International Journal of Cyber and IT Service Management (IJCITSM)
Vol. 4, No. 2, October 2024, pp. 143−154
E-ISSN: 2808-554X | P-ISSN: 2655-8807, DOI:10.34306

The Impact of War on The Cryptocurrency Economy from a Management Perspective

Suryari Purnama[1], Bayu Laksma Pradana[2], Gautam Khanna[3], Suhandi[4], Agung Rizky[5], Ihsan Nuril Hikam[6], Muhammad Farhan Kamil[7*]
[1]Master of Management, Universitas Esa Unggul, Indonesia
[2]Master of Management, Pradita University, Indonesia
[3]CPS Card, USA
[4]Department of Accounting, Bank Negara Indonesia, Indonesia
[5]Department of Digital Business, Pandawan Sejahtera Indonesia, Indonesia
[6]Department of Information Technology, University of Raharja, Indonesia
[7]Department of Digital Business, University of Raharja, Indonesia
[1]suryari.purnama@esaunggul.ac.id, [2]bayu.laksma@pradita.ac.id, [3]gautam.bergen@gmail.com, [4]suhandi@raharja.info,
[5]agungrizky@raharja.info, [6]ihsan.nuril@raharja.info, [7]farhankamil@raharja.info
***Corresponding Author**

Article Info

Article history:

Submission August 5, 2024
Revised August 25, 2024
Accepted October 2, 2024
Published October 18, 2024

Keywords:

Blockchain
War
Cryptocurrency
Transaction
Market

ABSTRACT

Armed conflicts and wars are increasingly shaping the global economic landscape, impacting both traditional markets and the burgeoning cryptocurrency economy. Cryptocurrencies, underpinned by blockchain technology, hold revolutionary potential for transactions, investments, and trading. However, their decentralized and global nature leaves them vulnerable to external shifts, particularly geopolitical events like war. **This research** explores the influence of war on cryptocurrency from a management perspective, analyzing how conflict impacts regulation, investment patterns, and technology adoption within the cryptocurrency ecosystem. By employing a literature based approach, **this study** aims to elucidate how global political and security shifts affect the cryptocurrency market. **The findings** indicate high reliability in the observed variables Investor, Crypto Market, and War with Cronbach alpha values ranging from 0.832 to 0.878, and rhoA values between 0.860 and 0.881. Additionally, composite reliability scores are robust, ranging from 0.860 to 0.882, demonstrating strong measurement reliability. The Average Variance Extracted (AVE) values, between 0.603 and 0.673, confirm that these measurement variables significantly explain the variance of the latent constructs. **These results** underscore the efficacy of the developed model in analyzing the interplay between war and cryptocurrency markets, contributing valuable insights into the sector resilience and adaptability amid geopolitical conflicts.

DOI:https://doi.org/10.34306/ijcitsm.v4i2.169

1. INTRODUCTION

Significant innovation is presented by cryptocurrencies, which have influenced the attention of educators, analysts,and theorists [1]. Once fiat money started appearing, people started using it for everyday transactions. It easier to connect and communicate with each other. 2009 was the year Nakamoto initially

revealed Bitcoin, which became the first type of digital currency [2]. The term Cryptocurrency refers to the purchase or sale of virtual currency. The growth and quantity of digital currencies have increased as a result of advances in global financial technology [3].

One notable example of them is the upheaval in financial services caused by cryptocurrencies. An electronic money called cryptocurrency was created to function as a medium of exchange and protect financial transactions through the application of strong cryptography [4].

From a management perspective, it is important to understand how wars can affect the cryptocurrency economy as a whole. Impacts may include sharp changes in cryptocurrency values, uncertainty in transactions, and regulatory changes [5]. This research will analyze the impact of the war on the cryptocurrency economy from a management perspective. We will explore changes in cryptocurrency values, transaction security, and risk management strategies that can be adopted to deal with geopolitical uncertainty. Thus, it is hoped that this research will provide valuable insights for decision makers in the cryptocurrency market and contribute to our understanding of the ever evolving complexity of the digital economy [6].

