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Research Article

Comprehending Cryptocurrency Investment: An In-Depth Analysis of Technological Impacts and Behavioral Dynamics

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ABSTRACT

This study seeks to investigate and synthesize existing literature on the cryptocurrency. The researcher adopted for NVIVO 14 software to perform a bibliometric analysis and elaborate a systematic literature review on cryptocurrency with a sample of 52 papers published in reputed journals, considering the different field of knowledge. The researcher explored a growing body of literature on factors affecting the investment behavior in cryptocurrency, which are Age, Gender, Behavioral Intention, Heuristic Factors, Prior Experience, Prospect, Governance, and the Cryptocurrency bubble. The secondary line of variables adopted from the analysis include price, financial literacy, the disposition effect, and investor sentiment, role of Blockchain technology, risks, herding behavior, and uncertainties related to cryptocurrency. Additionally, a dearth of literature has been observed on challenges faced by cryptocurrency and its investors, regulatory framework of cryptocurrency, factors which are motivating the cryptocurrency investors, impact of social media, and how technical knowledge can influence behavioral intention of investors in Indian context. This study helps the researchers and academics, by providing the research gaps on which further researches can take place in the field of cryptocurrency.

Keywords: Cryptocurrency, Blockchain technology, Investment behavior, Investor sentiment, Regulatory framework, Herding Behavior, Social media influence, Risk management, Financial literacy, Price volatility

INTRODUCTION

In early 1990s, a group was formed by Timothy May, Eric Hughes, and John Gilmore named as the Cypherpunks, focused on cryptography to advocate for internet privacy and individual control over personal data and financial transactions. They distrusted third parties and aimed to create a digital currency system. Other initiatives included DigiCash, led by David Chaum, which sought to establish a digital currency, and Cybercash, founded by Daniel C. Lynch in 1994 as an electronic shopping service. The first decentralized cash system, Bitcoin, was launched in 2009 by the mysterious Satoshi Nakamoto. Cryptocurrency utilizes blockchain technology to serve as digital money, ensuring transaction transparency and user accountability without a physical form. (Amsyar et al., 2020).

Cryptocurrency is a digital or virtual currency secured by cryptography, making double spending and counterfeiting impossible. It operates on a decentralized blockchain network, allowing direct transactions between parties without intermediaries or regulatory involvement (Shukla et al., 2022). It is any digital currency or we can say it is an intangible asset which is used as a medium of exchange distinct from fiat money, in various transaction whether it is online or offline, such as transaction over social media platforms, online gaming environments, virtual world, and peer-to-peer networks (Jani, 2018) through blockchain technology and strong cryptography by securing anonymous transactions recorded in a public database. Notable cryptocurrencies include Bitcoin, Etherum, Dash, and Monero, which maintain ownership records through distributed consensus. Regulatory approaches differ by country, with some, like the U.S., classifying them as taxable property (Almeida & Gonçalves, 2022). It does not require any validation from any bank or government body, it just rely on encryption technology for security. Every

time, a coin is transferred or sold, the transaction is added to the blockchain as block, which tracks the entire payment and ownership history of every coin in circulation (Ayoola-Akinjobi, 2024) but some risks are associated with cryptocurrency investment including exchange rate risk, operational, and security. There are companies which has started accepting Bitcoin payments from various prominent organizations, including Dell, eBay, Expedia, Microsoft, Valve, Tesla, Amazon, PayPal, and Subway(Andrianto & Diputra, 2017) & (Chathurika, 2020).

Cryptocurrencies are digital asset that rely on key features like the decentralization, persistence, anonymity, and verifiability, made possible by technologies such as distributed consensus mechanism, cryptographic hashing, and asymmetric cryptography based digital signature. Technological foundation enable transaction data efficient, cost effective, and unrestricted by geographical boundaries, supporting rapid, cross border exchange of value (Sharma et al., 2020); (Sagheer et al.,2022); (Rubanov et al., 2022) & (Zhang & Wang, 2020). By August 16, 2008, there were around 1600 cryptocurrencies and circulation, with well known examples including Bitcoin, Ethereum, XRP, Bitcoin Cash, Bitcoin SV, Litecoin, Tether, EOS, Binance coin, Polkadot and Chainlink (Andrianto & Diputra, 2017) & (Mukhopadhyay et al., 2016).

