International Journal of Advanced and Applied Sciences

Journal homepage: http://www.ijaas.in

Analyzing Crypto currency Market Volatility and Growth in India: A Quantitative Approach

Ankita Yadav [1*], Dr. Anupama Pandey [2], Nazia Sami [3], Monika Chauhan [4]

[1] *Junior Research Fellow, Department of Management and Commerce, NIMS University, Rajasthan, India*
[2] *Professor, Department of Management and Commerce, NIMS University, Rajasthan, India*
[3] *Assistant Professor, Department of Management and Commerce, NIMS University, Rajasthan, India*
[4] *Research Scholar, Department of Management and Commerce, NIMS University, Rajasthan, India*

ARTICLE INFO

Article history:
Received: 15-07-2025
Received in revised form: 10-08-2025
Accepted: 05-09-2025

Keywords:

Crypto currency, Market Volatility, Market Growth, Quantitative Analysis, India, Investment Behavior, Risk Management, Digital Finance.

ABSTRACT

The crypto currency market in India has witnessed rapid growth and increasing adoption over the past decade, attracting both individual and institutional investors. However, the market is characterized by high volatility, regulatory uncertainty, and evolving technological innovations, which pose challenges for investors and policymakers alike. This study aims to analyze the volatility and growth patterns of major crypto currencies in the Indian market using a quantitative approach. Historical price data, trading volumes, and market capitalization trends are examined through statistical and econometric techniques to identify patterns, correlations, and factors driving market fluctuations. The findings highlight periods of heightened volatility, key drivers of growth, and investor behavior trends, offering insights for risk management, investment strategies, and policy formulation. The study contributes to a better understanding of crypto currency dynamics in India, providing valuable guidance for stakeholders seeking to navigate this emerging digital financial ecosystem.

Introduction

Virtual currency like bit-coin has carved itself a special niche in the international financial markets, particularly following its quick development and expansion [1]. The market capitalization of crypto-currencies rose to 783 billion U.S. dollars till November 2021 when it was only closed to 1 billion U.S. dollars in 2013. In tandem with this, the importance of bit-coin markets in empirical finance has grown dramatically in recent years, attracting a lot of attention from academics, the media, governmental organizations, the financial industry, etc. Despite their extreme volatility, crypto-currencies are growing in popularity in the world's financial markets. They included both quantitative and qualitative studies that were published in journals or as working

papers in the fields of computers, accounting, and education. A narrative literature review method was utilized to examine the challenges and opportunities of crypto-currencies in contemporary finance. Among the challenges they identified were the lack of sufficient regulations, the possibility of illicit activities, governmental prohibitions and usage restrictions, and the sharp volatility of crypto-currencies in contemporary finance. Performed a biblio metric analysis using the ISI Web of Science database on crypto-currencies as financial assets the focus was only on the function of crypto-currencies as a financial asset, even if they took into account papers from the business, finance, and management domains.

A new generation of investors has been drawn to the dozens of alternative crypto-currencies that have emerged since the launch of Bit-coin in 2009 [2]. Due to the promise of large profits and a youthful, tech-savvy populace, the crypto currency industry in India has grown exponentially. This market is a high-risk, high-reward investing option, but it is also marked by severe volatility and regulatory uncertainty. The purpose of this study is to examine the risk and return features of crypto-currencies in the Indian setting. Making wise judgments requires an understanding of the particular risk-return trade-off for Indian investors. In addition to the intrinsic volatility of these assets, the research will look at exogenous variables that have a big impact on market behavior, such India's changing regulatory climate. Investing in bit-coin has the best rate of return when compared to stocks, gold, and exchange rates. In addition, compared to other investment options, bit-coin investments have the biggest risk (Sunita Dasman, 2021). Risk profile analysis highlights drawdown and volatility. Because of its greater volatility, Bit-coin is more vulnerable to price swings. The requirement for risk management is highlighted by the fact that crypto currency markets are generally volatile and unpredictable (Chaitali Mahadik, 2024). The following are the main goals of the study: 1) To quantify and evaluate the risk and return of a diversified portfolio of popular crypto-currencies that are available to Indian investors; and 2) To contrast the risk and return of crypto-currencies with those of conventional Indian investment products [3].

This has prompted conversations on the future of crypto-currencies in India among academics, specialists, and banks. According to one estimate, a 1% growth of crypto-currencies might result in a 5%

decrease in India's financial stability (Panigrahi, 2023). [11]. In spite of these problems, a lot of Indians are interested in crypto-currencies. Adoption is influenced by elements including perceived value and how simple they are to use, try, and observe (Kumar and Rani, 2024) [9]. The desire to get wealthy rapidly is what attracts young people, particularly mille nnials, to crypto-currencies (Sharma et al., 2023).

