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An Econophysics-Based Reinforcement Of The Indonesian Ulema Council (Mui) Fatwa On Cryptocurrency – Preliminary Study Of Dinar Dirham

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Abstract
This study explores the strengthening of the Indonesian Ulema Council (Majelis Ulama Indonesia/MUI) fatwa on cryptocurrency through an econophysics-based approach. Cryptocurrency has emerged as a disruptive financial innovation, offering efficiency in transactions and decentralized control, yet it also raises significant ethical, legal, and economic challenges, particularly within the framework of Islamic finance. Previous MUI fatwas have addressed cryptocurrency primarily from the perspective of Islamic jurisprudence, focusing on its uncertainty (gharar), speculation (maysir), and compliance with Sharia principles. However, such normative evaluations are often insufficient to capture the complex and dynamic behaviors of cryptocurrency markets. This research proposes the integration of econophysics—a discipline that applies methods and models from physics to analyze economic phenomena—to provide a more comprehensive basis for fatwa formulation. By employing models of volatility, complexity, and systemic risk, econophysics offers empirical insights into the speculative tendencies, stability, and long-term sustainability of cryptocurrency. Strengthening the MUI fatwa with an econophysics perspective enables a more evidence-based, interdisciplinary, and contextually relevant framework that bridges Sharia law with modern financial dynamics. This approach not only enhances the credibility and adaptability of Islamic legal rulings but also contributes to policy development in Indonesia's financial sector. Ultimately, the study highlights the importance of combining normative religious judgments with scientific analysis to address contemporary economic challenges, ensuring that Islamic finance remains both principled and responsive in the era of digital transformation.
Keywords: *MUI fatwa, cryptocurrency, econophysics, Islamic finance, Sharia compliance*

INTRODUCTION

The rapid advancement of digital technology over the past two decades has profoundly transformed the global financial landscape, with cryptocurrencies emerging as one of the most disruptive innovations. Since the introduction of Bitcoin in 2009, digital currencies have generated significant interest from academics, policymakers, investors, and religious scholars alike. Cryptocurrencies, built on blockchain technology, offer decentralized transaction mechanisms that bypass traditional financial intermediaries, thereby reshaping conventional understandings of value exchange, investment, and monetary systems (Nakamoto, 2008; Corbet et al., 2019). In Indonesia, the phenomenon of cryptocurrency adoption has gained increasing momentum, fueled by the country's young and tech-savvy population, rapid digitalization, and growing investment appetite. However, the rise of this innovation poses a unique challenge in societies where financial activities are closely tied not only to economic considerations but also to religious and ethical frameworks, such as those governed by Islamic law.

The Majelis Ulama Indonesia (MUI), as the highest Islamic clerical body in the country, plays a critical role in issuing fatwas that guide Muslim communities in navigating contemporary financial innovations. In 2021, the MUI declared that cryptocurrency was haram, or prohibited, due to elements of gharar (excessive uncertainty), maysir (gambling), and its incompatibility with the maqasid al-shariah principles that prioritize stability, justice, and social welfare (Majelis Ulama Indonesia, 2021). This fatwa sparked wide-ranging debates among scholars, regulators, and the public, particularly because cryptocurrencies continue to gain legitimacy in global markets, with many countries introducing regulatory frameworks to integrate them into formal economic systems (Baur et al., 2018; Dyhrberg, 2016). The tension between technological innovation and religious norms highlights the urgent need for more nuanced approaches in evaluating cryptocurrencies within the context of Islamic jurisprudence and financial stability.