The first commercial cryptocurrency transaction in 2010 marked the beginning of a major transformation in how financial transactions are conducted (Chathurika, 2020). Although Bitcoin, the first and most prominent cryptocurrency has faced challenges in gaining acceptance as a widely used medium of exchange------ highlighted by a 65% drop in market value in 2016, which led to substantial investor losses due to concern over stability------ it has continued to grow in visibility and adoption. A key milestone was used in September 2019 when New Zealand became the first country to permit salaries to be paid in Bitcoin signaling increasing mainstream acceptance (Yousuf et al., 2020). Cryptocurrency offers distinct advantages, such as lower transaction cost, global accessibility for international payment without reliance on traditional banking, user anonymity, and rapid settlement times. However, they also present drawbacks, including limited transparency, dependence on technology and Internet access related to anonymity, and high price volatility, which possess for both users and investors (Saksonova & Kuzmina-Merlino, 2019).

Cryptocurrency user distributed public ledger called the blockchain to record transactions, which are validated through mining. Miners ensure that the payer has sufficient fund and is not double spending by completing resource-intensive tasks, making fraud costly. Key mining methods, including Proof of Work, Proof of Stake and Proof of Retrievability. The mining process involves producing and verifying proof, checking transaction validity, and adding valid blocks to the Blockchain. This process regulates the introduction of new currency, ensuring a finite supply, with the first minor to validate a block earning a reward (Mukhopadhyay et al., 2016) ; (Saksonova & Kuzmina-Merlino, 2019) & (Almeida & Gonçalves, 2022).

Blockchain is decentralized, secure, and distributed, offering reliable detail storage and access control. It integrates security, AI, and cloud storage, attracting attention in finance. Applications include digital currency, international settlement, insurance, and fin tech, driving innovation in financial services (Zhao & Meng, 2019) & (Javaid et al., 2022). Satoshi Nakomoto designed blockchain technology in 2008, integrating it into Bitcoin in 2009 with the release of the paper titled “Bitcoin : A Peer-to-Peer Electronic Cash System” on a cryptography mailing list. Blockchain functions as a secure digital data storage system that uses cryptography to protect its information. Data is added incrementally, creating a linear chain records that become immutable once entered, meaning they cannot be altered or deleted. This data is distributed across a network of thousand of interconnected computers known as nodes. Blockchain functions as a secure digital data storage system that uses cryptography to protect its information. Data is added incrementally, creating a linear chain of records that become immutable once entered, meaning they cannot be altered or deleted. The data is distributed across the net work of thousands of interconnect computers, known as Nodes (Amsyar et al., 2020) ; (Andrianto & Diputra, 2017) ; (Zhao & Meng, 2019) ; (Saksonova & Kuzmina-Merlino, 2019) & Almeida & Gonçalves, 2022).

Blockchain technology consists of two main types: decentralized (permissionless) and centralised (permissioned) systems. Decentralised blockchains, like Bitcoin and Ethereum, are open to all participants and offer secure, transparent transactions. In contrast, centralised blockchains, such as Ripple, are restricted to approved participants, providing greater control and privacy, making the suitable for business applications (Lewis et al., 2017) ; (Yadav et al., 2022).

The evolution of blockchain began during the 2007-2008 financial crisis, which eroded public trust in traditional financial systems. In 2008, the anonymous figure Satoshi Nakomoto published a white paper that introduced Bitcoin and the underlying blockchain technology, along with the proof-of-work consensus mechanism. Bitcoin's network launched in 2009, and by 2010, its market cap had surpassed $1 million between 2011 and 2016, cryptocurrency exchanges and alternative coins (altcoins) began to emerge, while platform like Ethereum and Coinbase boosted Bitcoin's value and legitimacy. In 2017, the cryptocurrency market reached its peak before experiencing a steep decline in 2018. However, interest in blockchain technology continued into 2019 as a new investors recognized Bitcoin's potential, and regulatory development further shaped the landscape (Yadav et al., 2022).

The process of adding a transition to the Blockchain involves several steps. First, it is confirmed that person A is the legal owner of the asset by referencing previous transaction. Once verified A and B agree on the transaction, which is then recorded in a new block. Both parties add their digital signature, and a cryptographic hash is calculated to link the new transaction to the blockchain. The blockchain's consensus mechanism confirms the transaction, after which the block is added to the chain and distributed to all network participants to update the master ledger (Lewis et al., 2017)

The global financial system struggles with high costs, delays, and data breaches. Blockchain technology can help by decentralizing processes, using smart contracts to secure transactions, and reducing reliance on intermediaries. Despite numerous fintech options, providers face challenges in selecting effective solutions. Overall, blockchain has the potential to address the critical issue and lower operational cost and finance. There are tools and methods in Blockchain which are used for financial domain-

1. Security enabled- GETH, PARITY, DRIZZLE, GORLI TESTNET
2. Transparent system- TIERION, REMIX, SOLC, MYTHX
3. Real-time tracking- INFURA, METAMASK, EMBARK, STATUS
4. Cost effective- WEB3.JS, TRUFFLE, ETHFIDDLE, GANACHE CLI (Javaid et al., 2022).