Their choice to invest is also influenced by FOMO (fear of missing out) (Kala et al., 2023). Policymakers must weigh the advantages and disadvantages of maintaining a stable and expanding economy as India advances with crypto currency. As the market expands and its impacts become more apparent, the government's regulations around crypto-currencies are probably going to alter. For Indian CEOs, striking a balance between innovative concepts and sound financial standing is crucial. To assist investors, particularly young ones, comprehend the dangers and benefits of crypto-currencies, educational initiatives could be necessary [4]. To stop money laundering and tax evasion and to safeguard consumers, the government must enact regulations. Building a robust crypto currency system in India requires collaboration with banks, IT firms, and regulators

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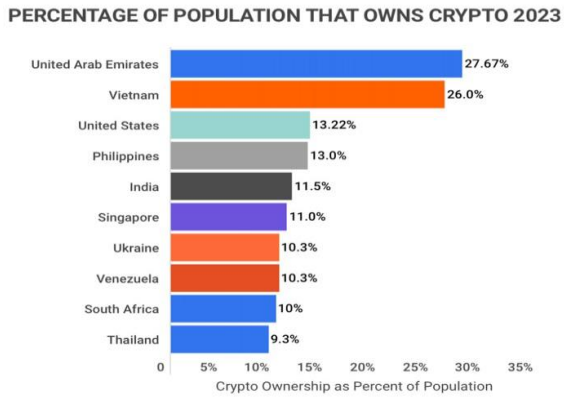

Figure 1: Zippia is the source. "30 striking crypto currency statistics [2023]: market value, bit-coin usage, and trends" at zippia.com February 28, 2023

Ether (ETH), the crypto currency used to transact on the ethereal platform, becomes more in demand as a result of this technology's ability to support online payments, loan distribution, and commodities training. Computational services and transaction fees are paid for using ether. By validating transactions on the ethereal platform, mining contributes to the creation of Ether. Ether is in high demand and serves as a launch pad for a variety of decentralized applications, including games, NFTs, and DeFi (decentralized finance). Peer-to-peer transactions are the focus of Lite-coin, a crypto currency with faster transaction speeds than Bit-coin. Lit-coin's main goal was to replicate Bit-coin's performance by increasing volume and enabling tiny payment transactions. Even if the objective has been partially met, fresh block-chain ideas are continually entering the crypto currency industry [5].

A fluctuation in an asset's price is referred to as volatility in financial markets. Profit chances are created by healthy volatility. Digital currencies, or crypto-currencies, appear to be the way of the future. A high-risk, high-return investment asset class is crypto currency. We may evaluate the likelihood of particular outcomes by estimating the volatility of return. Numerous researches have looked at the nature of asset volatility. Analyzing the volatility of crypto-currencies and contrasting them with other financial assets has become more important as their popularity has grown. Found that macro-financial issues have little effect on earning a return in Bit-coin.

The globe has seen a number of crises since the year 2000, including the Dot-Com Bubble Burst (1999–2002), the Banking and Financial Crisis (2007–2008), the Real Estate Crash (2009), and, most recently, the economic devastation brought on by the Covid-19 epidemic. Even the iconic 1929 stock market crash was not as damaging to investors' trust as these subsequent crises have been. As a result, investors are clearly moving away from conventional national currencies and toward crypto-currencies [6]. Concurrently, many people have been disillusioned with the growing involvement of states in financial transactions, which has led to a desire to regain control over their finances. In this regard, disruptive inventions like crypto-currencies are changing the Internet-driven, globalized society (Vora Gautam, 2015)

Literature review

Asif, M. (2022) [1] examined the legalization of crypto currency and its implications for the Indian economy in the *International Journal of Novel Research and Development*. The study provided an overview of the regulatory challenges, potential economic benefits, and risks associated with adopting crypto-currencies in India. Asif highlighted that legalization could encourage financial innovation, increase investment opportunities, and enhance cross-border transactions, while also raising concerns about volatility, taxation, and illicit activities. The research emphasized that a well-structured legal framework is crucial to harness the potential of crypto-currencies while safeguarding economic stability.