One promising interdisciplinary approach to strengthen the legitimacy and applicability of the MUI fatwa is through econophysics, a field that applies methods and models from physics to analyze complex economic

and financial systems (Mantegna & Stanley, 2000). Econophysics provides analytical tools to study volatility, uncertainty, and systemic risk in financial markets, including cryptocurrencies, which are often characterized by extreme fluctuations, speculative bubbles, and non-linear dynamics (Ausloos, 2019; Kutner & Grech, 2020). By adopting econophysical insights, it is possible to demonstrate empirically how cryptocurrencies may exhibit characteristics akin to high-risk speculative instruments, thereby reinforcing the theological and ethical concerns raised by Islamic scholars. This interdisciplinary synthesis creates a more robust foundation for religious rulings, bridging the gap between traditional jurisprudence and modern financial analysis.

The emergence of cryptocurrency in Indonesia also intersects with broader issues of financial inclusion, regulatory governance, and socio-economic stability. On one hand, digital currencies are often promoted as tools for democratizing finance, enabling access to unbanked populations, and fostering innovation in digital payment systems (Narayanan et al., 2016). On the other hand, the unregulated nature of cryptocurrencies exposes investors, particularly retail participants, to heightened risks of fraud, market manipulation, and severe capital losses (Corbet et al., 2019). In a country where financial literacy levels remain relatively low, these risks can exacerbate vulnerabilities among ordinary citizens. For policymakers, therefore, the task is twofold: to safeguard consumers while fostering innovation that aligns with ethical and cultural values. Within this context, the MUI fatwa assumes greater significance, as it seeks to guide Muslim communities away from harmful practices while encouraging financial systems grounded in justice and stability.

From an epistemological perspective, strengthening the fatwa on cryptocurrency through econophysics underscores the need for transdisciplinary dialogue between religious scholarship and empirical sciences. Traditional Islamic finance relies on principles such as prohibition of riba (usury), avoidance of gharar, and promotion of risk-sharing and social justice (Chapra, 2000; Iqbal & Mirakhor, 2011). These principles, while timeless, require continual reinterpretation to address contemporary challenges brought about by digital innovation. Econophysics provides an additional lens that quantifies uncertainty and volatility, offering empirical evidence that complements the normative reasoning of Islamic jurisprudence. For instance, studies have shown that cryptocurrency markets exhibit heavy-tailed distributions and fractal dynamics, characteristics that amplify risk exposure far beyond that of conventional financial assets (Bariviera et al., 2017; Gkillas & Katsiampa, 2018). These findings reinforce the MUI's concerns regarding instability and speculative elements, lending scientific credibility to religious rulings.

Furthermore, situating the discussion within the Indonesian context provides unique insights into how religious authority interacts with global financial trends. Indonesia, as the world's largest Muslim-majority nation, has positioned itself as a leader in Islamic finance and halal economic development (Antonio et al., 2019). Strengthening fatwas through empirical and interdisciplinary analysis not only enhances their domestic legitimacy but also contributes to the global discourse on Islamic responses to fintech innovation. By incorporating econophysical evidence into the assessment of cryptocurrency, the MUI can present its rulings as both theologically grounded and scientifically substantiated, thus increasing their resonance beyond national borders.

At the same time, the discourse on cryptocurrency fatwas must grapple with the inherent complexity of defining cryptocurrencies themselves. Unlike fiat currencies, cryptocurrencies are not issued by central banks and lack intrinsic value or physical backing. Their worth is largely derived from network consensus, market sentiment, and speculative demand (Glaser et al., 2014). This ambiguity complicates their categorization within Islamic jurisprudence, which traditionally distinguishes between money, commodities, and speculative instruments. Some scholars argue that cryptocurrencies may serve as digital commodities, while others reject their validity altogether due to their volatile nature (Al-Shammari, 2021). In this regard, econophysics can provide clarity by demonstrating how the statistical properties of cryptocurrencies differ fundamentally from those of stable monetary assets, thereby reinforcing the rationale for prohibition under shariah principles.