Several prominent companies including National Association of Securities Dealers Automated Quotations (NASDAQ), Global Banking Financial Telecommunications Association, Barclays Bank of the United Kingdom, , Hong Kong and Shanghai Banking Corporation (HSBC), and Internationale Nederlanden Groep (ING) are adopting blockchain technology for its numerous advantages (Zhao & Meng 2019). Blockchain enhances transparency and trustworthiness in cryptocurrency transactions by providing a secure, tamper- resistant platform for recording data, which can be easily tracked, making it dependable system for managing and storing transaction records. (Chathurika, D. M. D., 2020).

Despite its potential, blockchain technology faces various technical and business challenges, such as achieving consensus, standardization, interoperability, scalability, efficiency, immutability, and liquidity. (Lewis et al., 2017). Nevertheless, blockchain offers promising application across multiple sectors, including digital assets, cryptocurrencies, digital record keeping, smart contracts, and faster payment solution. (Lewis et al., 2017).

In India, the approach to cryptocurrency has evolved from caution to a more structured regulatory framework. Initially, the RBI issued warnings (2013-2017) and proposed stringent penalties in 2019. However, in 2020, the Supreme Court lifted restrictions on cryptocurrency, sparking increased interest. By 2021, the government had shifted focus to regulation over prohibition, promoting research. The 2022-23 Union budget included a 30% tax on cryptocurrency profit and a 1% TDS on digital asset transfers, signaling official recognition, while the RBI planned a central bank currency launch by 2023. Despite these steps, cryptocurrencies legal status in India remain uncertain, with further regulation anticipated (Shukla et al., 2022).

Cryptocurrency, however, face broader challenges, including security threats, risk of system collapse, volatility, and concerns around money laundering and black- market use (Jani, S., 2018). Countries vary in their stance on cryptocurrency: nations like Australia, Singapore, and the U.S. are crypto-friendly, while China and Brazil are resistant. Bitcoin, introduced by the pseudonymous Satoshi Nakamoto in 2009, revolutionized finance by operating without intermediaries and using cryptography to ensure only authorized users can access their funds (Amsyar et al., 2020).

Literature review

The investigation into the development of cryptocurrency in India notes significant events, including a 2019 ban, a 2020 the Supreme Court ruling that lifted it, and the introduction of a 30% tax on crypto in the 2022-23 Union Budget, which may discourage retail investors. It also highlights the government's plan to launch a Central Bank Digital Currency (CBDC) by 2023, signaling a shift toward digital finance. However, it points out ongoing regulatory uncertainty regarding the legal status of cryptocurrencies and potential future regulations (Shukla et al., 2022). Optimizing cryptocurrency investment portfolios to balance risk and return involves recommending diversification with both liquid and uncorrelated assets and using the Markowitz model for portfolio weighting. Findings from (Saksonova and Kuzmina-Merlino, 2019) indicate that diversification reduces risk, enhances conversion flexibility to fiat, and emphasizes the long-term investment potential of cryptocurrencies, depending on regulatory developments and market dynamics. The source code of Bitcoin has security vulnerabilities, including double spending, dust transactions, and code exploits,but these risks and securities can be mitigate by decentralization, a higher network hash rate, and ASICs (Bradbury, 2013).The substantive inefficiency of Bitcoin was characterized by non- random returns and strong anti-persistence. Initially, Bitcoin prices were stable before experiencing a surge in late 2013. This inefficiency persisted across both sub-sample periods, with the first showing clear anti-persistence and the second indicating no autocorrelation (Urquhart, 2016). Machine learning and Johnson test analysis show that cryptocurrency prices are co-integrated, with DASH and RIPPLE predicting Bitcoin prices. Supply-demand factors mainly drive volatility, while financial variables have less influence (Abraham, 2019). The performance of stocks and cryptocurrencies were compared with the use of financial metrics , finding that while cryptocurrencies pose greater risks and market instability, they offer higher short-term profit potential and better liquidity, whereas stocks provide more reliable long-term returns (Lan and Wang, 2023). The legal framework and mechanisms for granting credit with crypto asset collateral objects is explored by (Mulyani et al., 2022), and provides protection and legal certainty for the parties involved in the credit agreement. The study also highlights that Indonesian's current legal framework does not provide sufficient protection for creditors holding crypto asset collaterals. Additionally, the study notes that the fast-changing regulatory landscape could render some of its findings obsolete as laws and regulations evolve. Researches alike (Smutny et al., 2021) explores that motivations such as rapid value growth drive interest, significant barriers, including lack of information and perceived market instability, still hinder broader adoption, particularly among women and younger generations. The prospect theory was tested in the cryptocurrency market, with a model using prospect theory value (PTV) to predicts returns, discovering an inverse relationship between PTV and returns, particularly for smaller, volatile cryptocurrencies (Yadav, 2024). Behavioral finance, particularly herding prospect, and heuristic theory, significantly influence Arab investors' decision in the highly volatile cryptocurrency market, where social influence, perceived risks, and cognitive shortcuts playing key roles (Al-Mansour, 2020) . The psychological barrier in the cryptocurrency market affects Bitcoin, Dash, Litecoin, and Ripple exhibit these behavior, while Ethereum and NEM do not, and crossing these psychological price levels significantly impacts investor behavior and price movements, resulting in increased average returns over the following five days, suggesting opportunity for profitable trading strategies (Fonseca et al., 2019). The study by (Xi et al., 2019) explore the differences in investor profiles and preferences for ICOs between Australian and Chinese cryptocurrency investors, identifying key factors like age, gender, education, occupation and investment experience, and encounter variances in how each group ranks ICO attributes, deterrent factor, and investment strategies .