Banerjee, S., Chakra borty, S., & Saha, A. (2021) [2] explored crypto currency as a tool for financial inclusion in India, published in *Anveshana's International Journal of Research in Regional Studies, Law, and Social Science*. The authors argued that crypto-currencies could provide unbanked and under banked populations with access to secure, fast, and cost-effective financial services. The study highlighted the transformative potential of block chain technology in reducing transaction costs, enhancing transparency, and promoting digital financial literacy. However, the research also noted the need for regulatory oversight and public awareness campaigns to ensure safe adoption of digital currencies.

Dash, B., Sharma, P., Siddha, S. S., & Ansari, F. M. (2022) [3] analyzed the integration of smart contracts and Central Bank Digital Currency (CBDC) into the Indian banking system in *International Journal of Network Security and Its Applications*. Their study emphasized how smart contracts can automate banking operations, enhance transaction security, and reduce operational costs. Additionally, the introduction of CBDC was highlighted as a means to modernize monetary policy, improve payment efficiency, and strengthen regulatory oversight. The authors concluded that these innovations could make Indian banking more future-ready but require robust technological infrastructure and regulatory support to ensure stability and widespread adoption.

Srinivas, M., Murthy, V. R., & Raju, S. (2023) [4] investigated the broader economic impacts of crypto currency adoption in India, as reported in the *International Journal of Creative Research Thoughts*. Their study discussed the influence of crypto-currencies on financial

markets, investment patterns, and consumer behavior. They highlighted both positive aspects—such as increased liquidity, enhanced global trade, and investment opportunities—and challenges, including market volatility, security threats, and potential regulatory gaps. The authors stressed the importance of careful policymaking and public education to mitigate risks while maximizing economic benefits.

Jackon, G. (2024) [5] focused on crypto currency adoption in traditional financial markets in the United States, published in the *American Journal of Finance*. The study examined how institutional investors and traditional financial institutions are integrating digital currencies and block chain-based assets into portfolios and trading systems. Jackon highlighted factors influencing adoption, including regulatory clarity, technological infrastructure, and market demand. The research concluded that while crypto currency adoption can increase market efficiency and diversify investment opportunities, it also introduces new risk dimensions such as volatility, cyber security threats, and systemic risk, which require careful management by financial institutions.

Kala, D., Al-Adwan, A. S., & Chaubey, D. (2023) [6] examined crypto currency investment behavior among young Indians, focusing on the mediating role of the Fear of Missing Out (FOMO), as published in *GKM*. Their study highlighted how psychological factors, particularly FOMO, significantly influence investment decisions in digital currencies. The research found that young investors are driven not only by potential financial gains but also by social and peer pressure, which amplifies risk-taking tendencies. The authors emphasized the need for investor education and awareness programs to help mitigate impulsive decision-making and ensure informed investment practices in the rapidly evolving crypto currency market.

Kumar, A. (2021) [7] analyzed the overall impact of crypto currency on the Indian economy, as reported in the *International Journal of Research in Regional Studies, Law, and Social Science Journal of Management Practice*. The study explored both economic opportunities and challenges associated with crypto currency adoption, such as digital financial inclusion, innovation in payment systems, and cross-border trade facilitation. At the same time, Kumar discussed concerns over volatility, regulatory ambiguity, and potential misuse

for illegal activities. The research underscored the importance of a balanced regulatory framework that encourages innovation while safeguarding economic stability.

Kumar, J., & Rani, V. (2024) [8] conducted an empirical study on crypto currency adoption among Indian retail investors, published in *Bottom Line*. The study investigated factors influencing adoption, including risk perception, technological awareness, and perceived profitability. Findings revealed that while retail investors show growing interest in digital currencies, adoption is moderated by concerns about security, market unpredictability, and lack of regulatory clarity. The authors suggested that increasing awareness, providing secure investment platforms, and regulatory support are key to fostering sustainable participation in the crypto currency market.

Murugappan, M., Krishnan, S., & Nair, R. (2023) [9] explored global consumer perceptions and usage of crypto currency in a pilot study, as reported in the *Journal of Theoretical and Applied Electronic Commerce Research*. The study highlighted varying attitudes towards digital currencies across different demographics, emphasizing trust, perceived usefulness, and familiarity as major determinants of adoption. The authors found that while crypto-currencies are increasingly recognized as alternative investment assets, challenges such as regulatory uncertainty, security concerns, and market volatility continue to hinder wider acceptance. The study contributes to understanding consumer behavior in the context of digital finance and cross-border crypto currency adoption.