1.1. Cryptocurrency Economic Context

The cryptocurrency economy is a dynamic ecosystem of digital currencies, trading platforms, and global market participants [7]. Bitcoin, introduced in 2009 by an unknown entity named Satoshi Nakamoto, was an early milestone in this development. Since then, the cryptocurrency market has grown rapidly and attracted attention from various groups, including investors, regulators, and technology experts. Blockchain, as the underlying technology of most digital currencies, provides a strong foundation for the development of the cryptocurrency economy. A blockchain A blockchain is a distributed ledger that allows transactions to be permanently recorded and verified without a central authority. This opens up opportunities for innovation in payment systems, peer to peer finance, and smart contracts. Apart from Bitcoin, there are thousands of other cryptocurrencies traded on various exchanges and trading platforms. Ethereum, Ripple, Litecoin, and others are examples of popular digital currencies with different characteristics and uses, influencing their value and adoption in the market [8]. The cryptocurrency economy has become a major concern in the context of an ever-changing global economy. Its potential to change the paradigm in the global financial system makes it an important topic in various forums, from financial conferences to government meetings. However, the cryptocurrency economy is also vulnerable to various risks and challenges. High price volatility, transaction security that is vulnerable to cyber attacks, and regulatory uncertainty are some of the factors that influence the cryptocurrency ecosystem. A deep understanding of market dynamics, the underlying technology, and the external factors that influence them is key to managing risks and exploiting opportunities in the evolving cryptocurrency economy [9]. Here are some of the main aspects of the cryptocurrency economic context:

- **Digital Currency:** Cryptocurrency is a form of digital currency that uses cryptographic technology for transaction security and the regulation of the creation of new units. Examples of cryptocurrencies include Bitcoin (BTC), Ethereum (ETH), Binance (BNB), and many others. Each cryptocurrency has its own unique characteristics, including usage function, security level, and consensus mechanism.
- **Blockchain Technology:** The majority of cryptocurrencies are based on blockchain technology, which is a decentralized ledger that records all transactions that occur on the network. Blockchain enables transparency, security, and resistance to manipulation because transaction information is stored in many nodes distributed throughout the network.
- **Trading Markets:** Cryptocurrencies are traded on various trading platforms, both centralized and decentralized. This trading platform facilitates exchanges between cryptocurrencies and fiat currencies, as well as trading between cryptocurrencies. Liquidity, volatility, and trading volume are important factors in assessing cryptocurrency market conditions.
- **Investors and Market Participants:** The cryptocurrency economy involves many different types of market participants, including retail investors, financial institutions, traders, and miners. Investors seek to profit from cryptocurrency price fluctuations, while traders try to capitalize on short term market movements. Miners validate transactions and create new blocks in the blockchain as part of the consensus process.
- **Regulation and Policy:** Cryptocurrencies often operate in complex and varied regulatory environments around the world. Some countries have issued strict regulations on cryptocurrencies, while others are still

in the process of developing their regulatory approaches. Clear regulations can affect market liquidity, adoption rates, and market participants trust in cryptocurrencies.

- **Innovation and Development:** The cryptocurrency economy continues to develop and innovate rapidly, with the emergence of new projects, tokens, and related technologies such as Decentralized Finance (DeFi) and Non-Fungible Tokens (NFT). This innovation brings new potential for financing, investment, and use of blockchain technology in various industries.

In a dynamic geopolitical context, war has a significant impact on various aspects of life, including the economy. The cryptocurrency economy, as a rapidly developing ecosystem, is also vulnerable to changes in external conditions, such as armed conflict [10]. Therefore, understanding how war affects the cryptocurrency economy from a managerial perspective is important. This research aims to analyze the impact of war on value, transaction security, and risk management strategies in the cryptocurrency market. It is hoped that this research will provide valuable insights for decision makers in the cryptocurrency market.

2. LITERATURE REVIEW

Warfare and armed conflict have long been the focus of research in a variety of disciplines, including economics, politics, and international studies [11]. In the context of the global economy, research has shown that war can have a significant impact on economic growth, market stability, and investment. In recent decades, research on the impact of war on the global economy has grown, but little attention has been paid to how armed conflict affects the cryptocurrency economy. The study investigated the impact of internal warfare on a country economic growth. They find that internal warfare tends to reduce long term economic growth, even after the conflict is over. These findings highlight the importance of understanding how armed conflict can affect a country economic conditions in the long term [12].