The technology awareness influences cryptocurrency users' behavioral intentions, revealing that it positively affects these intention through perceived usefulness. The study also shows that government support enhances this relationship by increasing perceived usefulness and reducing perceived risk, which further encourages frequency adoption (Sagheer et al., 2022). Similarly, the study (Chathurika, 2020) investigates the factors influencing the intention of university's student to use cryptocurrencies in Sri Lanka. The study finds that perceived trust, awareness, perceived usefulness, and perceived ease of use significantly affect students' decisions, with trust in the security and reliability of cryptocurrencies having the most substantial impact. These factors collectively explain 55% of the variation in students' intention to adopt cryptocurrencies.

The relationship between investor attention and cryptocurrency prices was investigated and discovering that investor attention significantly predicts return and volatility. The study also reveals that high auto high attention correlates with the positive returns, while lower attention leads to mixed outcomes, confirming its critical role in influencing market dynamics (Zhu et al., 2021). The study (Naeem et al., 2021) examines online investor sentiment

as a predictor of crypto considerations, comparing Twitter's happiness sentiment and the FEARS index. They find the Twitter sentiment significantly predicts return for major cryptocurrencies, outperforming Google sentiment. The study also indicates that the FEARS index can predict returns, particularly highlighting that the Happiness sentiment index forecasts Bitcoin and other major cryptocurrencies during extreme market condition, with the effect lasting up to 22 days. Researches such as (Guindy, 2021) examines the link between cryptocurrency price volatility and investor attention, finding that increased investment attention leads to higher price volatility. Conversely, during attention-grabbing event that distracted investors, cryptocurrency price volatility tends to decrease. Researches such as, (Akyildirim et al., 2021) analyze the link between cryptocurrency turns and sentiment using market psyche data finding that high market cap cryptocurrency dominate with returns influencing sentiment while bitcoins influence on return spillovers to altcoin is waning it remains strong in sentiments spillover . Cryptocurrency pricing is strongly influenced by investor sentiment, driven by herding and anchoring bias. Notably, cryptocurrency investors are less affected by broader market trends and respond mainly to sentiment specific to the crypto market (Gurdgiev and O'Loughlin, 2020). The impact of the COVID-19 crisis on investment education and behavior among young students was examined, finding an increased interest in investing, particularly among males. Most students aged 18-20 use pocket money or freelance earning for investments, with factors such as educational resources and peer influence significantly shaping their investment amounts (Ashish & Fazalbhoy, 2022). The relationships among financial literacy, investment activities, and environmental factors on investment awareness investigated in young individuals and finds that financial literacy and personal interest significantly enhance investment awareness, while environmental factors do not have a notable impact (Azhar et al., 2017). The investment behavior of retired and working adults was analyzed, revealing that while Indians generally show positive financial attitudes, men possess more financial knowledge than women, who exhibit better financial behavior. Higher-income and married individual prioritize saving, with most starting retirement planning early and preferring safe investments. However, awareness of financial products remains low (Agarwalla et al., 2012). The impact of technical analysis on cryptocurrency investment returns in Indonesia was inquired into, concluding that price trends and technical indicators are useful for predicting returns, while asset volume and supply are not significant (Ilham et al., 2022). The Bitcoin investors tend to display traits like a higher desire for novelty, lower cooperativeness, and increased psychological challenges like anxiety and fear of missing out. Key factors influencing Bitcoin investment include personality traits, investment behaviors, and a tendency for loss-chasing (Kim et al., 2020). The institutional investment pattern strongly influence the cryptocurrency market, with cryptocurrencies sharing common institutional investors showing similar price movements and market behaviors. This suggest that institutional investors drive market trends, as their aligned preferences create synchronized behavior within groups of related cryptocurrencies (Mungo et al., 2024). The Cryptocurrency price movements were analyzed with neural networks, revealing that selected cryptocurrencies are cointegrated and that a Multi-layer perceptron neural network effectively predicts price patterns, highlighting the significant influence of market fundamentals on prices (Abraham, 2019). Speculative behavior and spillover effect in cryptocurrency prices were analyzed , revealing that speculative bubbles in major cryptocurrency (BTC, ETH, DOGE, XRP) from 2018 to 2021 were driven by both external factor like geopolitical uncertainties and internal factors like advancement in blockchain technology (Doğan and Yalçıntaş, 2023). Significant anti-herding is observed in static model, while fluctuations occurs in time-varying models, with heading increasing during high volatility and strong market indices (Youssef, 2020). The cryptocurrency investors can be grouped into optimist, pessimist, positive traders, and negative traders. Notably, Etherum investors adopt long-term strategies whereas Bitcoin users are most speculative, influenced by prevailing market conditions (Aspembitova et al., 2021). The financial literacy increases risk tolerance and regret while having negative effects on investment decision when regret is mediating factor (Chalimatuz Sa'diyah et al., 2024). Herding behavior and contagion in the cryptocurrency market were examined , revealing significant herding during high volatility. The contagion effects primarily affected Bitcoin, Etherum, and Ripple, while Stablecoins like Tether resist contagion. (Da Gama Silva et al., 2019). The herding behavior in major cryptocurrencies during volatile periods is influenced by weak regulations, which increase speculation. Investors are advised to monitor market trends to avoid panic selling. The Herding behavior in the COVID-19 cryptocurrency market was explored, finding significant herding during high volatility using the regime-switching model, while the CSAD model showed no such behavior (Jalal et al., 2020). The study highlights the role of media coverage in increasing panic, prompting investors to follow others rather than rely on their own insights (Youssef and Waked, 2022). The herding behavior in cryptocurrencies across different volatility regimes reveals that herding can create price bubbles in stable markets, while anti-herding occurs in volatile conditions and also highlights the dynamic

