Mapping Public Interest in Cryptocurrency in Indonesia (2021–2024): Analyzing Geographical Disparities and Temporal Trends

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Mapping Public Interest in Cryptocurrency in Indonesia (2021–2024): Analyzing Geographical Disparities and Temporal Trends

Wawan Gunawan*, Debashish Sharma

Abstract

This study investigates public interest in cryptocurrency in Indonesia, focusing on related queries, geographical distribution, and temporal trends. Utilizing a quantitative descriptive approach with secondary data from Google Trends (January 2021–December 2024), the findings reveal that cryptocurrency is predominantly perceived as a trading tool, with terms like *trading* and *crypto* dominating search queries. Geographical analysis highlights significant regional disparities, with Bali demonstrating the highest interest due to its global connectivity and digitally literate population, while Nusa Tenggara Timur reflects challenges such as limited infrastructure and financial literacy. Temporal trends show fluctuations aligned with global market events and regulatory developments, stabilizing in 2023–2024 as public perceptions matured. These results emphasize the need for public education to broaden understanding beyond speculative trading and for inclusive strategies to address regional and educational gaps. This study contributes to the literature by offering a novel framework integrating geographical and temporal analyses, providing actionable insights for policymakers and stakeholders to foster equitable and sustainable cryptocurrency adoption in emerging markets.

Keywords: Cryptocurrency; Geographical Distribution; Temporal Trends; Financial Literacy; Emerging Markets

Publisher's Note:

INTRODUCTION

Cryptocurrency, as an innovation in digital financial technology, has garnered global attention, including in Indonesia. As a decentralized digital currency system based on blockchain technology, cryptocurrency offers numerous advantages such as secure transactions, low transfer fees, and accessibility. However, alongside these benefits, cryptocurrency poses significant challenges, including price volatility, regulatory uncertainties, and cybersecurity risks [1], [2], [3], [4]. In Indonesia, the adoption of cryptocurrency has shown a growing trend, particularly during the COVID-19 pandemic, when the public began seeking more flexible investment alternatives [5], [6], [7], [8]. Despite this trend, the distribution of interest in cryptocurrency across various regions in Indonesia has not been thoroughly explored. Previous studies have revealed that interest in cryptocurrency is unevenly distributed globally and regionally. For instance, El Hajj [9] found that the popularity of cryptocurrency tends to concentrate in regions with higher levels of digital literacy. Another study by Allen et al. [10] indicated that search trends for cryptocurrency on digital platforms could serve as an early indicator of financial technology adoption in a given area. In Indonesia, El Chaarani [11] highlighted that public interest in cryptocurrency is influenced by internet accessibility, financial literacy, and perceptions of government regulations. However, their study did not provide a detailed analysis of the geographical distribution of cryptocurrency interest at the provincial level.

Temporal trends reflecting fluctuations in public interest toward cryptocurrency also require further examination. According to Wasiuzzaman [12], spikes in cryptocurrency interest are often triggered by global events such as Bitcoin price surges or regulatory announcements. However, in Indonesia, research linking temporal dynamics with geographical distribution remains limited. This study contributes to the literature by offering a novel perspective through the integration of geographical and temporal analyses of cryptocurrency interest in Indonesia using real-time data from Google Trends. This approach enables the identification of regions with high adoption potential for cryptocurrency and provides insights into the temporal patterns influencing public interest. As such, this research offers new contributions to the understanding of cryptocurrency trends in Indonesia through digital data exploration, an area that has not been extensively studied. Moreover, the findings of this research hold significant practical implications. For policymakers, the data can serve as a basis for designing targeted cryptocurrency regulations in regions with high public interest. For industry players, the results can guide marketing or educational strategies tailored to regional needs. Thus, this study not only holds academic relevance but also offers tangible impacts in supporting the growth of the cryptocurrency ecosystem in Indonesia.

METHODS

This study employs a quantitative descriptive approach using secondary data from Google Trends to analyze public interest in cryptocurrency in Indonesia. The research is designed to identify patterns of geographical and temporal distribution, as well as related search queries, reflecting public attention to the topic.

