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Cryptocurrency Management from the Beginning to the Present

Cristina DIMA
Lecturer PhD, Professor PhD, Bucharest University of Economic Studies, Romania
cristina.dima@man.ase.ro

Catalin Razvan DOBREA
Professor PhD, Bucharest University of Economic Studies, Romania
razvan.dobrea@man.ase.ro

Madalina Ioana MONCEA*
Phd Student, Bucharest University of Economic Studies, Romania
**Corresponding author, madalina.moncea@man.ase.ro*

Eduard Laurentiu ION
Phd Student, Wallachia University, Targoviste, Romania,

Abstract. *For a long time, among the most controversial topics revolves around technology, which encompasses the financial landscape and changes the way we perceive and interact with money. The cause of this transformation is cryptocurrency - a revolutionary innovation that has captured the imagination of individuals and institutions around the world. For the less informed, investing in cryptocurrencies may seem like a game of chance, while for the younger ones, it represents a promising source of income for the future. The reasons for choosing the theme about cryptocurrencies can be motivated by several current factors such as: the topicality and relevance of cryptocurrencies, technological innovation, financial opportunities, regulations and public policies, social and cultural impact, but the main reason is the monetary future, which can become a significant part of the global monetary system.*

Keywords: cryptocurrencies, economy, development, inovation, management.

Introduction

Cryptocurrencies, referred to as digital or virtual currencies, are decentralized digital assets that regulate the creation of new units and protect transactions through the use of cryptographic algorithms (Adams, Smart& Huff, 2017). They offer chances to profit from long and short term investments. Digital currencies work through decentralized networks driven by blockchain technology, which is a distributed ledger system that guarantees security, immutability and transparency. The intrinsic volatility of cryptocurrencies, which is characterized by strong price fluctuations, is one of their distinguishing features. While there are profitable investment opportunities due to this volatility, there are also major risks associated with it, requiring careful risk management techniques (Ahmad et al., 2020).

Researchers are paying increased attention to blockchain transactions because they demonstrate transparency and decentralization. Based on access to transaction records, real opportunities have arisen to investigate and identify illicit activities on Bitcoin networks. The action of creating addresses or accounts is easy and almost free for most blockchain cryptocurrencies. In this regard, a given user can simultaneously hold multiple addresses or accounts in order to ensure anonymity (Bouri and Gupta, 2021).

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Over the past decade, blockchain technology has advanced significantly, leading to the creation of over 7.000 active cryptocurrencies and generating massive transaction data reaching terabytes in size. The cryptocurrency Bitcoin has received the most attention, especially due to its widespread use and rising notoriety. In 2019, the market valuation of Bitcoin reached a significant level of 265.4 billion USD; therefore, Bitcoin still holds sovereignty in the cryptocurrency market, but other rival entities have also appeared on the market, increasingly used to this day, such as Ethereum, Ripple and Litecoin (Bouri, Christou and Gupta, 2022).

Many believe that in the near future, secure digital alternatives based on distributed ledgers would replace traditional financial transactions. This hypothesis appears true due to the widespread adoption of blockchain technology, especially in the field of cryptocurrencies. (Campbell& Ramachandran, 2021)

Literature review

Users are prohibited from revealing their true identity in cryptocurrency transactions. Since blockchain networks possess a certain pseudonymity. It should be noted that privacy-preserving techniques have been developed as a boomerang to increased privacy requirements, such as hashing services, call signatures and non-interactive evidence. All of these are intended to make it difficult to trace transactions. However, there is a possibility that they can support financial crimes and money laundering, if applied incorrectly.

Transaction network analysis is a very promising tool for relationship analysis and money flow prediction. In the traditional banking system, there is an intermediary, the bank, and supervision by the state authorities, in cryptocurrencies, these actors disappear. There is no central authority to regulate it, functioning as a community, with users themselves validating decisions through a system of blocks, called blockchain, which is formed by deciphering mathematical algorithms (Caporale& Plastun, 2019).