The application of econophysics to Islamic finance is still in its infancy, but its potential is increasingly recognized. Previous studies have applied econophysical models to assess stock markets, commodity prices, and systemic risks in banking systems (Mantegna & Stanley, 2000; Ausloos, 2019). Extending these models to cryptocurrencies allows scholars to test hypotheses regarding volatility clustering, long-memory processes, and contagion effects, which can be used to substantiate theological arguments about instability and harm. By doing so, the fatwa is not merely a normative prohibition but an evidence-based guideline that integrates

scientific rigor with religious values. This integration enhances the credibility of Islamic finance in global academic and policy discussions, positioning Indonesia as a pioneer in linking religion, science, and technology.

The urgency of reinforcing the fatwa also stems from the socio-cultural dynamics of cryptocurrency adoption in Indonesia. The increasing popularity of crypto-investments among millennials and Gen-Z reflects broader trends in speculative behavior, influenced by social media, peer groups, and narratives of quick wealth accumulation (Hamzah & Basir, 2022). In this environment, fatwas serve as moral and ethical compasses that protect communities from financial harm while promoting socially responsible investment practices. However, without sufficient empirical backing, fatwas risk being dismissed as outdated or irrelevant in the eyes of younger generations. Thus, integrating econophysical analysis strengthens the fatwa's authority by demonstrating that its prohibitions are not merely theological assertions but are supported by observable patterns of risk and instability in financial markets.

In conclusion, the strengthening of the MUI fatwa on cryptocurrency through econophysics represents an innovative and necessary endeavor in bridging religious jurisprudence with modern scientific analysis. As cryptocurrencies continue to challenge conventional financial systems and ethical frameworks, the integration of normative Islamic principles with empirical evidence offers a more comprehensive basis for decision-making. This approach not only reinforces the legitimacy of religious rulings in Indonesia but also contributes to the global discourse on the ethical governance of financial technologies. By situating the discussion at the intersection of Islamic law, econophysics, and financial innovation, this study highlights the importance of interdisciplinary collaboration in addressing the complexities of the digital economy and safeguarding the values of justice, stability, and social welfare.

RESEARCH METHOD

This study employs a qualitative case study approach to analyze the development and collapse of Dinar Dirham Koin (DDK) as an Islamic cryptocurrency project in Southeast Asia. The case study method is appropriate because it allows for an in-depth examination of complex social, technological, and financial dynamics in their real-world context (Yin, 2018).

The research is based on secondary data collection, which includes project whitepapers, promotional materials, and official announcements issued by DDK and its affiliates. In addition, historical market data such as price fluctuations, capitalization, and trading volumes were obtained from online sources including CoinMarketCap and WalletInvestor. To ensure triangulation, academic literature on Islamic finance, gold-backed cryptocurrencies, and econophysics was also reviewed (Dyhrberg, 2016; Baur et al., 2018; Mantegna & Stanley, 1999). Complementary insights were drawn from community testimonies on platforms such as Steemit, which provided firsthand accounts of user experiences and challenges.

The analysis adopts a multi-dimensional framework. First, a thematic Shariah compliance analysis was conducted, guided by key Islamic financial principles such as the prohibitions of riba (usury), gharar (uncertainty), and maysir (gambling) (El-Gamal, 2006; Obaidullah, 2005). This step evaluated whether the project's claims of Shariah certification and gold backing were aligned with established standards set by institutions such as the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

Second, the study applies an econophysics perspective to examine DDK's market behavior. Price trajectories and trading patterns were analyzed in light of statistical physics models, particularly entropy dynamics and Ponzi-like decay structures (Yakovenko & Rosser, 2009). This approach provides insight into the volatility and eventual collapse of the token, revealing unsustainable system dynamics similar to those observed in speculative bubbles.

Third, a qualitative narrative analysis following the Miles and Huberman (1994) framework was employed. This involved reducing data to key themes, displaying relationships among Shariah claims, technological infrastructure, and community practices, and drawing conclusions by verifying inconsistencies between official claims and actual outcomes. This process allowed for the systematic identification of discrepancies between the project's narrative and investor experiences.