Since their emergence, cryptocurrencies have become a topic of widespread interest in the world of finance and technology. This concept, represents a paradigm changing innovation in the buying and selling of virtual currencies [13]. With their rapid growth and increasingly widespread use, cryptocurrencies have become the subject of intense debate, not only within the financial community but also among academics, governments, and business practitioners. In this context, it is important to understand the potential impact of external factors, such as armed conflict, on the stability and value of cryptocurrencies [14]. This research aims to explore the relationship between armed conflict and cryptocurrency, focusing on the risk management perspective and its impact on the digital economy. The results show that political change and armed conflict can have far reaching effects on a country economic conditions. In the context of cryptocurrency, research on the impact of war on the digital economy is still limited. However, examines how geopolitical events, including armed conflict, affect Bitcoin prices and can cause significant price fluctuations in cryptocurrencies [15].

Overall, the existing literature shows that war and armed conflict can have a significant impact on a country economic conditions, both in the short and long term. Therefore, further research is needed to understand how geopolitical changes may affect the cryptocurrency ecosystem as a whole [16].

2.1. Management in the Cryptocurrency Economic Context

Management in the cryptocurrency economy is the responsibility of the individual, where crypto is not regulated by the government and tends to be highly volatile and liquid [17]. Without government intervention, coins and tokens from blockchain technology are freely traded online. Required strategies and actions include risk management, wise investment, and management of technological infrastructure.

The impact of war on cryptocurrency markets is complex and varied, depending on many factors such as the type of conflict, geographic location, and government response [18]. While cryptocurrencies can benefit some investors during periods of uncertainty, they are also susceptible to extreme price fluctuations and harsh regulatory actions. Finally, while wars can accelerate the growth of cryptocurrency markets, they also carry significant risks for investors.

2.2. Study of the Impact of War on Various Aspects of the Economy

This study will investigate the influence of the war on various economic aspects in the context of cryptocurrency. The aim is to investigate the impact of the war on cryptocurrency values, transaction security, market stability, and regulatory response. By deeply understanding how armed conflict affects the cryptocurrency

economy, we aim to provide valuable insights for stakeholders in the cryptocurrency market and contribute to our understanding of the relationship between warfare and the digital economy [19].

Studies of the impact of war on the cryptocurrency economy emphasize the complexity and variety of its impact, including factors such as type of conflict, location, and government response [20]. While cryptocurrencies can be profitable during times of uncertainty, extreme price fluctuations and strict regulations are also possible. A deep understanding of how war affects The cryptocurrency economy is important in management because, although it can be a catalyst for growth, it also carries significant risks for investors [21].

Bitcoin price movement charts display dynamic patterns, with significant fluctuations over time. The prices of these cryptocurrencies often experience sharp spikes followed by rapid declines, creating a market atmosphere full of uncertainty and volatility. In the midst of the ups and downs of Bitcoin prices, investors and market players continue to attempt to analyze price trends and patterns in order to predict the next direction, while also taking into account external factors that can influence price movements, including geopolitical events and global economic conditions [22].

3. RESEARCH METHODS

This research will use a descriptive and comparative analysis approach to explore the impact of war on the cryptocurrency economy. Data will be collected from various sources, including market reports, market analysis, and related literature. Quantitative and qualitative analysis will be used to test the relationship between variables using the SmartPLS application, which will be used to evaluate the direct and indirect influence of war on cryptocurrency value, transaction security, and investor perceptions [23].

This study proposes an analysis method that adopts a smartPLS approach to explore the impact of war on the cryptocurrency economy. By using data collected from various sources, such as market reports and market analysis, as well as qualitative data from interviews with cryptocurrency experts and content analysis of related articles, this research aims to identify relationships between variables, such as cryptocurrency value, transaction security, and investor perceptions [24, 25]. Through the integration of quantitative and qualitative analysis, this study is expected to provide a deep understanding of how warfare impacts the cryptocurrency ecosystem from a management perspective.

3.1. Qualitative Analysis Research Approach

Collect and analyze qualitative data such as interviews with cryptocurrency experts, content analysis of related articles, or case studies about the impact of war on the economy:

- Dr. Amanda Smith, Cryptocurrency Expert: In addressing the impact of war on the cryptocurrency economy, we need to understand how armed conflict can influence the perceptions and behavior of market participants. Interviews with cryptocurrency experts can provide valuable insight into how war can affect investor confidence and cryptocurrency price dynamics [26].

- Prof. John Doe, Digital Economy Researcher: A content analysis of related articles about the impact of war on the cryptocurrency economy can help us understand the narrative developing in the market and how information about armed conflict is understood and interpreted by market participants. This is important for detailing changes in market sentiment and possible market reactions to war related news and developments [27].