Cryptocurrencies have become popular for criminal activities because they can be used to provide pseudo-anonymity, and independent and strict laws are not available in most countries to combat the threat of malicious actors.

This chapter focuses on two types of crimes that are strongly affected by the existence of cryptocurrencies. The first is the category of fraud, including crimes such as tax evasion.. So are the ways in which terrorist groups have used cryptocurrency to finance illicit operations and fuel the expansion of black markets (Coombes& Nicholson, 2013).

Cryptocurrencies can be combined with other forms of digital or physical money in a single step or at any time as part of money laundering.

Bitcoin ATMs, for example, provide a way to deposit funds anonymously. Mixing wallets enhance the anonymity of financial transactions on the Bitcoin network, with a basket of wallets being mixed together in Bitcoin tumbling services. These wallets allow users to transfer their Bitcoins through a network of microtransactions (providing additional privacy) and are therefore more difficult to trace.

In addition, they have payment gateways that users can use to liquidate their cryptocurrencies through PayPal, Western Union, or other services. Mixing services also exist on the Dark Web. It mixes a user's money with that of other users to prevent third parties from tracking transactions originating from a particular address (Garcia et al., 2014).

Black markets on the Dark Web are particularly notable because they are hidden and operate over a cartel of restricted networks and also require specific software, such as TOR, to provide an advanced level of protection and anonymity.

There are also widely adopted methods, such as obtaining tokens in online games (with the purchase of cryptocurrencies) or through online gambling services/receiving (Jegerson&Mertzanis, 2024).

Money laundering and terrorist financing can be facilitated by cryptocurrencies due to their decentralized design and lack of regulation (El Chaarani et al., 2024).

Terrorist organizations could set up a chain of Bitcoin ATMs to send money around the world quickly and anonymously. These ATMs pose a serious problem in terrorist financing. Blockchain will allow for even more sophisticated agreements and the construction of decentralized applications. In simple terms, blockchain is the platform for cryptocurrency.

Blockchain-confirmed and validated transactions are immutable, while a timestamp history of transactions is available to the wider user community, blockchain supporting the transparency, traceability and irreversibility of blockchain technology (Ferretti, 2021).

One of the biggest challenges in limiting the illegalities generated by cryptocurrencies is the lack of clarity in the laws regarding the use of identification, which leads to the possibility of generating anonymous or fictitious accounts, which further contribute to cross-border tax evasion and money laundering. The decentralized nature of cryptocurrencies, such as Bitcoin, leads to the absence of a central authority to monitor and report suspicious activities (Karim et al., 2022).

The idea that private keys and seeds for a cryptocurrency system must be public is a concern for user privacy. Best practices are, in trusted environments, the use of keys and, in this regard, the use of two signatures on tasks to prevent accidental exposure of the wallet holder's identity or theft of keys.

Through a platform of decentralized consensus mechanisms and cryptographic security using blockchain technology, the need for a trusted third-party central authority is eliminated, allowing the credibility and veracity of data and transactions to be maintained.

Without them, cryptocurrencies will never gain the credibility needed to be universally accepted. The lack of a clear legal framework has left an opportunity for malicious actors to use cryptocurrencies for nefarious purposes, but has kept retailers and other legitimate businesses away from using them. Because cryptocurrencies are decentralized systems, they are vulnerable to online attacks, which leads victims of fraud or theft to seek help from the legal framework (Ron and Shamir, 2013).

There are three important aspects that must be considered to maintain a solid security structure: system security, including technology and computers, such as operating system security to prevent digital fraud; privacy and data security, including social aspects (Xia Shu et al., 2023).

The confidentiality and availability of data and information, as well as integrity, are very important. In the context of cybersecurity, secrecy refers to the protection of privacy, while privacy refers to the absence of adverse publicity, covert surveillance, public scrutiny, and unlawful exposure of personal data or information. Digital security should not be built in isolation from users, devices, network or environment, as it is a crucial part of the larger digital infrastructure and network. Furthermore, different threat scenarios may not be adequately addressed by a one-size-fits-all security architecture. Consequently, it is preferable to have a tiered or reconfigurable security architecture that allows for flexible security settings (Tummers, Kassahun& Tekinerdogan, 2019).

