely transform digital transactions.
- **Geographical Trends:** The adoption of cryptocurrencies will be primarily driven by Asia, with a particular focus on China and India. [55]

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[53] Bitpanda Guest Contributor. 2024. "The Future of Cryptocurrency: Expert Insights and Predictions for 2024." Bitpanda.com. February 9, 2024. The future of cryptocurrency: Expert insights and predictions for 2024.

[54]https://www.facebook.com/technologijos.lt,%20and%20https://www.facebook.com/technologijos.lt.%202024.%20%E2%80%9CDeep%20Dive%20into%20Crypto%20Market%20Insights:%20Analysis,%20Trends,%20and%20Predictions%20-%20Technology%20Org.%E2%80%9D%20Technology%20Org.%20May%2027,%202024.%20https://www.technology.org/2024/05/27/deep-dive-into-crypto-market-insights-analysis-trends-and-predictions/.%20%E2%80%8C

[55] "Crypto 2024: The Year Ahead - CoinDesk." 2024. @Coindesk. 2024. Crypto 2024: The Year Ahead - CoinDesk.

10.3. Long-Term Sustainability

Cryptocurrency encounters numerous obstacles in order to ensure its long-term sustainability. Prioritizing energy consumption and carbon footprint is essential for ensuring the long-term sustainability of cryptocurrency. Several cryptocurrencies, such as Bitcoin, depend on energy-intensive proof-of-work (PoW) consensus mechanisms. Adopting environmentally friendly alternatives, such as proof-of-stake or energy-efficient blockchains, is crucial for reducing the negative effects on the environment.

Furthermore, as the cryptocurrency ecosystem expands, the risks to security also increase. It is essential to persistently improve security protocols, safeguard against breaches, and deter fraudulent activities. Regular audits, strong encryption, and effective wallet management are crucial practices.

Ultimately, the viability of cryptocurrencies hinges on the cooperation and partnership between various participants in the industry. Developers, miners, investors, regulators, and users must work together to address challenges, improve protocols, and maintain trust. Open dialogue, transparency, and shared responsibility are key. [56]

[56] Patel, Edul. 2023. “The Future of Crypto: Top Trends for 2024.” The Economic Times. Economic Times. December 4, 2023. The future of crypto: Top trends for 2024 - The Economic Times.

11. Questions to be Addressed

- What is a cryptocurrency?
- What can be counted as the traits of currencies?
- What are the reasons for the popularity of cryptocurrencies?
- What is the Definition of Crypto Market?
- What kind of effects does Cryptocurrencies have for an individual user?
- What kind of effects do currencies have on governments?
- What are the consensus mechanisms? Which Mechanism is Suitable for Governments? How can the currencies be stabilized or their volatility minimized?
- Should cryptocurrencies be taxed? How can the governments regulate it?
- What crimes can cryptocurrencies cause? How can the crimes be eliminated?
- Should cryptocurrencies be legalized in all member states? If it should be, why and how to legalize it. If it should not be legalized, why?
- Why do people choose crypto coins as a tool of investment?
- What are the Side Effects of Crypto Coins' Usage as a Tool of Investment to the Markets?
- What are the possible implementations of cryptocurrencies in global trade?
- How can the governments minimize the financial outcome of cryptocurrencies to their GDP?
- Can new jobs be promoted? If possible, what are the ways?

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