Data analysis was conducted iteratively, beginning with document and market data collection, followed by thematic coding and categorization. The results from each analytical framework were then synthesized to form

a holistic understanding of DDK. Triangulation across data sources and methods was used to enhance the reliability and validity of findings, reducing potential bias that may arise from reliance on a single analytical perspective (Patton, 2015).

In sum, this research method integrates financial data analysis, Islamic finance assessment, and qualitative evaluation to critically assess DDK's trajectory. By combining these approaches, the study highlights how the absence of transparency, weak governance, and questionable compliance mechanisms undermined the long-term sustainability of the project.

RESULT AND DISCUCSSION

The emergence of Dinar Dirham Koin (DDK) represents one of the notable attempts in Southeast Asia to merge blockchain technology with Islamic financial principles, particularly those grounded in gold-backed assets and community-based economic participation. The project was first introduced between 2016 and 2018, with its operational focus primarily in Malaysia and Indonesia. The very name "Dinar Dirham Koin" reflects its ambition to symbolize the historical role of dinar and dirham—currencies traditionally minted in gold and silver—as a digital representation of intrinsic value within a modernized blockchain ecosystem. This initiative was spearheaded by the Malaysian public figure Datuk Aray, who envisioned DDK as a blockchain-driven innovation in Islamic finance designed to empower communities through transparent, just, and asset-backed mechanisms.

The DDK project was closely associated with Dinar Dirham (DD), a fintech company specializing in digital gold investment. Officially headquartered in Hong Kong, the firm sought to extend its influence through branches in Malaysia, Singapore, Vietnam, and Cambodia, with additional expansion planned in Dubai and Jakarta. Its flagship products included the Dinar Coin (DNC) and the so-called Gold Smart Contract, which were launched in February 2016. Both products were marketed as attempts to combine the stability of gold with the transparency and efficiency of blockchain, thereby positioning DDK within the broader discourse of gold-backed cryptocurrencies (Dyhrberg, 2016; Baur et al., 2018).

The project's promotional claims revolved around several key advantages. First, it emphasized the liquidity and inflation-resistant nature of gold-based investment, highlighting the elimination of storage costs as one of its unique selling points. Second, blockchain technology was promoted as a guarantor of transparency, decentralization, and efficiency in transactions. Third, the system offered users both physical gold in the form of dinar coins and digital representations through DNC and ETPS tokens. These features were further integrated into a larger ecosystem encompassing digital wallets, an exchange platform (ICE), and transaction applications—an attempt to create a comprehensive financial infrastructure that paralleled conventional banking systems (Nakamoto, 2008; Yermack, 2017).

The Ethereum Tokenized Precious Metal (ETPS) platform constituted the operational core of DDK. Functioning as an ERC20 token, ETPS was presented as a digital certificate representing one gram of gold stored in a third-party vault. This claim was designed to reinforce the idea of intrinsic value, with users given the option to exchange ETPS into Dinar Coin, redeem them for physical gold, or hold them as digital savings. Within the platform, members engaged in staking, peer-to-peer transfers, and reward claims, which effectively turned ETPS into the locus of financial activity. While DDK maintained its own blockchain, most value transactions and systemic activities were managed through ETPS rather than decentralized public blockchains, raising questions regarding the actual level of decentralization and transparency (Tapscott & Tapscott, 2016).

From a technological perspective, DDK relied on Ethereum's infrastructure and marketed its Gold Smart Contract as a mechanism for linking Dinar Coin to gold prices in real time. The development of the platform was attributed to Fxbitlab Holdings Sdn Bhd, supported by co-founders such as Arai Ezzra, Ismail Malik, Stalian Balta, and Ville Oehman. Promotional materials also claimed partnerships with significant players in the cryptocurrency ecosystem, although such claims were often subject to skepticism due to limited verifiable evidence.