Methodology

The paper is a literature review that studies the relationship between cryptocurrencies and the securities market. The connection between the world of cryptocurrencies and that of securities, including their differences and similarities, has aroused the interest of all economic agents: scientists, specialists from various fields of economics, investors, bankers, entrepreneurs and the political world. As a result, the topic of study of this paper is the correlation and contrast between the cryptocurrency markets and the stock markets.

Given that many people do not correctly understand the effects of their activities on the cryptocurrency market and how they can optimally manage their portfolios, the purpose of this paper is to provide a better understanding.

The findings have several implications for the existing specialized literature on cryptocurrencies and the securities market, including several gaps and future research directions.

It is claimed that, to the best of their knowledge, this is the first study based on a review of academic articles that deals with the topic of crypto assets and the capital market, and that the discussion provided in this paper can help both those who regulate accounting and investments to improve legislation in this regard, as well as researchers interested in this topic.

In order to understand the concepts and characteristics that define cryptocurrencies and stocks on the proposed topic, a series of specialized articles taken from national and global internet sources were used. The paper is based on the content analysis of materials available on the internet that include cryptocurrency technology, various graphs that illustrate some phenomena over several years, and highlights comparisons between cryptocurrency and securities markets.

The development process is based on the review and qualitative analysis of the interpretation of publications and specific aspects, comparing opinions from various sources and existing trading platforms to support theoretical concepts. In contrast, a content analysis is carried out. This is the process of identifying a set of similar articles and scientific papers together in order to present a complete picture of the results and previous studies. Theoretically, cryptocurrencies and stocks are introduced in a short summary after reviewing related electronic sources.

Furthermore, the research was tasked with examining and introducing some statistical information, such as the number of deals at the largest financial transactions in the world, the market capitalization of deals and the total amount of cryptocurrency money, the market capitalization of the cryptocurrency, due to this, an identity between the two elements was observed.

The data and information were presented in an aggregated manner to obtain a point of view on the topic addressed: comparative analysis of cryptocurrencies versus stocks. Communication of the results. The analysis carried out led to certain conclusions and allowed the formulation of some perspectives on the economic approach to operations with cryptocurrencies and stocks. Also, new study perspectives are offered, taking into account various associations that can be made.

Results and discussions

The same data from CoinMarketCap was analyzed for Bitcoin over a decade, between 2014 and 2023. This analysis was performed using the Blockchain platform. The analysis and number of coins might be slightly different, as both platforms operate in real time. Therefore, the results are an estimate. It can be seen from the figure below that the volume of Bitcoin coins (2014-2023) showed an upward trend, increasing from $23.878.230 in 2014 to $36.344.952.010 in 2023. The

virtual currency, Bitcoin, has seen a significant increase, $3.000.000.000, in its annual transaction volume. The largest increase was in 2021, being around $41.320.810.907.