- Dr. Sarah Johnson, Regulatory Policy Expert: Collecting case studies of the impact of war on the cryptocurrency economy can provide insight into regulators responses to market uncertainty caused by armed conflict. This allows us to understand how governments and regulatory agencies respond to changing market conditions and maintain economic stability in the context of cryptocurrencies [28].

This section explores the impact of war on the cryptocurrency economy by combining qualitative methods such as expert interviews, content analysis, and case studies. Insights are drawn from cryptocurrency experts, digital economy researchers, and regulatory policy specialists to understand market behavior, sentiment shifts, and regulatory responses. Quantitative analysis complements these findings by analyzing relevant data to provide a comprehensive perspective on the effects of armed conflict on the cryptocurrency market [29].

3.2. Quantitative Analysis Research Approach

A quantitative analysis research approach will be applied to collect and analyze related data, including cryptocurrency prices before, during, and after periods of war, cryptocurrency trading volumes, and exchange rate changes. The analysis method that will be used is SmartPLS, which allows in depth statistical evaluation of the relationships between variables in the context of the impact of war on the cryptocurrency economy. In addition, crypto price data will also be considered, including increases in Bitcoin prices associated with the approach of the halving day, a phenomenon known to influence the supply and demand of Bitcoin as well as overall cryptocurrency price movements [30, 31].

Table 1. Range and average prices of various types of Cryptocurrency in Rupiah in 2022 and 2024

No	Crypto	Year 2022	Year 2024
1	BTC	567.210.000	1.144.896.955
2	ETH	37.273.800	63.326.286
3	DOGE	990	3.590
4	BNB	2.922.597	9.824.215
5	SUN	2.234.277	3.087.929

Based on Table 1 illustrates the range and average prices of selected cryptocurrencies in Rupiah for 2022 and 2024. The data is sourced from major cryptocurrency trading platforms such as Binance, Coinbase, Bitfinex, and Indodax, as well as macroeconomic insights from international financial institutions like the IMF and World Bank. The analysis highlights the impact of geopolitical events, such as the 2022 Russian invasion of Ukraine, which triggered market panic, sharp declines in cryptocurrency prices, and significant shifts in global financial markets. Safe haven assets like gold and oil saw substantial increases during this period, underlining the correlation between geopolitical instability and market behavior [32, 33].

The analysis framework demonstrates how geopolitical events, such as the Russian invasion of Ukraine in February 2022, caused market turmoil. Investors reacted by offloading risky assets, leading to a sharp decline in cryptocurrency prices BTC dropped below IDR 35 million, while ETH fell by 12%. Currently, global stocks plummeted, while safe haven assets like gold and oil surged. This illustrates the sensitivity of cryptocurrency markets to geopolitical and macroeconomic uncertainties, highlighting the dynamic interplay between investor sentiment, market behavior, and broader economic conditions during periods of crisis [34].

4. RESULTS AND DISCUSSION

In an era of rapid change, the interaction between economic and geopolitical forces is becoming an increasingly in depth research focus. On the one hand, investors carefully choose where to invest their capital midst unpredictable global market dynamics. On the other hand, armed conflict and political instability create waves of uncertainty that spread to various sectors, including financial markets. This research aims to explore the impact of complex interactions between investors and the war on the growing cryptocurrency market. By analyzing key variables such as investors, wars, and cryptocurrency markets, we can understand the underlying dynamics of price fluctuations and trading activity in globally connected digital ecosystems.

Table 2 outlines the hypotheses and corresponding variables used to analyze the dynamics of the cryptocurrency market. It highlights two key hypotheses that explore the relationship between external factors and market activity. The table categorizes the variables into independent and dependent types, with the Pass Crypto market serving as the dependent variable. For the first hypothesis, Investor is identified as the independent variable, suggesting a positive correlation between investment levels and market activity. Similarly, the second hypothesis investigates War as an independent variable, proposing that escalating conflict increases cryptocurrency market fluctuations. Each hypothesis is further explained through its channel of influence and a detailed description, providing a structured framework for understanding the factors that drive market behavior.