Research Design

This research aims to address three main objectives:

1. Related Queries: To identify the most popular search terms related to cryptocurrency in Indonesia.
2. Geographical Distribution: To analyze regions in Indonesia with the highest levels of interest in cryptocurrency.
3. Temporal Trends: To examine changes in public interest in cryptocurrency over time.

Data Source

The primary data source for this research is Google Trends, which provides real-time information aggregated and anonymized based on user search behavior. This tool offers data categorized by time, geographical regions, and search term popularity, enabling the study of public interest in cryptocurrency across Indonesia.

Data Collection

Data collection in this study involved three main components to comprehensively examine the dynamics of cryptocurrency adoption. First, related queries were analyzed by identifying search terms associated with the primary keyword "cryptocurrency." The top five queries were extracted to discern public focus on the topic, with data exported in CSV format for detailed analysis. Second, geographical distribution data was gathered by filtering regional interest specifically for Indonesia. Popularity was quantified using a relative scale of 0–100, where a score of 100 indicated the highest level of interest within a region. This approach allowed for a focused understanding of regional variations in cryptocurrency interest. Lastly, temporal trends were explored through time-series data spanning January 2021 to December 2024. This period was deliberately chosen to capture key developments in cryptocurrency adoption both during and after the COVID-19 pandemic, providing a robust temporal context for understanding shifts in public interest and engagement with cryptocurrency. Together, these components ensured a comprehensive and methodical approach to data collection, enabling nuanced insights into the adoption patterns of cryptocurrency.

Data Analysis

1. Analysis of Related Queries: Related queries were analyzed using descriptive statistics to identify the most searched terms. Additionally, content analysis was conducted to provide contextual insights into the relevance of the queries to cryptocurrency.
2. Geographical Distribution Analysis: Regional data was visualized using software tools such as Tableau and Python (*seaborn* and *matplotlib*) to generate heatmaps. Geographical distribution was compared to identify regions with the highest interest and explore potential influencing factors, such as internet penetration, urbanization, or financial literacy.
3. Temporal Trends Analysis: Temporal trends were analyzed using time-series analysis to identify patterns and fluctuations in interest. Peaks in interest were examined in relation to global events, such as cryptocurrency price surges, regulatory changes, or new asset launches.
4. Data Validation: The data from Google Trends was validated through triangulation with secondary sources, including internet penetration reports from the Indonesian Internet

Service Providers Association (APJII), cryptocurrency transaction reports in Indonesia, and news articles about major events affecting public interest.

Research Limitations

1. Data Representation: Google Trends data reflects the interest of internet users who use the Google search engine, which may not fully represent the entire Indonesian population.
2. Relative Scale: The data is presented on a relative scale (0–100) rather than absolute search volumes, limiting precise quantitative comparisons.
3. Query Interpretation: Search queries may represent curiosity rather than genuine interest in cryptocurrency.

RESULT AND DISCUSSIONS

Related Queries

Table 1. Top 5 Related Search Queries for Cryptocurrency in Indonesia

No	Query	Popularity Score
1	trading	100
2	crypto	94
3	trading crypto	85
4	cara trading	13
5	cara trading crypto	12

The analysis of related queries from Google Trends provides a clear indication of how the Indonesian public perceives and interacts with cryptocurrency. The top five related search terms *trading* (100), *crypto* (94), *trading crypto* (85), *cara trading* (13), and *cara trading crypto* (12) highlight a strong focus on trading activities and methods. This emphasis on trading suggests that cryptocurrency is predominantly viewed as a financial instrument, aligning with findings by White et al. [13], which indicate that emerging markets often regard cryptocurrency as an investment vehicle rather than a multifaceted technological innovation. The dominance of the terms *trading* and *crypto* reflects widespread interest in speculative opportunities, driven by the potential for high returns. This behavior may be influenced by global trends, such as cryptocurrency's increasing popularity as an alternative investment during the COVID-19 pandemic. However, the relatively lower popularity scores for *cara trading* and *cara trading crypto* point to a knowledge gap regarding the practical aspects of engaging in cryptocurrency trading. This discrepancy indicates that while many individuals are drawn to the financial possibilities of cryptocurrency, a significant portion lacks the technical skills or understanding to participate effectively. This finding is consistent with K. M. Anwarul Islam and Muhammad Saifuddin Khan [14], who emphasized that digital literacy plays a crucial role in enabling broader participation in financial technologies.