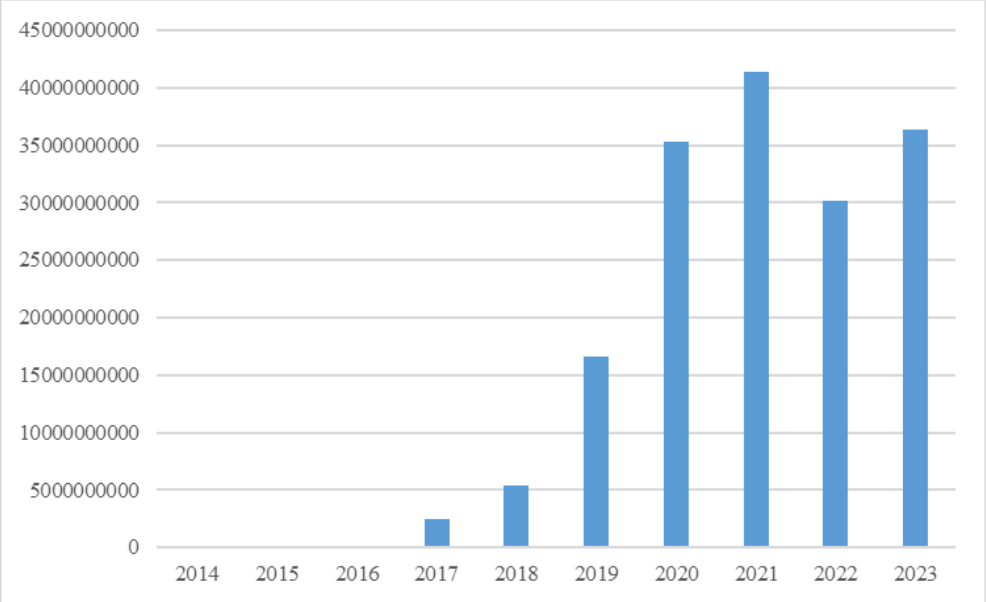

Figure 1. The development of the trading volume of Bitcoin coins in the period 2014-2023
Source: CoinMarketCap.

The section begins by presenting the main factors that led to the increase in volume. In this regard, the development of laws supporting cryptocurrencies, the creation of digital wallets, and trading platforms are mentioned. Also, although this will largely depend on the evolution of the global economy, certain predictions can be made regarding the potential upward growth of transaction volume in the coming years.

According to Figure 2, it can be deduced that the significant upward trend in capitalization from $4.498.887.398 in 2014 to $680.245.690.321 in 2023 can be observed. At the same time, the Bitcoin market capitalization increased by an average of $60.235.712.526.

In 2021, a maximum market capitalization was reached for Bitcoin during the analyzed period. This was driven by massive purchases of Bitcoin by large companies, such as Tesla.

It is also argued that other reasons could have driven the increase in market capitalization, such as technological improvements and the development of a trading infrastructure (example: exchanges and trading platforms) allowing more users to access Bitcoin, and the increased interest of large companies and banks had a considerable impact on the market capitalization.

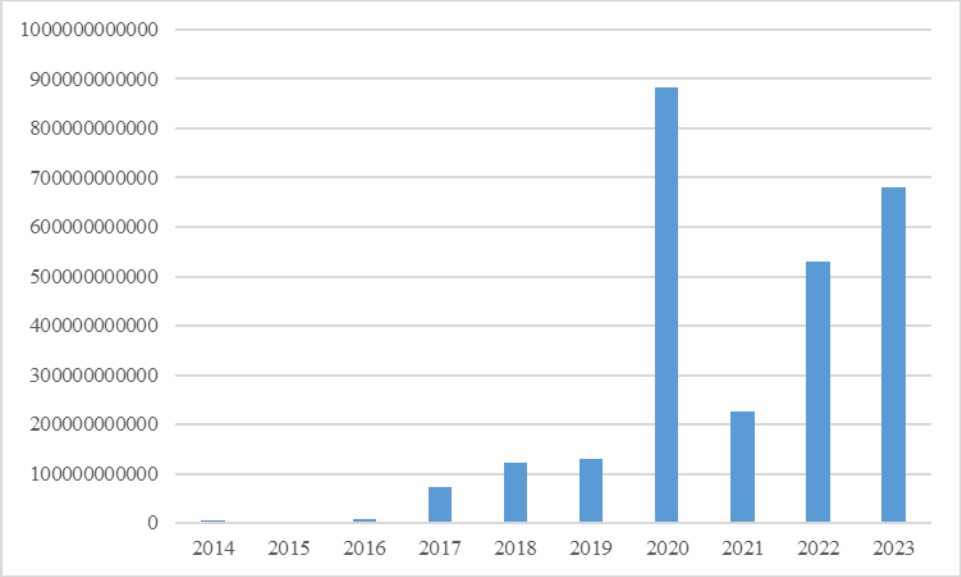

Figure 2. The development of the capitalization and trading of the virtual currency Bitcoin in the period 2014-2023

Source: CoinMarketCap.