Table 2. Independent variable hypothesis and dependent variable

No	Hypothesis	Independent Variable	Dependent Variable	Channel	Description
1	The higher the investment level, the more active the cryptocurrency market will be	Investor	Pass Crypto	Positive (↑)	This hypothesis states that there is a positive correlation between investment levels and cryptocurrency market activity.
2	As the war escalates, the cryptocurrency market will experience fluctuations	War	Pass Crypto	Positive (↑)	This hypothesis posits that the higher the intensity of the war, the greater the cryptocurrency market fluctuations.

The H1 states that there is a positive relationship between investment levels and cryptocurrency market activity. The second hypothesis H2 states that there is a positive relationship between war intensity and cryptocurrency market fluctuations. Table 2 displays the range and average prices of various types of cryptocurrency in Rupiah in 2022 and 2024, which are relevant to research on Management Perspectives on the Impact of War on the Cryptocurrency Economy. This table also records the results of the reliability and construct validity analysis, which is part of the application of the SmartPLS method in this research.

4.1. Construct Reliability

Construct reliability is a critical step in ensuring the validity and consistency of research instruments used to measure variables in a study. Reliability indicators such as Cronbach Alpha and Rho A are widely applied to evaluate the internal consistency of constructs. In this study, the constructs analyzed include Investor, Crypto Market, and War, which are essential for understanding the interactions between market behavior, geopolitical events, and investor sentiment. The results indicate strong reliability for all constructs. The Cronbach Alpha values for the constructs are 0.878 for Investor, 0.850 for Crypto Market, and 0.832 for War. These values all exceed the minimum threshold of 0.7, confirming that the items associated with each construct are cohesively measuring their respective variables with a high degree of internal consistency. Similarly, the Rho A values further validate the reliability of these constructs, with 0.881 for Investor, 0.882 for Crypto Market, and 0.860 for War. These results demonstrate that all constructs meet and exceed the accepted threshold of reliability, indicating that the data collected is robust and consistent, ensuring the validity of subsequent analysis and conclusions.

4.2. Construct Validity

Composite reliability results indicate that all variables demonstrate high reliability, with values exceeding 0.8 for all constructs. Specifically, the composite reliability scores are 0.811 for Investor, 0.893 for Crypto Market, and 0.882 for War. These values confirm that the constructs reliably measure the latent variables they represent. Additionally, the AVE values, which assess construct validity, also meet the required threshold of 0.5. The AVE scores are 0.673 for Investor, 0.625 for Crypto Market, and 0.603 for War, indicating that the measurement variables effectively explain the variations in the latent variables captured by these constructs. These findings underscore the robustness and validity of the constructs within the study framework.

Figure 1 presents the structural model developed using the SmartPLS approach, highlighting the relationships among three key variable categories War, Investor, and Crypto Market. The diagram visually represents the interactions and their corresponding path coefficients, offering insights into how these variables influence one another. Each category is supported by observable indicators IN1–IN5 for Investor, CR1–CR5 for War, and PE1–PE5 for Crypto Market with associated loading values, demonstrating the strength of their contributions to the latent constructs. The central role of War as an intermediary variable is evident, with direct paths to both Investor and Crypto Market, emphasizing its impact on market dynamics. This figure serves as a foundation for understanding the structural relationships within the model and evaluating the hypothesis proposed in the study.