nature of investor behavior and calls for further research and caution for investors (Coskun et al., 2020). The trading behavior on the Mt. Gox Bitcoin exchange was examined from April 2011 to November 2013, focusing on the disposition effect and herding behavior. The study analyzes how these behaviors manifest during bullish and bearish market conditions, as well as how trading frequency, market trends, and data granularity influence them (Haryanto et al., 2019).

RESEARCH METHODOLOGY

This study uses a systematic literature review to analyze prior research, identify research gap, and define the scope for further exploration. NVIVO 14 was utilized to organize and extract relevant insights from literature. The databases consulted included Google Scholar, Science Direct, Emerald, and Elsevier. Marking Satoshi Nakamoto's 2008 introduction of cryptocurrency as a milestone, the researcher collected data from these sources spanning from January 1, 2009, to November 4, 2021.

The study adopted a broader scope of keywords, i.e. Cryptocurrency, cryptocurrencies, bitcoin, investment, herding behavior, sentiments, blockchain, cryptocurrency bubble, social media influence, demographic factors----without applying any restrictive terms. The search equation focused on the search within title, abstract, and author's keywords. The researcher included only academic journals written in English that focused on the cryptocurrencies from investors and investment perspective. The researcher have excluded the papers which did not meet the criteria and which were included as opinion pieces, or editorials.

For extracting the relevant data, researcher have go through different phases for systematic review process, i.e. in the initial search yielded a total of 100 results, which were then systematically refined, then researcher left with 80 papers. The first step involved NVIVO software in screening the titles to filter out irrelevant papers. This process led to the exclusion of research papers, duplicates, white papers, ACM digital materials, conference papers, book chapters, proceedings papers, and opinion articles. In the next phase, the abstracts and full texts were reviewed in detail, and any papers that did not address the concepts of cryptocurrency and were discarded. Ultimately, the researcher was left with 52 peer-reviewed papers.

Discussion

Word frequency analysis is a technique used to identify the frequency of specific words or phrases in a text, revealing key themes and concepts. It is commonly applied in linguistics, text mining, qualitative research, and literature reviews, often using software like NVIVO. NVIVO allows researchers to customize stop word lists, group similar terms, and analyze word usage context, making it especially useful for qualitative research.

In this analysis, text data was imported into NVIVO, and a Word Frequency Query was conducted to find the most frequently used words. The results are presented in word clouds and tables, such as Table 1, which lists the top 15 words with a weighted percentage of less than 0.22%. The most prominent word identified is "cryptocurrency," followed by terms like "blockchain," "markets," "bitcoin," "invests," "investors," "technology," and "transactions." Overall, the query generated a list of 50 frequently recurring words in the literature.