Ethereum was created in 2013 by a 19-year-old college dropout named Vitalik Buterin, who published his idea in an article. It began its journey with a proper launch in late 2015.

Table 1. Ethereum Coin Trading Volume Development 2016-2023

Year	Value
2016	16.281.519
2017	764.125.194
2018	2.013.941.258
2019	6.912.581.912
2020	14.241.952.125
2021	22.851.271.521
2022	15.012.942.185
2023	10.841.295.174

Source: CoinMarketCap.

We focused on the cryptocurrency over the 2016-2023 period, which represents an 8-year time frame. The volume of all Ethereum coins for the period 2016-2023 ranged from $16.281.519 in 2016 to $10.841.285.174 in 2023 (see Table 1). This growth is attributed to the rise of Ethereum (ETH) as the de facto platform for smart and decentralized applications, which has fueled demand for the Ethereum virtual currency in the past.

The volume of virtual currency transactions in Ethereum in 2021 is equal to the highest in that period for this currency. The transaction volume added $2.24 billion. The business continued to generate more, as follows: each year, on average, an additional ~2.239.542.323 USD.

Table 2. The development of the capitalization and trading of the virtual currency Ethereum in the period 2016-2023

Year	Value
2016	820.413.924
2017	24.153.099.124
2018	43.125.918.215
2019	19.512.861.412
2020	35.818.512.913
2021	329.158.312.495
2022	234.125.851.852
2023	171.921.842.175

Source: CoinMarketCap.

As we can see in the following table, the market capitalization has increased significantly, being 820,413,924 USD in 2016 and reaching 171,921,842,175 USD in 2023. The market capitalization, on average, increased by 37,913,351,812 USD each year in Ethereum virtual currency transactions. In 2021, the market capitalization of Ethereum transactions increased to the highest level during the analyzed period due to the booming activities in the fields of decentralized finance and NFTs, which have strongly adopted the use of the Ethereum network for transactions. These are the characteristics that show how present and influential Ethereum has been in the cryptocurrency space in these years, transforming itself into an innovative hub and Blockchain technology implemented in various economic and financial industries.

Cardano (ADA) was launched in 2017 by IOHK, with Charles Hoskinson as CEO. The cryptocurrency in this study is analyzed over a 6-year period, starting in 2018 and ending in 2023.

The chart below indicates that the amount, which was $130.380.850 in 2018, increased to $572.310.492 in 2023. Cardano transaction volume was the highest during the period under review, in 2021. The virtual currency earned, on average, $224.145.401 per year, which is indicative of the interest among the crypto community and investors.

The driving factors for growth are: constantly implementing technological improvements and new protocols, thereby attracting more users to its ecosystem; it has collaborated with other projects and platforms; this has increased in various sectors including finance, gaming and the NFT industry, supported the expansion of transaction volume.