The limited interest in technical queries such as *cara trading* suggests that public enthusiasm for cryptocurrency in Indonesia is not matched by adequate resources or educational support. This gap presents an opportunity for targeted interventions by industry stakeholders, educational institutions, and policymakers. For example, cryptocurrency exchanges and platforms could develop localized educational materials and training programs that focus on the fundamentals of trading, risk management, and the use of trading platforms. Such initiatives could empower individuals to engage more confidently and responsibly in cryptocurrency trading, reducing the risks of financial loss and susceptibility to scams.

Furthermore, the findings suggest that the public's perception of cryptocurrency remains narrow, focusing primarily on its speculative aspects while overlooking its broader applications. Blockchain technology, which underpins cryptocurrency, offers diverse possibilities, including

secure payment systems, decentralized finance (DeFi), and innovative use cases in supply chain management and identity verification. Public education campaigns highlighting these broader applications could help shift perceptions and unlock cryptocurrency's potential to address real-world problems beyond investment. The gap in knowledge revealed by the low scores for *cara trading* also aligns with findings by Kusumawardhani et al. [15], who observed that financial literacy and digital literacy are key barriers to technology adoption in Indonesia. Addressing this gap requires a multi-stakeholder approach. Policymakers could incorporate cryptocurrency education into national financial literacy programs, particularly in regions where digital infrastructure is developing. Such initiatives should prioritize inclusivity, ensuring that content is accessible to diverse audiences, including those in underserved communities with limited access to digital technologies.

Additionally, this analysis of related queries provides valuable insights for future research and market strategies. For researchers, these findings underscore the importance of examining the relationship between public interest and education levels, as well as the impact of targeted campaigns on changing perceptions over time. For market players, understanding the nuances of public queries can inform the development of marketing strategies tailored to the specific needs and knowledge levels of Indonesian users. For instance, platforms could focus their outreach on explaining fundamental trading concepts and addressing common misconceptions about cryptocurrency. In conclusion, the analysis of related queries reveals both opportunities and challenges in fostering cryptocurrency adoption in Indonesia. While the strong interest in trading demonstrates a growing awareness of cryptocurrency as a financial tool, the lack of technical understanding highlights the critical need for educational initiatives. By addressing these gaps, stakeholders can help cultivate a more informed and inclusive ecosystem, enabling broader and more responsible engagement with cryptocurrency and its underlying technologies. These efforts will not only enhance public confidence but also contribute to the sustainable development of the cryptocurrency market in Indonesia.
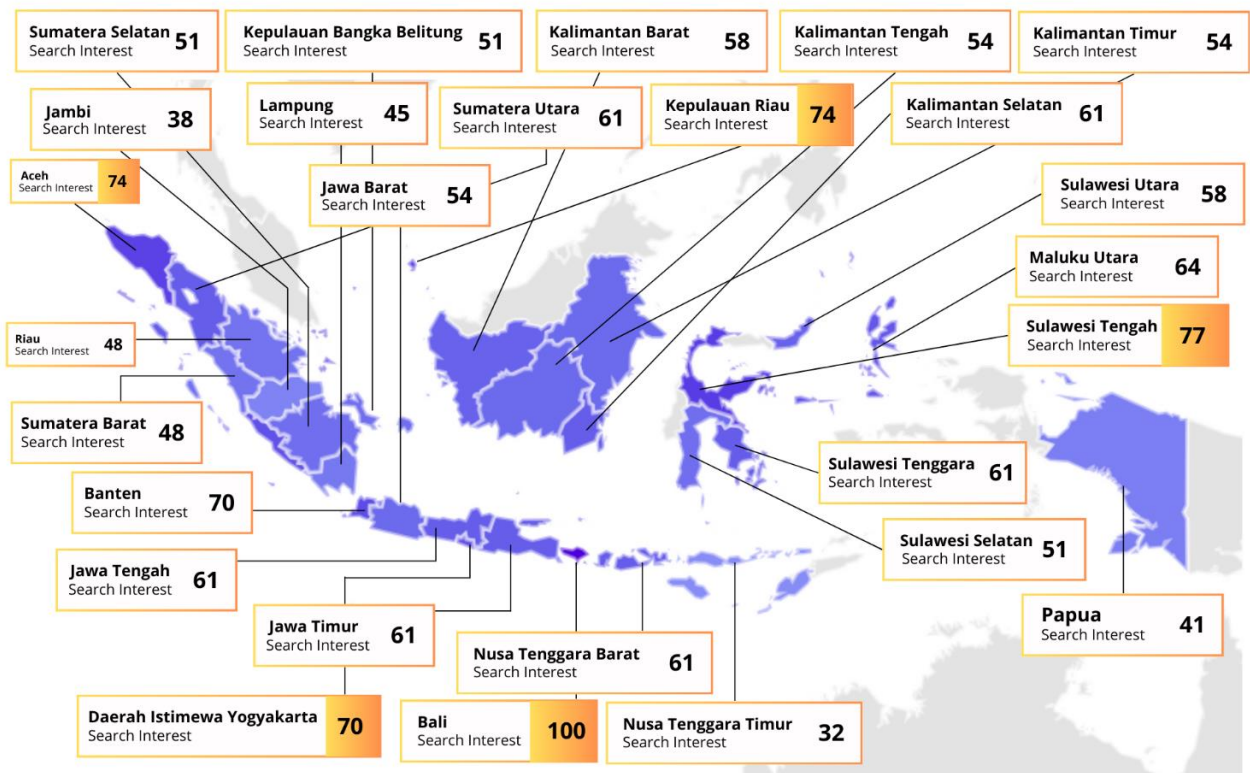
Geographical Distribution