A defining characteristic of DDK was its emphasis on community engagement through staking and referral systems. Users were incentivized to acquire and stake DDK for a predetermined period in order to obtain a promised return on investment (ROI), while simultaneously recruiting new members to expand the

community. This mechanism placed DDK's growth model closer to community-driven finance structures, although critics have argued that the reliance on referral-based expansion blurred the line between financial innovation and pyramid-like schemes (Mollick, 2014).

DDK also positioned itself as a Shariah-compliant project, claiming to anchor its value on physical gold reserves stored in secure vaults. The project's promoters highlighted its alignment with Islamic finance principles, asserting that it had undergone a full Shariah audit by Malaysian consultants and obtained certification of Shariah compliance under the supervision of the Shariah Advisory Council of Bank Negara Malaysia as well as the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Furthermore, the company asserted that it had resolved previous incidents of Shariah non-compliance through corrective actions, presenting its investment scheme as a form of *mudharabah* rather than one involving *riba* (usury) or *maysir* (gambling). Nonetheless, questions regarding the transparency of gold reserves and independent auditing processes persisted, reflecting a broader skepticism toward gold-backed cryptocurrencies and their claims of asset collateralization (Zainudin & Chuan, 2018; Ahmed et al., 2020).

The development of DDKoin (DDK) initially generated significant enthusiasm, particularly among Muslim communities and proponents of Shariah-based investments in Southeast Asia. From its launch in 2019, the project marketed itself as a continuation of the classical Islamic financial tradition of dinar and dirham, while simultaneously offering a narrative of liberation from *riba* (usury) and the perceived injustices of fiat monetary systems. This combination of religious symbolism and technological novelty proved highly effective in attracting early supporters across Indonesia, Malaysia, and even the Middle East, where Islamic finance continues to play a central role in the structuring of investment products (Elasrag, 2019).

Table 1. Prices according to Market Facts

Parameter	Value
Starting Price (2019)	$15.26 USD
Highest Price	$975,286 (possible anomaly/data error)
Lowest Price	$0.05 USD (December 2022)
Final Price (2023)	$0.29 USD
Median Price	$0.67 USD (more representative)

According to market data (CoinMarketCap, 2023), the price of DDKoin at its launch stood at approximately USD 15.26. Within a relatively short time, the token experienced both speculative surges and sharp declines. While there was one recorded anomaly that placed its value at an implausible USD 975,286—a figure likely caused by data errors or thin market liquidity—the broader trend demonstrates a consistent downward trajectory. By December 2022, DDK's market price had collapsed to as low as USD 0.05, before stabilizing slightly around USD 0.29 in 2023. The median price, which more accurately reflects long-term trading behavior, hovered at USD 0.67, a drastic reduction from its initial launch valuation.

Source: www. https://coinmarketcap.com/id/currencies/ddkoin/

Figure 1. DDKoin price since entering the marketplace

The chart above illustrates the decline of DDKoin's market capitalization and trading volume from mid-2019 to early 2020. Despite occasional spikes in trading activity, these fluctuations were unsustainable and coincided with broader revelations about the project's underlying weaknesses. Three structural issues became increasingly apparent over time. First, the reward system and return on investment (ROI) model were heavily dependent on the recruitment of new members rather than organic demand for the token. Second, most trading activity took place within the closed ETPS platform rather than on public exchanges, which significantly undermined claims of decentralization. Third, the project lacked independent audits or transparent verification of its supposed gold reserves, which had been promoted as the token's underlying value (Zainudin & Chuan, 2018).

Further critiques began to emerge on platforms such as Steemit, where community members expressed concerns about the critical limitations of ETPS. Many users reported difficulties in redeeming ETPS into fiat currencies such as Indonesian rupiah or US dollars. Others indicated that they were unable to withdraw balances, and the secondary market for Dinar Coin (DNC) experienced a drastic collapse in liquidity. Eventually, the project either became inactive or transformed into another entity without clear communication to its investors. These issues closely resembled the dynamics of exit scams, where initial hype and speculative gains give way to loss of transparency and abandonment once investor confidence deteriorates (Chen et al., 2019).