Panigrahi, S. (2023) [10] investigated whether crypto-currencies pose a threat to India's financial stability and economic growth, using a cointegration approach, as published in *Investment Management and Financial Innovations*. The study analyzed the long-term relationship between crypto currency market activity and macroeconomic indicators, revealing that unregulated crypto currency proliferation could potentially introduce volatility into the financial system. Panigrahi emphasized that effective regulatory oversight and monitoring mechanisms are essential to mitigate systemic risks. The research concluded that while crypto-currencies offer opportunities for financial innovation, unchecked adoption without proper governance could adversely impact economic stability.

Patsakis, C., Politou, E., Alepis, E., & Hernandez-Castro, J. (2023) [11] explored the practices surrounding ransom ware payments and the role of crypto currency in facilitating illicit financial transactions, as published in the *International Journal of Information Security*. The study analyzed how cybercriminals leverage crypto-currencies for anonymity and efficiency in ransom payments, highlighting the challenges posed to law enforcement and financial systems. The authors emphasized that while crypto-currencies provide decentralized and secure transaction mechanisms, they also increase the risk of misuse in cybercrime. The research called for enhanced regulatory frameworks and technological solutions to track and mitigate illegal crypto currency flows.

Sahu, B., & Divakar, H. (2023) [12] examined the broader economic impact of crypto currency on India in the *Journal of Global Economics*. Their study focused on how crypto currency adoption affects financial markets, investment trends, and macroeconomic indicators. The authors argued that while digital currencies can foster innovation, improve payment efficiency, and enhance financial inclusion, they also introduce risks such as volatility, speculative bubbles, and potential challenges for monetary policy. The study highlighted the importance of regulatory clarity and institutional readiness for sustainable integration of crypto-currencies into the Indian economy.

Sharma, R., Mehta, K., & Rana, R. (2023) [13] investigated the adoption behavior of millennial investors in India, published in IGI Global. The study identified key factors influencing crypto currency investment among younger populations, including perceived profitability, social influence, risk perception, and technological familiarity. Findings indicated that millennials are highly motivated by both financial gains and the novelty of digital assets, yet their adoption is moderated by concerns over market volatility and regulatory uncertainty. The authors suggested that educational initiatives and secure investment platforms are essential to facilitate responsible adoption among young investors.

Shukla, V., Misra, M., & Chaturvedi, A. (2022) [14] analyzed the evolution of crypto currency in India in light of the financial budget of 2022-23, as presented on ArXiv. The study reviewed policy measures, taxation guidelines, and regulatory announcements impacting crypto currency trading and investment. The authors

highlighted that government initiatives and budgetary frameworks play a crucial role in shaping investor confidence and market growth. Their findings suggested that clear regulatory policies and tax structures are essential for mainstream adoption of crypto-currencies in India, while ambiguous policies could hinder market development.

Singh, P. R., & Chaurasia, S. K. (2025) [15] explored the future prospects of crypto currency in India, published in the *Journal of Infoc Education Research*. The study projected trends in adoption, regulatory developments, and technological innovations influencing the digital currency landscape. The authors argued that crypto-currencies could become integral to India's financial ecosystem, supporting financial inclusion, cross-border transactions, and digital innovation. However, they emphasized that regulatory frameworks, investor awareness, and cybersecurity measures will be critical to ensuring sustainable and secure growth of crypto-currencies in the country.

Methodology

This study uses both primary and secondary data sources and employs both empirical and analytical approaches. In order to investigate how crypto-currencies affect the Indian economy, the study technique combines qualitative and quantitative methods. This is accomplished by reviewing the body of research and analyzing primary data gathered from a sample of 108 consumers and company owners in the State of West Bengal, with an emphasis on their attitudes, views, and use of crypto-currencies [7]. In May 2025, the survey was conducted online using Google Forms utilizing a closed-ended questionnaire intended to collect statistics about crypto currency acceptance and usage as well as demographic information. In terms of the economic effect, it also takes into account factors like banking and finance, remittances, e-commerce, real estate, and taxes. Relevant research journals, papers, articles, academic publications, and a variety of internet resources were examples of secondary data sources. Frequency tables and percentages have been used to summarize data in order to find trends, patterns, and correlations between variables. To accomplish the goals of the study, a correlation test was used on the primary data gathered from the survey. The data was analyzed and logical conclusions were drawn for the study using SPSS-26 statistical software [8]. The Cronbach's alpha test was used to evaluate the questionnaire's consistency and reliability;

the results showed a score of 0.963, which is regarded as extremely satisfactory for social science research. This shows that the results drawn from the survey were trustworthy and appropriate.