Figure 1. Geographical Distribution of Cryptocurrency Interest in Indonesia

WISE Pendidikan Indonesia

An analysis of search interest trends in cryptocurrency across Indonesia reveals notable variations among provinces, stretching from Sabang to Merauke. Drawing on normalized online search index data within a 0–100 range, each province displays a value indicative of its search intensity for digital currencies. Bali emerges with the highest score (100), reflecting robust public enthusiasm likely spurred by its standing as an international tourist hotspot and a hub for expatriates and digital nomads. Meanwhile, Sulawesi Tengah (77), Aceh (74), and the Kepulauan Riau (74) also register elevated search trends, underscoring the importance of socioeconomic factors and digital infrastructure in these areas.

These findings align with several regional developments, such as heightened interest in Banten and the Daerah Istimewa Yogyakarta (both at 70), which appears to be supported by local economic growth, enhanced digital literacy, and concerted government initiatives. Provinces with substantial populations namely Jawa Barat (54), Jawa Timur (61), and Jawa Tengah (61) demonstrate relatively stable levels of interest. In contrast, Nusa Tenggara Timur (32) exhibits the lowest score, suggesting ongoing challenges related to internet accessibility, digital financial literacy, and limited public education initiatives concerning cryptocurrency. Overall, the analysis indicates marked regional disparities driven by technological infrastructure, demographic factors, tourism trends, and economic dynamics. Provinces endowed with more advanced digital ecosystems and a vibrant tourism sector generally report stronger interest, while those constrained by limited internet coverage and digital literacy rank considerably lower. These insights provide a foundational reference for policymakers and industry stakeholders seeking to formulate adaptive strategies for cryptocurrency ecosystem development at the provincial level. Increased digital literacy, broader internet reach, and synergies with local economic sectors are projected to further stimulate sustainable cryptocurrency adoption throughout Indonesia. The geographical analysis reveals the following top regions in Indonesia with the highest interest in cryptocurrency:

Table 2. Geographical Distribution of Cryptocurrency Interest in Indonesia

Region	Interest Score
Bali	100
Sulawesi Tengah	77
Kepulauan Riau	74
Aceh	74
Daerah Istimewa Yogyakarta	70

Bali, as the region with the highest score (100), is likely influenced by its role as an international hub for tourism and expatriates, many of whom may have greater familiarity with cryptocurrency. This finding is consistent with Linh Thi My Nguyen and Phong Thanh Nguyen [16], who reported that regions with strong international connections tend to have higher cryptocurrency adoption rates.