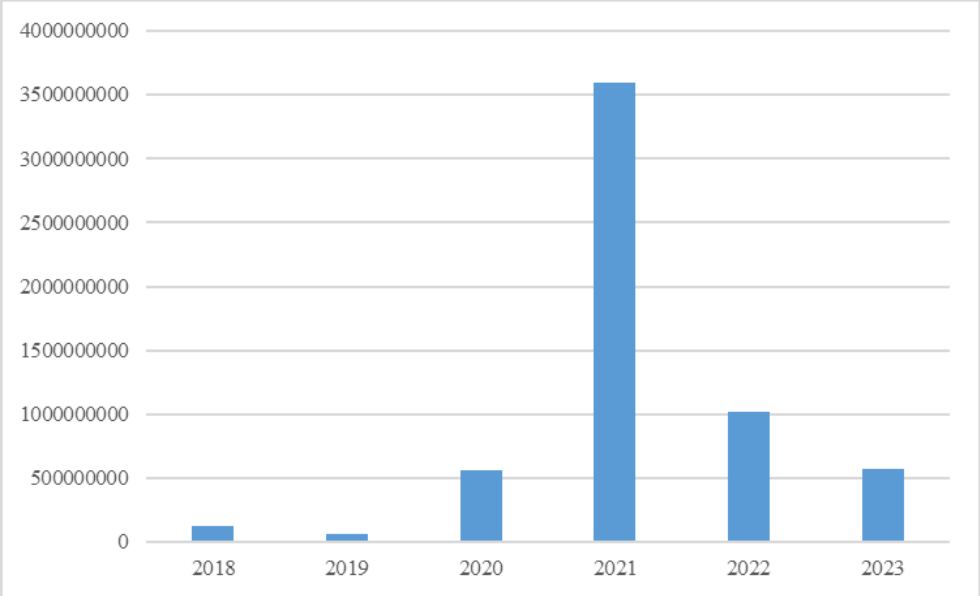

Figure 3. Cardano Virtual Currency Trading Volume Development 2018-2023

Source:CoinMarketCap.

The capitalization of this sector has also grown strongly, from 4.523,85 crore rupees in 2018 to 14.491,28 crore rupees in 2023. Cardano's market capitalization peaked in the time series in 2021. Over the past year, the Cardano virtual currency had an average value of $4.192.492.194, which means that traders have shown interest.

The main reason for the growth is the increasing number of decentralized applications and projects developed on Cardano, which in turn has led to its usage and capitalization. Both characteristics reflect what Cardano has achieved at a rapid pace and the solid foundation it has found in the cryptocurrency world - a testament not only to its growth, but also to its status as a significant player in the global blockchain space.

Conclusion

Since their entry into the financial scene, cryptocurrencies have undergone an incredible transformation. Digital currencies have been a huge innovation since the launch of Bitcoin in 2009. The cryptocurrency market has expanded rapidly in a short period of time, leading to the emergence of many new digital currencies. The financial system and economy have been significantly affected by the development of cryptocurrencies.

The decentralization of cryptocurrencies has allowed consumers to have direct control over their holdings. While this feature has made cryptocurrencies more popular, it has also brought with it difficulties such as volatility.

Trading platforms are essential for making cryptocurrency trading possible. These platforms provide users with access to multiple cryptocurrency markets and facilitate the buying, selling, and exchanging of virtual currencies. Digital wallets provide a secure way to access and store digital assets, making them indispensable for managing and owning cryptocurrencies.

Cryptocurrencies are constantly innovating, with the Ethereum platform facilitating the creation of smart contracts, which allow parties to automate and execute agreements without the

need for an intermediary. As a result, decentralized finance (DeFi) has grown, providing financial services in place of traditional banks.

Cryptocurrencies have become even more viral with the emergence of online educational platforms and university courses that now offer modules on cryptocurrencies and blockchain. Companies in the field, such as Coinbase, also offer educational resources to help users better understand how to use and invest in cryptocurrencies responsibly. Cryptocurrencies have come a long way since they first appeared on the financial market.

Exchanges are indispensable for cryptocurrency trading. It is on these exchanges where most cryptocurrency trading takes place and where users can buy, sell, and own digital currencies. Digital wallets provide a way to leverage and profit from digital media through the use of digital currency.

Crypto continues to evolve, a notable example being Ethereum, a platform that enables the creation of smart contracts that allow parties to automate and materialize contracts without another intermediary. This has led to the rise of decentralized finance (DeFi), which offers financial products and services outside of the traditional banking system.

Cryptocurrencies have been widely appreciated due to online educational resources and university courses that offer units on cryptocurrencies and blockchain. Additionally, industry companies such as Coinbase also offer educational tools to help users learn how to use and invest in cryptocurrencies responsibly.

In conclusion, Cryptocurrency anagement illustrates the importance and impact of cryptocurrency growth in the global financial economy, highlighting the challenges that must be overcome for long-term growth.

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