Fig 1 word cloud

Table-1. Top 15 common words

cryptocurrency’	15	6443	1.21	’cryptocurrencies’, cryptocurr, cryptocurre, cryptocurrences, cryptocurrencies, cryptocurrencies', cryptocurrencies’, cryptocurrency, cryptocurrency’
blockchain’	11	3669	0.69	#blockchain, blockchain, blockchain’, blockchains, blockchains’
markets’	8	3480	0.65	market, marketability, marketer, marketers, marketing, markets, markets’
bitcoin’	8	3471	0.65	’bitcoin’, bitcoin, 'bitcoin, bitcoin’, bitcoins, bitcoins’
invests	7	2357	0.44	invest, invested, investing, investment, investments, investments’, invests
investors’	10	2256	0.42	investor, investors, investors', investors’
technology	10	2188	0.41	technological, technologically, technologies, technologies’, technology
transactions’	13	2019	0.38	transact, transacted, transacting, transaction, transactional, transactions, transactions’
financials	10	1917	0.36	financial, financially, financials, financiers
assets’	7	1658	0.31	asset, assets, assets’
pricing	7	1591	0.30	price, price’, priced, prices, prices’, pricing
behaviors	9	1404	0.26	behavior, behavioral, behaviors
financing	9	1341	0.25	financ, finance, finance’,

				financed, finances, financing
herding	7	1196	0.22	herd, herded, herding, herds
risks	5	1188	0.22	risk, risk', risking, risks

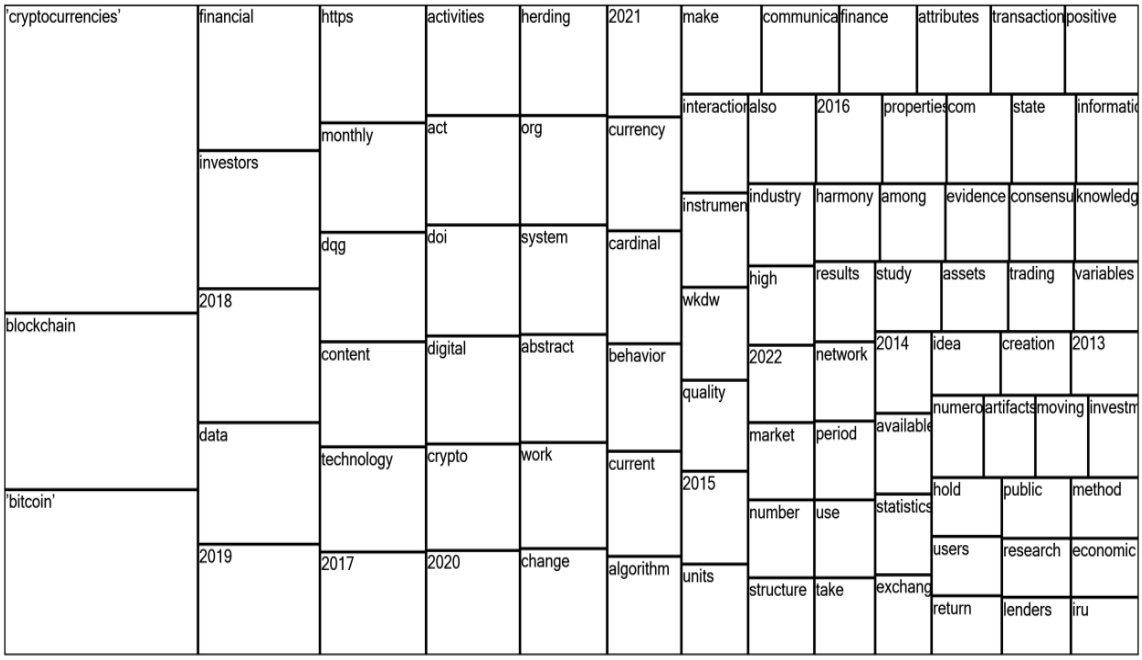


Fig 2 Word tree map

Figure 3 presents the hierarchical tree map chart, which visually organizes and depicts the relationships among different nodes or themes in qualitative data. This chart is instrumental in illustrating how various concepts are interconnected and structured hierarchically.

In this chart, the size of each rectangular box represents the significance, influence, or importance of a particular aspect or dimension of cryptocurrency and its effects.