The project was also widely accused of exhibiting characteristics of a Ponzi or pump-and-dump scheme. In its early stages, DDK's value was artificially inflated, only to be released into the market at a peak, enabling insiders to exit profitably. Its referral-driven growth model, while not officially labeled as multi-level marketing (MLM), bore striking similarities to MLM reward structures. Moreover, repeated claims of physical gold backing were never directly verified by investors, raising serious doubts about the credibility of its Shariah compliance assertions. Similar patterns of speculative hype and unsustainable reward mechanisms have been identified in other cryptocurrency projects that rely on MLM-like dynamics, leading to accusations of fraud and regulatory interventions (Vigna & Casey, 2015; Levenson, 2021).

Table 2. Combined Conclusions

Aspects	Assessment
Initial Objectives	Gold tokenization using sharia principles and blockchain technology
Sharia Claims	Audited and complies with mudharabah and zakat principles (claim)
Technology	Using Ethereum and Smart Contracts
Real Issues	Unable to withdraw funds, loss of value, project disappearance
Indications of Ponzi/MLM	Indications exist, despite claims not to be MLM
Final Status	DNC/ETPS tidak bernilai, harga turun >99%, banyak investor mengalami kerugian

By the end of 2022, DDK had effectively lost more than 99% of its market value, leaving many of its early investors with significant financial losses. The collapse of DDK serves as an illustrative case of how ambitious attempts to combine Islamic finance narratives with blockchain innovation can falter without strong governance, transparency, and regulatory oversight. While the original aim of tokenizing gold through a Shariah-compliant blockchain was conceptually compelling, the project's lack of accountability, opaque financial structures, and questionable reward systems undermined its long-term sustainability.

From an academic perspective, the case of DDK offers valuable insights into the risks associated with merging religious legitimacy with speculative technological ventures. It highlights the urgent need for more rigorous Shariah audits, third-party verification of asset backing, and compliance with decentralized finance principles if Islamic cryptocurrencies are to achieve both credibility and resilience. Ultimately, DDK illustrates how the absence of transparency and governance can transform a promising initiative into a cautionary tale for investors and regulators alike.

The trajectory of Dinar Dirham, particularly through the historical data of DDKoin prices, offers valuable insights into the volatility and sustainability challenges faced by cryptocurrency projects that claim to operate under Islamic financial principles. Based on the observed price chart of DDKoin, several significant patterns emerge that reflect both market behaviors and structural weaknesses of the project.

The initial price of DDKoin in August 2019 was approximately USD 16 per token, supported by a market capitalization close to USD 20 million. However, during the period between August and October 2019, the project experienced a sharp decline in both price and capitalization, signaling waning investor confidence and reduced liquidity. This downward movement was punctuated by two significant price spikes around November 2019 and February 2020. Such anomalies suggest the possibility of market manipulation or pump-and-dump schemes, whereby prices are artificially inflated through sudden surges in trading activity, only to collapse shortly thereafter (Vidal-Tomás & Ibañez, 2018).

The pattern of abrupt surges followed by equally rapid declines closely resembles classic pump-and-dump cycles documented in cryptocurrency markets. These cycles are characterized by sudden price appreciation, a dramatic increase in trading volumes, and a subsequent price crash within a short period (Xu & Livshits, 2019). Such irregularities indicate an unhealthy market environment, often orchestrated by a small number of dominant actors—commonly referred to as "whales"—who possess the ability to manipulate price movements for speculative gains.

From October 2019 to February 2020, DDKoin's performance demonstrated a consistent downward trend in both USD and BTC terms, pointing to a deeper erosion of fundamental value and a lack of new market support. This aligns with observations in the literature on unsustainable tokenomics, where projects without a robust economic base tend to lose investor trust, resulting in persistent depreciation (Corbet, Lucey, & Yarovaya, 2019).