The interest in regions like Sulawesi Tengah (77) and Kepulauan Riau (74) may be linked to economic activities such as trade and resource extraction, where cryptocurrency could serve as an alternative financial mechanism. Meanwhile, Daerah Istimewa Yogyakarta (70), a known center for education, indicates that younger, digitally literate populations might be driving the interest in cryptocurrency. Interestingly, Jakarta, the capital city and Indonesia's economic hub, did not rank in the top five regions. This may suggest that cryptocurrency interest is more distributed and not confined to traditional financial centers, underscoring the decentralized nature of cryptocurrency as a technology.
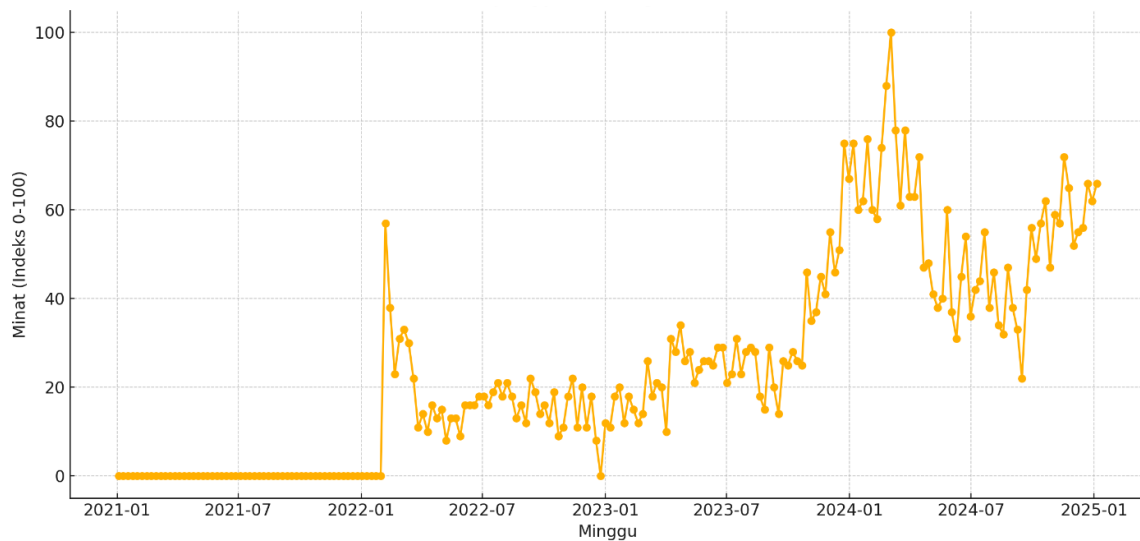
Temporal Trends

Figure 2. Temporal Trends of Cryptocurrency Interest in Indonesia (2021–2024)

An analysis of trends in Indonesian interest in cryptocurrencies over the period 2021 to 2024 shows significant fluctuations, reflecting the dynamics of public attention to this topic. The data, taken from Google Trends, illustrates a pattern of increasing and decreasing interest that is influenced by various external factors, such as global economic events, cryptocurrency exchange rate fluctuations, or local regulations affecting the crypto market. The graph shows that there are peaks of interest at certain periods of time, which are most likely caused by major events, such as a sharp rise in the price of Bitcoin or important announcements from financial institutions regarding digital assets. On the other hand, there are periods of more stable interest levels, which suggests that while cryptocurrencies receive significant attention at any given time, interest in them tends to stay at a certain level consistently. A decline in some time intervals may indicate a diversion of public attention to other issues or a decrease in market activity. Overall, this pattern suggests that cryptocurrencies have strong appeal, but public attention to them is highly sensitive to market developments and related news. This research provides initial insights into the dynamics of public interest that can be used to understand the adoption of new financial technologies in Indonesia. The time-series analysis from January 2021 to December 2024 reveals significant fluctuations in public interest in cryptocurrency:

Initial Growth (Early 2021)
Public interest in cryptocurrency began to rise in early 2021, coinciding with global events such as Bitcoin's record price surge in April 2021. The surge in interest during this period suggests a strong correlation between market performance and public attention.

Volatility Period (Mid-2022)
A noticeable decline in interest occurred during mid-2022, coinciding with a major downturn in global cryptocurrency markets, often referred to as the *crypto winter*. This period likely dampened public enthusiasm due to widespread losses among investors.