Table 1: Money Remitted

Remittances		
Attributes	**Frequency**	**Percent**
Potential to Offer Cheaper and Efficient Way	54	50
No Significant Impact	27	25
Unknown Currency	27	25
Total	108	100

Source: Primary Data

The time frame for the sample and the search approach are the first steps in the second phase [9]. All articles published between 2008 and November 2021 on the connection between crypto-currencies and the stock market are found using a variety of keywords. We looked at the following search terms in combination: (i) "crypto currency", "crypto-currencies", "bit-coin", "AND"; (ii) "stock", "stock market", and "equity market." It ensures that extracted research papers have the desired keywords. 649 items were left for further examination after the search was refined to only include publications written in English and from Scopus's sections on economics, finance, business, management, computer science, and mathematics.

Table 2: Property

Real Estate		
Attributes	**Frequency**	**Percent**
Potential to Offer New Investment	45	41.7

Opportunities		
No Significant Impact	45	41.7
Unknown Currency	18	16.7
Total	108	100

Source: Primary Data

A thorough evaluation of the articles was part of the third stage. In order to exclude irrelevant articles, we examined the titles, keywords, and abstracts of the chosen papers. Articles were flagged as unsuitable if they did not look at the relationship between crypto-currencies and the stock market. More precisely, the reasons they were excluded included herding in the crypto currency market, attention to the market's development, volatility in the crypto currency market, etc. [10]. We obtained a collection of 217 articles after excluding unnecessary ones [11]. Duplicate articles were removed from the file after each author double-checked it. Ultimately, we discovered 151 studies that were ideal for determining the relationship between crypto-currencies and the stock market. Although the majority of applications requires separate Scopus RIS or WOS files, VOSviewer and Microsoft Excel allowed us to work with CSV files and combine data from the two databases. In the second step of the investigation, we conducted a content analysis and, using subject keywords and a detailed examination of abstracts, we were able to identify four distinct research streams. Lastly, based on the study's findings, we offered research topics for possible follow-up investigations.

Figure 2: Leading crypto currency as of December 31, 2022

Coinmarketcap.com is the source

Bit-coin had the greatest median daily return (0.23%), whereas Ether had the highest daily average return (0.32%). Additionally, it was noted that whereas XRP and Lite-coin displayed a positive skew ness, Bit-coin and Ether, which have the largest market capitalizations, had a negative skew ness. The leptokurtic distribution, which shows that the log returns of all the currencies in the research are more centered around the mean than the normal distribution, is formed by even the greater kurtosis of all the currencies. At a 1% significance level, the J-B Statistics (Jerque Bera) and associated p-values verify that these crypto-currencies' return data are not normal [12]. The results' tendency to cluster is also noted. strong positive correlation between all of the crypto-currencies; however, the correlation between Ether and Bit-coin (0.712) is higher than that of the other pairs, suggesting that the two have a strong relationship and the highest market capitalization.

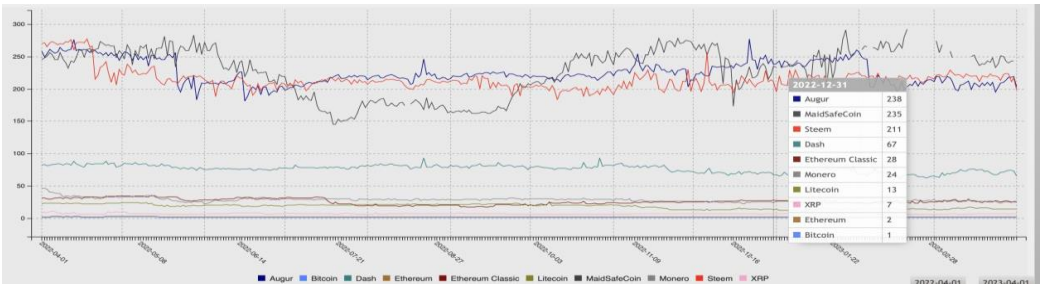

Figure 3: Ranking of crypto-currencies as of December 31, 2022
Cryptochart.com is the source