Trading volumes throughout this period remained relatively stagnant, with the exception of sudden surges coinciding with the aforementioned price spikes. Such fluctuations further reinforce the suspicion of orchestrated manipulation, likely originating from internal actors within the project or its community who sought to temporarily inflate the value of the token.

The case of Dinar Dirham can be examined through three analytical frameworks: (1) thematic Shariah compliance, (2) econophysics, and (3) qualitative narrative analysis following Miles and Huberman.

1. Thematic Shariah Analysis

From the perspective of Shariah finance, the project must be scrutinized in light of the principles outlined by the Indonesian Ulema Council (MUI), the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), and other Shariah boards. The key prohibitions to consider are riba, gharar, and maysir (El-Gamal, 2006).

- Riba (usury): Dinar Dirham's operations raise concerns regarding whether returns were generated through unjust mark-ups or speculative profits without legitimate ownership of underlying assets.
- Gharar (excessive uncertainty): The lack of transparency surrounding the actual ownership and allocation of physical gold backing DDKoin creates significant uncertainty. This ambiguity undermines investor confidence and violates Shariah principles that demand contractual clarity (Obaidullah, 2005).
- Maysir (gambling/speculation): The highly volatile nature of DDKoin prices, combined with pyramid-style bonus structures disconnected from tangible assets, suggests elements of speculation akin to gambling.

Although Dinar Dirham had previously claimed to undergo Shariah audits (Dinar Dirham, 2017), such claims appear superficial in hindsight, particularly after widespread investor losses. The mere invocation of Islamic contractual terms such as *mudharabah* or *syirkah* cannot compensate for a lack of transparency and enforceable guarantees of asset ownership. This case reflects a broader concern in Islamic fintech regarding projects that exploit religious legitimacy without delivering genuine Shariah compliance (Hassan, Aliyu, & Hudaefi, 2020).

2. Econophysics Approach

Using an econophysics lens, Dinar Dirham can be understood as a complex dynamic system subject to phases of energy transfer, entropy increase, and eventual collapse. The distribution of token prices displayed a "fat

tail" pattern consistent with Pareto distributions, in which a small minority of early adopters and top sponsors captured disproportionate gains before the system unraveled.

In its early stages, DDKoin exhibited strong inflows of investor "energy," analogous to a chain reaction. However, as the ecosystem matured and confidence eroded, the system entered a decomposition phase, resulting in collapse. This is similar to entropy dynamics in closed thermodynamic systems where initial high energy dissipates into disorder (Mantegna & Stanley, 1999).

The drastic decline in value from USD 15 to USD 0.29—and at one point USD 0.05—resembles an exponential relaxation process, a hallmark of decaying systems. This trajectory bears similarity to radioactive decay models in nuclear physics, which have been used to explain the collapse of Ponzi-like schemes in financial contexts (Yakovenko & Rosser, 2009).

Table 3. Comparison of Two Source Analysis

Aspects	CoinMarketCap Chart	WalletInvestor Chart
Data Period	(2019–2020)	(2019–2025)
Initial Price Resolution	July 2019 – February 2020	2019 – early 2025
Initial Fluctuation	Price started at $16, dropped to around $4	Price starts at $17, drops sharply to <$1
Stable Phase	There were two major spikes	Visible 3–4 initial spikes, then a sharp downward trend until a stable low
Volume & Prediction	(Nov 2019 & Feb 2020)	Price remains relatively flat from 2022 to 2025 (below $0.5)
Bubble Signal	Not visible due to truncation at the beginning	Includes the forecast area (blue shading), which indicates potential minor fluctuations

Comparative chart data reinforces this analysis. CoinMarketCap data between July 2019 and February 2020 highlighted two major spikes before collapse, while WalletInvestor projections extended the analysis to 2025, showing continued decline toward equilibrium below USD 0.50. Both sources confirm that the project entered a pseudo-equilibrium stage with no meaningful market activity—an outcome typical of exhausted speculative bubbles.