Recovery and Stabilization (2023–2024)
Interest began to stabilize in 2023 and 2024, likely influenced by increasing institutional adoption and regulatory discussions in Indonesia. Announcements from Bank Indonesia and the Financial Services Authority (OJK) about potential frameworks for regulating cryptocurrency may have restored public confidence.

The temporal trends align with Zhang et al. [17] and Marugappan et al. [18], who highlighted the sensitivity of cryptocurrency interest to global market trends and regulatory events.

However, the findings also emphasize that local regulatory developments significantly impact public interest in the Indonesian context.

Discussion

The findings of this study provide critical insights into the dynamics of cryptocurrency interest in Indonesia, highlighting significant geographical and temporal variations. The dominance of Bali in the geographical analysis aligns with its international reputation as a hub for tourism and digital nomads, echoing findings by Saiedi et al. [19], who emphasized the role of global connectivity in driving cryptocurrency adoption. Similarly, the high interest in regions such as Sulawesi Tengah and the Kepulauan Riau underscores the influence of local economic activities and resource-based industries, where cryptocurrency is perceived as an alternative financial tool. In contrast, regions like Nusa Tenggara Timur exhibit significantly lower interest, consistent with findings from Adel [20], which identified digital infrastructure and financial literacy gaps as major barriers to technological adoption in less-developed areas. Temporal trends further reveal the sensitivity of public interest to external factors such as market performance and regulatory developments. Peaks during Bitcoin's price surges and notable regulatory announcements align with the observations of George Vlahavas and Athena Vakali [21], who identified similar patterns in emerging markets. The stabilization of interest in 2023–2024, driven by institutional adoption and regulatory clarity, reflects a maturation of public perceptions toward cryptocurrency, suggesting a shift from speculative enthusiasm to more structured adoption. These trends underline the critical role of regulatory frameworks and public education in sustaining cryptocurrency adoption, as highlighted in previous studies such as Tan et al. [22]. This study's novelty lies in its integration of geographical and temporal analyses using real-time digital search data, offering a comprehensive framework for understanding cryptocurrency interest in an emerging market. Unlike prior studies that primarily focused on global or macroeconomic trends, this research delves into the localized context of Indonesia, mapping regional disparities and correlating them with socioeconomic and infrastructural factors. Furthermore, by examining search queries, this study identifies a critical gap in public knowledge about cryptocurrency trading, emphasizing the need for targeted educational initiatives. The findings extend the existing literature by providing actionable insights for policymakers and industry stakeholders, including the need for adaptive strategies to address digital literacy disparities and foster equitable access to cryptocurrency technologies across diverse regions. This integrated approach contributes to a deeper understanding of how technological adoption unfolds in emerging markets, offering a replicable model for future research.

CONCLUSION

This study underscores the multifaceted dynamics of cryptocurrency interest in Indonesia, revealing significant geographical and temporal variations shaped by digital infrastructure, socioeconomic factors, and market trends. Regions like Bali demonstrate high levels of interest due to their global connectivity and digitally literate populations, while areas such as Nusa Tenggara Timur highlight the persistent challenges of limited internet access and financial literacy. Temporal analysis indicates the strong influence of market performance and regulatory events on public interest, with periods of growth, volatility, and stabilization reflecting broader global and local trends. By integrating geographical and temporal perspectives with search query analysis, this research offers a novel framework for understanding cryptocurrency adoption in emerging markets. The findings provide actionable insights for policymakers and industry stakeholders, emphasizing the importance of localized strategies to address infrastructure gaps, enhance public education, and foster inclusive access to cryptocurrency technologies. As such, this study contributes to advancing

knowledge on digital financial adoption while offering practical recommendations for sustainable ecosystem development.

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AUTHORS CONTRIBUTIONS

WG and DS contributed to this study. WG conceptualized the research, designed the methodology, and supervised the overall project. DS managed data collection, conducted statistical analyses, and prepared the visualizations. WG contributed to the literature review, data interpretation, and drafting of the discussion section. DS critically revised the manuscript to ensure academic rigor and compliance with international journal standards. All authors reviewed, edited, and approved the final version of the manuscript, agreeing to be accountable for all aspects of the work.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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