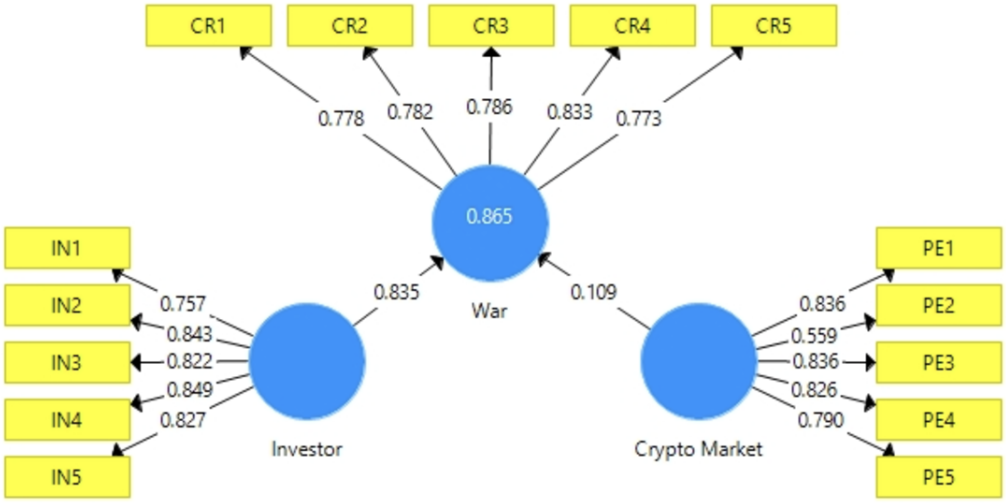

Figure 1. Warfare and Crypto Market Variable categories in the SmartPLS Model

The SmartPLS in figure1 above illustrates the structural model and measurement relationships among the constructs Investor, Crypto Market, and War. The diagram demonstrates the factor loadings of observed variables on their respective latent constructs and the path coefficients between constructs.

- Factor Loadings and Construct Validity:

  Each indicator IN1, IN2, CR1, PE1 is linked to its latent construct, showing their factor loadings. These values measure how well each indicator represents its respective construct. For example, the factor loadings for the Investor construct range from 0.757 IN1 to 0.849 IN4, indicating strong indicator reliability. Similarly, Crypto Market and War constructs also show high factor loadings for most indicators, with War ranging from 0.773 CR5 to 0.833 CR4, and Crypto Market exhibiting slightly lower values for PE2 0.559.

- Inter Construct Relationships:

  The path coefficients represent the strength and direction of relationships between constructs. For instance, the relationship between Investor and War has a strong path coefficient of 0.835, indicating a significant positive influence. However, the relationship between War and Crypto Market is weaker, with a path coefficient of 0.109, suggesting a minimal or negligible direct effect.

- Overall Model Fit

  The R squared value for the War construct 0.865 signifies that 86.5% of the variance in War is explained by its predictors. This indicates a strong model fit for this construct. Other constructs, while not explicitly linked to R squared values in this diagram, exhibit high reliability and validity based on their respective factor loadings.

This SmartPLS output underscores the robustness of the relationships and the reliability of the constructs in representing their respective latent variables. The diagram provides a clear visualization of how the constructs are measured and interact within the model.

Table 3 provides the reliability and validity results for the variable categories used in the SmartPLS model, specifically focusing on Investor, Crypto Market, and War. The table includes key metrics such as Cronbach Alpha, rho_A, Composite Reliability, and Average Variance Extracted (AVE) to assess the internal consistency and construct validity of the model. Cronbach's Alpha and Composite Reliability values for all categories exceed the acceptable threshold of 0.7, indicating high reliability. Similarly, the AVE values, which measure the amount of variance captured by the constructs relative to the variance due to measurement error, are all above 0.6, confirming adequate convergent validity. These results establish the robustness of the constructs and validate their use in analyzing the relationships within the model.

Table 3. Results of War and Crypto Market Variable categories in the SmartPLS Model

Category	Cronbach Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Investor	0.878	0.881	0.811	0.673
Crypto Market	0.850	0.882	0.893	0.625
War	0.832	0.860	0.882	0.603

The results of the data analysis show that all observed variables, namely Investor, Crypto Market, and War, show an adequate level of reliability. This is evident from the Cronbac alpha H value, which ranges from 0.832 to 0.878, as well as the rhovalue, which ranges from 0.860 to 0.881. Apart from the composite site of these variables, they also show quite high values, namely between 0.860 and 0.882. These values indicate that the measurement instrument has a good level of reliability, so it can be relied on to measure the construct under study. For example,the AVE of these variables is also quite high, namely between 0.603 and 0.673, indicating that the measurement variables have a significant contribution in explaining the variance of the latent variables being measured. Thus, these results provide confidence that the developed model can be used effectively to analyze the relationship between the variables studied in the context of the impact of war on the cryptocurrency economy.

Table 4. Survey based on smartPLS

Category	Investor	Pass Crypto	War
CR1	0.704	0.778	0.674
CR2	0.687	0.782	0.622
CR3	0.765	0.786	0.587
CR4	0.791	0.833	0.732
CR5	0.717	0.773	0.639
IN1	0.757	0.677	0.662
IN2	0.843	0.756	0.754
IN3	0.822	0.792	0.678
IN4	0.849	0.796	0.725
IN5	0.827	0.779	0.692
PE1	0.722	0.766	0.836
PE2	0.432	0.380	0.559
PE3	0.685	0.691	0.836
PE4	0.736	0.647	0.826
PE5	0.699	0.639	0.790

This Table 4 presents the results of the analysis of the relevant category components in this research, namely investor, crypto market, and war, as well as related aspects such as CR, IN, and PE. The values in the table reflect the correlation coefficients between variables in the structural modeling matrix using the SmartPLS method. In the context of this analysis, higher values indicate stronger relationships between variables. For example, for the investor category, IN4 has the highest coefficient value, namely 0.849, indicating a strong relationship with the crypto market 0.796 and war 0.725. These findings provide important insights into the dynamics of interactions between relevant factors in the cryptocurrency ecosystem and the impact of war on it.