Over time, India's crypto currency market has experienced substantial growth and changes in regulations. Prior to 2013, the Reserve Bank of India (RBI) issued circulars alerting consumers to the hazards involved with crypto-currencies but refrained from approving them. The RBI issued a circular a month later prohibiting banks, NBFCs, and payment system providers from dealing with virtual currencies owing to perceived dangers after the Central Board of Digital Tax (CBDT) advocated a ban on crypto-currencies to the Ministry of Finance in March 2018. Nevertheless, the RBI has persisted in warning people against utilizing crypto-currencies, emphasizing preventative actions, in spite of this decision. Crypto currency exchanges then saw a comeback [13]. A bill to establish a national digital currency and outlaw private crypto-currencies was announced by India on January 29, 2021. By November 2021, industry heavyweights including the Block-chain and Crypto Assets Council (BACC) and the Standing Committee on Finance were in favor of regulating crypto-currencies rather than outlawing them. Although the exact regulatory agency is yet unknown, current signs indicate that crypto-currencies will be regulated in India. According to experts, the government will probably regard crypto-currencies as an asset class, and trading platforms should be more accountable and transparent. In order to avoid fraud and monitor cross-border transactions, checks and balances may be necessary [14].

Result

The 2022 Global Crypto Adoption Index

Vietnam has been ranked first in crypto currency adoption for the second consecutive year, according to the results of the Chain-analysis 2022 (September 2022) Global Crypto Adoption Index, which is based in Singapore. Vietnam scored a perfect 1.000 on the overall index, while India came in at #4 with a score of 0.663. Global crypto currency adoption has slowed during the down market, but it is still higher than it was during the bull market, according to the analysis. According to a blog post by Chain-findings, "global adoption has level led off in the last year after growing consistently since mid-2019." "Global adoption has leveled off over the past year, according to our data." The globe saw an

880% increase in crypto acceptance, according to the 2021 Global Crypto acceptance index published by Chain-analysis, a business that specializes in block chain studies. India ranked second on the index, after Vietnam, with a score of 0.37. In just one year, the Indian crypto currency market grew by 641%. It is evident that the global crypto currency business has enormous potential and is growing quickly. For India as well, it appears to be a potential business. Vietnam is the most advantageous nation in terms of crypto currency adoption, according to the data in the Chain-analysis 2022 Global Crypto Adoption Index study. Despite going through several ups and downs along the process, India is able to move up to fourth position in the standings. China is ranked highly on the worldwide crypto adoption index for 2022, despite the nation's ban on crypto currency. Therefore, it seems that despite the government's attempts to deter them, investors are still active in China.

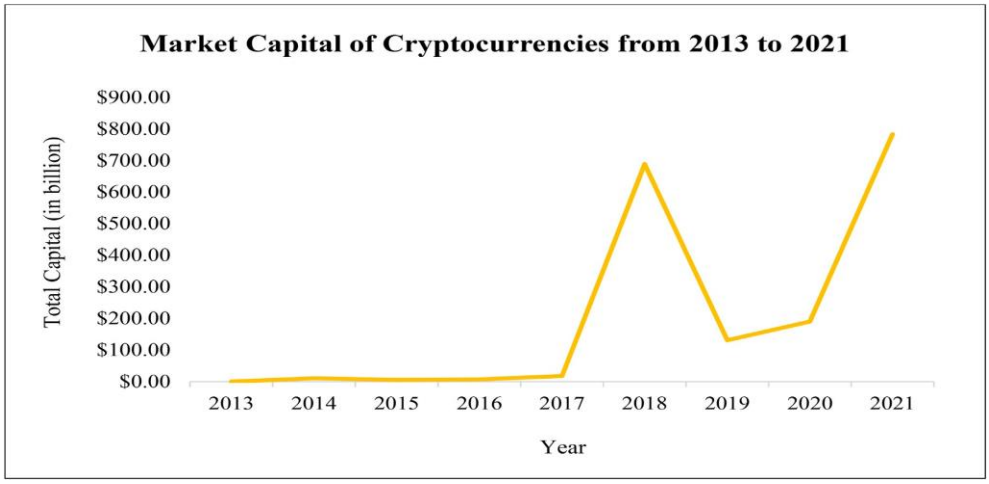

Figure 4: Crypto currency market capitalization

Verifying the data's stationarity and the residuals' hetero scedasticity are prerequisites for using GARCH modeling. The GARCH framework is required to describe conditional volatility since hetero scedasticity is present.

Test of Unit Roots

Regression findings will be erroneous if the data is not steady. It will be challenging to establish a link or do any forecasting if the series is non-stationary since its distribution will fluctuate with each period [15]. A

stationary series indicates that the data structure in the time series is stable, which suggests that the mean, variance, and covariance remain constant across time. The augmented Dickey–Fuller (ADF) test, whose null hypothesis is that the data are not stationary, was used to look for the unit root problem (Dickey and Fuller 1981).

$$N\ \Delta yt = \propto 0 + \theta \propto \Delta yt + et, \quad (2)\ i=1$$

The data at time t is denoted by "yt," the ideal number of lags is denoted by "n," the constant is denoted by "αo," and the error term is denoted by "e."