This reinforces the view that DDKoin failed not only economically but also structurally, as it could not maintain a sustainable entropy balance. Instead, it followed the archetypal Ponzi decay model: initial hype, artificial inflation, collapse, and stagnation.

3. Miles and Huberman Qualitative Analysis

Applying the Miles and Huberman framework for qualitative data analysis, the Dinar Dirham case can be systematically deconstructed.

- Data Reduction: Promotional narratives, audit claims, and user testimonials were filtered to isolate key themes: Shariah legitimacy, business model design, and investor experience.
- Data Display: A thematic matrix highlights technological claims (e.g., blockchain and smart contracts), legal-Shariah assertions, actor interactions, and eventual system collapse.
- Conclusion Drawing/Verification: The analysis revealed inconsistencies between official claims and actual outcomes. Investor testimonies indicated systemic withdrawal failures, suggesting that the supposed gold backing was not accessible. Network structures resembled pyramid marketing hierarchies, even though they were formally presented as "network marketing." Ultimately, the disjunction between claimed and actual asset values demonstrated that DDKoin's promised underlying gold was illusory.

Taken together, the three analytical approaches converge on the conclusion that DDKoin represents a destructive financial experiment. From a Shariah perspective, it violated core prohibitions of riba, gharar, and maysir. From an econophysics perspective, it mirrored decaying systems and Ponzi-like collapses. From a

qualitative standpoint, it embodied a credibility bubble—relying on grand claims and religious legitimacy until market forces exposed its structural weaknesses.

The graphical evidence and market data corroborate these findings, underscoring that DDKoin was not a sustainable hedge asset as initially claimed. Instead, it devolved into a speculative scheme characterized by manipulation, collapse, and market exit. Ultimately, the case highlights the urgent need for stronger regulatory oversight, deeper Shariah auditing, and the integration of econophysics modeling to anticipate unsustainable dynamics in future Islamic fintech ventures.

CONCLUSION AND RECOMMENDATION

The discourse surrounding cryptocurrency within the framework of Islamic finance highlights the complex intersection of technological innovation, Sharia principles, and financial market dynamics. The fatwa of the Indonesian Ulema Council (MUI) plays a central role in providing normative guidance, particularly regarding issues of gharar (uncertainty), maysir (speculation), and the absence of intrinsic value in many cryptocurrencies. While these concerns justify the prohibition of certain practices, the potential of blockchain technology and tokenized assets remains significant when aligned with Sharia objectives such as transparency, fairness, and social benefit. Furthermore, applying econophysics as an analytical lens allows for a deeper understanding of volatility, systemic risk, and market behaviors, offering new opportunities for evaluating compliance and resilience in Islamic financial systems. Thus, cryptocurrency cannot be dismissed outright; instead, it requires a nuanced approach that distinguishes between speculative instruments and Sharia-compliant digital innovations.

Future discourse should move beyond binary positions of permissibility or prohibition. Instead, Islamic scholars, regulators, and financial practitioners should explore frameworks that integrate Sharia with emerging financial technologies. Developing robust risk-assessment models through econophysics and other interdisciplinary tools can provide stronger empirical foundations for fatwas and regulatory decisions. Additionally, education and public awareness are crucial to ensure that Muslim communities understand both the risks and ethical opportunities of digital assets.

Policymakers and regulators are advised to collaborate with Sharia authorities, fintech innovators, and academic researchers to create regulatory sandboxes for Islamic digital finance. These controlled environments can test blockchain-based financial products that adhere to Sharia principles, such as asset-backed tokens, smart contracts for zakat and waqf, or Islamic microfinance solutions. Moreover, the MUI could adopt a dynamic, conditional fatwa framework that permits innovation under strict compliance monitoring. By balancing prudence with openness to innovation, Indonesia can position itself as a global leader in Sharia-compliant digital finance while safeguarding Muslim consumers from exploitative or speculative practices.

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