As shown in Figure 3, the **factors affecting the investment behavior of cryptocurrency investors** (indicated in green) are highlighted, revealing a substantial number of references along with their sub-themes, including **Age, Gender, Behavioral Intention, Heuristic Factors, Prior Experience, Prospect, Governance, and the Cryptocurrency bubble.** These themes explore the demographic and psychological factors that shape individuals' investment choices in cryptocurrency. The theme of **herding behavior** (shown in purple) is also represented by a large block, indicating its significant references, suggesting that the tendency to follow others significantly contributes to the price volatility of cryptocurrencies.

A major theme is the **investor attention affects price** (depicted in gray), demonstrating that the attention investors allocate to cryptocurrencies greatly influences price movements. Related themes, such as **financial literacy, the disposition effect, and investor sentiment (**shown in various colors), indicate that an investor's knowledge, emotional responses, and overall attitude can impact their decisions, ultimately affecting market prices.

Another key theme highlights the **role of blockchain technology in securing transactions** (represented in brown), stressing its crucial role in ensuring the integrity and security of cryptocurrency exchanges. Additionally, the impact of social media on price volatility (illustrated in orange) is explored, showing how discussions, rumors, and news circulating on social media can lead to significant price changes. Finally, the chart addresses the **challenges faced by cryptocurrency and cryptocurrency investors, risks, and uncertainties** (shown in

blue, red, and gray) inherent in the cryptocurrency market, including technological risks and regulatory hurdles that add to market unpredictability.

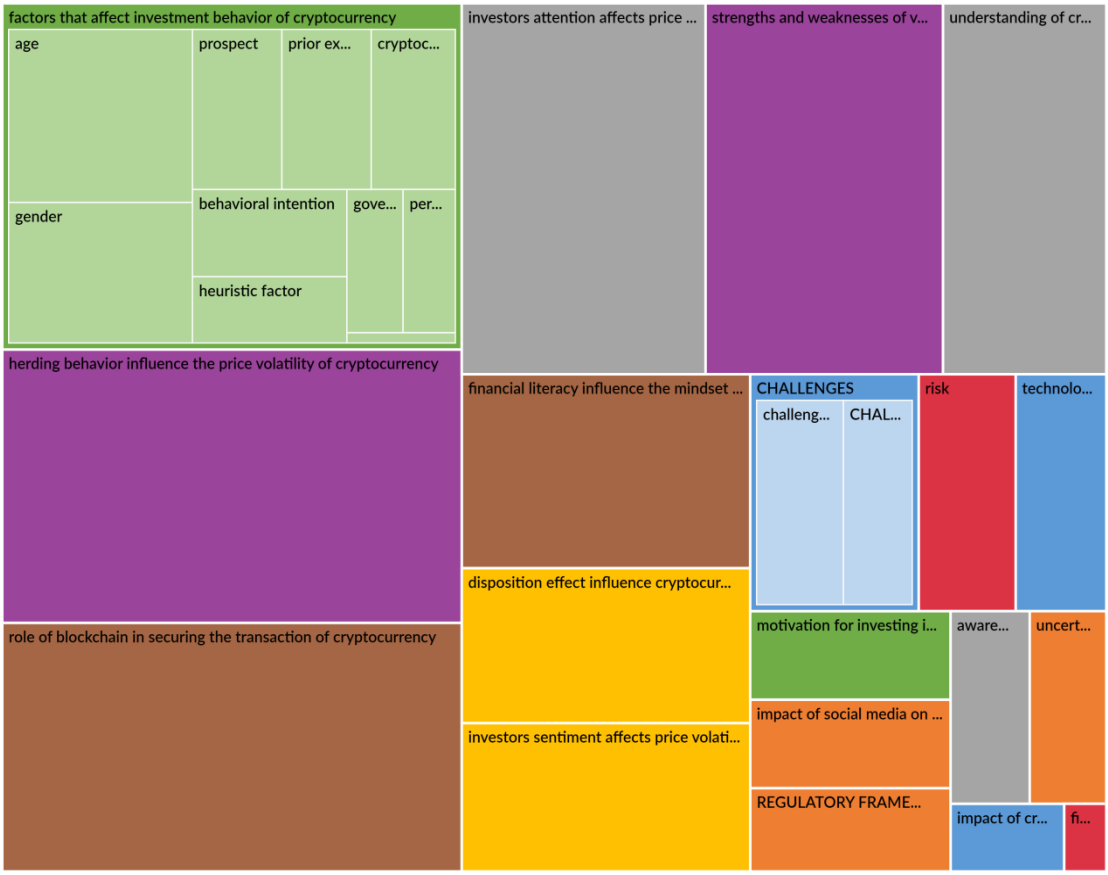
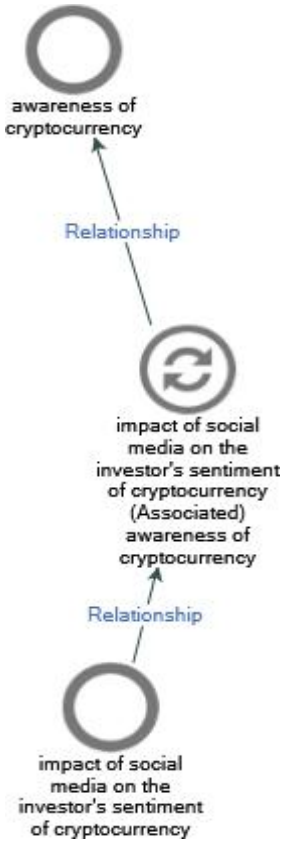