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It has been noted that every crypto currency return in the data set exhibits stationarity.

The ARCH–LM test's null hypothesis is that there is no hetero scedasticity or ARCH effect in the time series data because the coefficients of the squared residuals in Equation (3) are unimportant, meaning $\gamma 0 = \gamma 1 = \gamma 2 = \gamma p = 0$. The GARCH model must be used to determine the impact of conditional volatility since the ARCH effect is common in crypto currency returns

Table 3: Features of crypto currency

Name	**Symbol**	**ization in Market (in dollars)**	**Price (in dollars)**	**culating Supply**	**Volume (in dollars)**
Ethereum	ETH	316,327,093,482	2,728.37	115,939,767 ETH	76,081,227,984
Ripple	XRP	42,484,880,360	1.21	35,108,326,973 XRP	20,300,135,013
Ethereum Classic	ETC	7,935,801,671	68.23	116,313,299 ETC	9,467,323,983
Lite Coin	LTC	13,903,967,713	208.29	66,752,415 LTC	10,210,875,902
Bit-coin	BTC	710,169,231,729	37,949.16	18,713,700 BTC	111,499,352,365

Source: Coin Market Website

Granger Causality

Any correlation between the returns of the various crypto-currencies has been investigated using the Granger causality test. The Granger causality link has been tested using the following equation:

$$yt = a0 + a1yt-1 + a2yt-2 + \bullet\bullet\bullet apyt-p + b1xt-1 + b2xt-2 + \bullet\bullet\bullet bpxt-p + \in t \quad (4)$$

$$xt = c0 + c1xt-1 + c2xt-2 + \bullet\bullet\bullet cpxt-p + d1yt-1 + d2yt-2 + \bullet\bullet\bullet dpyt-p + \Psi t \quad (5)$$

Equation (4) in series X does not Granger cause Y, according to the null hypothesis, which suggests that all of x's coefficients are zero. It will be determined that series X is affecting series Y's returns if any coefficient of X differs noticeably from zero. The null hypothesis in Equation (5) is that Series Y does not Granger cause X, which is true if all of y's coefficients are 0.

Table 4: Gender

Gender		
Attributes	**Frequency**	**Percent**
Male	72	66.7
Female	36	33.3
Total	108	100

Source: Primary Data

Ether and Bit-coin have a unidirectional causal relationship in which Ether affects Bit-coin's return. Both XRP and Bit-coin and XRP and Ether have been shown to have a comparable univariate connection. Estimating mean equation: To determine the influence of the previous return and residual in the return of crypto-currencies, we have chosen the autoregressive moving average model, or ARIMA (1,1), as the best fit model.

Table 5: Learning

Education		
Attributes	**Frequency**	**Percent**
School	18	16.7
UG	45	41.7
PG	36	33.3
Technical	9	8.3
Total	108	100

Source: Primary Data

The coefficients of the ARCH and GARCH terms in the aforementioned Equation (7) are α1 and β1, respectively. "α1" stands for the ARCH effect, which calculates the reaction to any shock or news in the crypto currency market. The GARCH effect, or "β1," indicates how persistent the volatility is. According to Chaudhary et al. (2020) and Rastogi (2014), a high ARCH coefficient (α1) suggests that volatility is more sensitive to impending news, whereas a high GARCH (β1) value shows that volatility is persistent and takes longer to fade out. Only when the total of α1 and β1 is less than one will the GARCH model be stable; otherwise, the data will show an explosive character. Table 9 shows that all of the crypto-currencies have a significant persistency factor and a strong presence of the ARCH and GARCH effects.

Table 6: Age

Age		
Attributes	**Frequency**	**Percent**
18 yrs-30 yrs.	54	50
31 yrs-40 yrs.	36	33.3
41 yrs-50 yrs.	9	8.3
above 50 yrs.	9	8.3
Total	108	100

Source: Primary Data

With an average of 14.75 citations per article, the final sample of 151 papers had 310 authors and were published in 80 journals. the total number of articles and citations pertaining to the relationship between crypto currency and the stock market throughout time. The number of papers published has been increasing; 2020 was the most productive year, but 2021 also had a high number. Furthermore, it is observed that publications with the highest number of citations (about 700) were published in 2020. According to the first trend, the relationship between crypto currency and the stock market attracted the greatest interest from academics during the COVID-19 pandemic.

Table 7: Consumer and Business Adoption

Adoption by Consumers and Businesses		
Attributes	**Frequency**	
Emerging Stage	90	
Matured Stage	18	
Total	108	100

With 15 papers, or 9.93% of all publications, Finance Research Letters was the most prominent journal. Research in International Business and Finance came in second with 10, or 6.62. Physica A: Statistical Mechanics and its Applications (6, 3.97%) and the North American Journal of Economics and Finance (6, 3.97%). With 975 and 215 citations, respectively, Finance Research Letters and Research in International Business and Finance continued to be the top two most influential journals.

Conclusion

The analysis of crypto currency market volatility and growth in India reveals a rapidly evolving yet highly unpredictable financial landscape. The study demonstrates that while crypto-currencies offer significant opportunities for wealth creation, investment diversification, and digital financial innovation, they are accompanied by pronounced price fluctuations and market risks. Quantitative evaluation of historical data highlights key periods of market volatility, the influence of trading volumes, regulatory announcements, and macroeconomic factors on price movements.

The findings suggest that informed investment decisions, robust risk management strategies, and clear regulatory frameworks are essential for mitigating risks and sustaining market growth. Overall, this study provides critical insights into the behavior of the Indian crypto currency market, offering guidance for investors, policymakers, and financial institutions seeking to harness the potential of digital assets while minimizing associated uncertainties.

Reference

1. Asif M. Legalization of Crypto currency and Its Impact on Indian Economy: An Overview. Int J Nove Res Dev. 2022;7(3):324-330.
2. Banerjee S, Chakraborty S, Saha A. Crypto currency: A New Age Economic Instrument for Financial Inclusion in India. Anveshana's Int J Res Reg Stud Law Soc Sci Journ Manag Prac. 2021;6(8):59-66.
3. Dash B, Sharma P, Siddha SS, Ansari FM. Future Ready Banking with Smart Contracts CBDC and Impact on the Indian Economy. Int J Netw Sec Its Appl. 2022;14(5):39-49. DOI: 10.5121/ijnsa.2022.14504
4. Srinivas M, Murthy VR, Raju S. Impact of crypto currency on the Indian economy. Int J Creat Res Tho. 2023;11(8):1-10.
5. Jackon G. Crypto currency Adoption in Traditional Financial Markets in the United States. Am J Finance. 2024;9(1):40-50. DOI: 10.47672/ajf.1810
6. Kala D, Al-Adwan AS, Chaubey D. Crypto currency Investment Behaviour of Young Indians: Mediating Role of Fear of Missing Out. GKM, 2023. DOI: 10.1108/gkmc-07-2023-0237
7. Kumar A. The Study on Crypto currency's Impact on the Indian Economy. Int J Res Reg Stud Law Soc Sci Journ Manag Prac. 2021;6(8):52-59.
8. Kumar J, Rani V. What Do We Know about Crypto currency Investment? An Empirical Study of Its Adoption among Indian Retail Investors. Bottom Line. 2024;37(1):27-44. DOI: 10.1108/bl-04-2023-0104
9. Murugappan M, Krishnan S, Nair R. Global Market Perceptions of Crypto currency and the Use of Crypto currency by Consumers: A Pilot

Study. J Theor Appl Electron Commer Res. 2023;18(4):1955-1970. DOI: 10.3390/jtaer18040098

10. Panigrahi S. Are Crypto-currencies a Threat to the Financial Stability and Economic Growth of India? Evidence from the Cointegration Approach. Inv Manage Financ Innov. 2023;20(2):307-320. DOI: 10.21511/imfi.20(2).2023.26
11. Patsakis C, Politou E, Alepis E, Hernandez-Castro J. Cashing Out Crypto: State of Practice in Ransom Payments. Int J Inf Sec. 2023;23(2):699-712. DOI: 10.1007/s10207-023-00766-z
12. Sahu B, Divakar H. Crypto currency and Its Impact on the Indian Economy. J Glob Econ. 2023;11(3):401. DOI: 10.37421/2375-4389.2023.11.401
13. . Sharma R, Mehta K, Rana R. Crypto currency Adoption Behaviour of Millennial Investors in India. IGI Global. 2023;135-158. DOI: 10.4018/978-1-6684-8361-9.ch006
14. Shukla V, Misra M, Chaturvedi A. Journey of Crypto currency in India in View of Financial Budget 2022-23. ArXiv, 2022.
15. Singh PR, Chaurasia SK. The Future of Crypto currency in India. J Infoc Educ Res. 2025;5(1):480-485.