Fig 3 hierarchical Treemap chart

So this study can conclude that factors affecting investment behavior of cryptocurrency investor, role of blockchain, herding behavior, investors attention, financial literacy, the disposition effect, and investor sentiment are the most explored field of the cryptocurrency. And this study have identified the fields on which are least explored, i.e. challenges faced by cryptocurrency and its investor, regulatory framework of cryptocurrency, factors which are motivating the cryptocurrency investors, impact of social media, and how technology awareness can influence behavioral intention of investors. So the researcher can say these are the research gap on which further researches can be conducted.

We have identified the relationship between social media and awareness of cryptocurrency through NVIVO 14 software. This relationship explains that how social media is affecting the awareness of cryptocurrency among investors.

SOCIAL MEDIA- Social media significantly influences cryptocurrency prices by fostering sentiment-driven trading that often overshadows fundamental analysis (Gurdgiev & O'Loughlin, 2020). Factors like the Fear of Missing Out (FoMO) and retail investor engagement contribute to Bitcoin's volatility, with tweet volume and sentiment impacting market fluctuations (Kim et al., 2020; Guindy, 2021). Investor awareness, shaped by social media and personal recommendations, also affects investment decisions (Nurbarani & Soepriyanto, 2022). Research shows that positive sentiment in tweets and news leads to lower Bitcoin returns, while negative sentiment results in higher returns (Cao & Rhue, 2019). Events like the COVID-19 pandemic have increased non-professional traders, making social media sentiment often more influential than macroeconomic news (Coskun et al., 2020; Naeem et al., 2021). The lack of fundamental value in cryptocurrencies amplifies the role of sentiment in driving volatility (Abraham, 2019; Sakariyahu et al., 2024; Ashish & Fazalbhoy, 2022; Youssef & Waked, 2022).



AWARENESS OF CRYPTOCURRENCY- Surveys reveal a critical need for enhanced financial education, particularly in India, where only 7% of employees and 9% of retirees are aware of common financial products (Agarwalla et al., 2012). In Germany, 66% are aware of cryptocurrencies, but only 4% consider themselves knowledgeable, while 58% in the UK and over 32% of American retirees remain unaware (Steinmetz et al., 2021). Young people's investment awareness is shaped by their understanding of investing's importance and risks, alongside personal interests in low-risk options like gold and mutual funds (Azhar et al., 2017). Cryptocurrency awareness is growing, particularly in Malaysia, but security concerns and government policies hinder adoption in developing countries. Media significantly influences investment decisions, impacting user interest and market stability (Nurbarani & Soepriyanto, 2022; Mahamud et al., 2019; Vejačka, 2014). Overall, awareness is essential for cryptocurrency investments, with demographic factors having minimal impact.

The study conclude that Social media plays a crucial role in raising cryptocurrency awareness by providing real-time updates, educational content, and fostering investor communities. Platforms like Reddit and Twitter influence investment decisions through peer influence, hype, and FOMO, while influencers and campaigns promote new projects. Overall, social media is a key driver of knowledge and engagement in cryptocurrency markets.

LIMITATIONS

The limitations of this study include a restricted sample of 52 studies, which may not fully capture the broad and fast evolving cryptocurrency landscape. The analysis is also dependent on NVIVO software, which while effective for thematic analysis, may miss more nuanced insights. Additionally, the review's focus on certain field of knowledge might overlook interdisciplinary perspective, and its coverage only up to 2021 leaves out newer research that could further inform the findings.

CONCLUSION

In conclusion, the review paper reveals significant insights into the factors influencing cryptocurrency investment behavior, including demographic, psychological, and social drivers, alongside the vital role of blockchain technology. It identifies key research gap in regulatory framework, investor motivation, and impact of social media, urging further studies in these areas while the review offer the value available perspective for researchers and practitioners,

limitations such as sample size and reliance on specific analytical tools suggest that future research should broaden the literature scope and incorporate new newer findings to strengthen understanding in the fast-.evolving field.

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