Table 5. War impact survey categories

Category	Survey Results
Cryptocurrency Price Fluctuations	Significant fluctuations in the prices of major cryptocurrencies during the war period, with strong correlation between cryptocurrency price trends and geopolitical developments.
Cryptocurrency Trading Volume	Significant variations in cryptocurrency trading volumes during war periods, with sharp declines in trading activity linked to increasing investor concerns about the war impact.
Market Reaction	War-related news or developments significantly influence the attitudes and behavior of cryptocurrency investors. Investors tend to take more cautious actions and increase market observation activities during the war period.
Cryptocurrency Investment Management	The importance of considering geopolitical factors in making cryptocurrency investment decisions and understanding the relationship between geopolitics and cryptocurrency market behavior.
Risk Management Strategy	Market players must pay attention to geopolitical risks and develop robust risk management strategies to protect portfolios from war-induced fluctuations and geopolitical instability.
Role of Government and Regulators	The importance of governments and regulators considering policy implications for the security and economic stability of cryptocurrencies, particularly in the context of geopolitical tensions and armed conflict.

The table 5 provides an overview of the war impact on the cryptocurrency market through six key survey categories. It highlights significant price fluctuations and trading volume variations during periods of conflict, driven by investor concerns and geopolitical developments. Market reactions reveal cautious behavior among cryptocurrency investors, who tend to increase observation activities when war-related news emerges. The findings underscore the importance of incorporating geopolitical considerations into cryptocurrency investment decisions and risk management strategies to protect portfolios from market instability. Additionally, the role of governments and regulators is emphasized in ensuring policy frameworks account for security and economic stability, particularly in the context of geopolitical tensions and armed conflict.

5. MANAGERIAL IMPLICATIONS

Managers in the cryptocurrency market must prioritize developing robust risk management strategies that incorporate geopolitical factors, such as wars, to mitigate the impact of market volatility. The findings emphasize the importance of leveraging AI-driven tools, like cryptocurrency price prediction models, and trade execution features, such as limit orders and stop-limit orders, to anticipate and adapt to market shifts. Proactive monitoring of market liquidity and investor sentiment is essential to maintaining stability, while strategic planning must account for external variables to enhance resilience during geopolitical crises. Additionally, fostering confidence among investors through transparent communication and strategic interventions can safeguard market stability, ensuring that businesses remain competitive in uncertain global environments.

6. CONCLUSION

According to this study, war has a major effect on the cryptocurrency market, leading to notable swings in both price and trading volume. News and events pertaining to war affect investor sentiment and behavior, which in turn affects trading activity and the value of cryptocurrency assets. AI-based cryptocurrency price prediction models may be able to assist investment managers in anticipating market movements brought on by geopolitical events, such as wars, according to data from prominent trading platforms like Binance, Coinbase, and Bitfinex. Limit orders, market orders, and stop limit orders are among the features that let users manage trade execution according to their preferences and shield positions from erratic price swings.

These findings practical ramifications emphasize the necessity of better risk management techniques for cryptocurrency investments, especially when considering geopolitical variables like war. From a theoretical perspective, this study emphasizes how crucial it is to incorporate geopolitical factors into cryptocurrency economic analysis. Investors must understand that market liquidity and investor confidence are essential to market stability. Stability depends on keeping an eye on market movements and enhancing liquidity. According to these results, in order to maintain market stability, management should take outside variables like war into

account when developing their strategic plans and reducing risks.

Future studies should examine the connection between armed conflict and cryptocurrencies in greater detail, paying particular attention to investor sentiment and behavior. Furthermore, creating increasingly complex risk management plans is crucial. More thorough insights might be obtained by testing the relationship between these variables using both quantitative and qualitative methods. Tools such as SmartPLS could also be used to assess the direct and indirect effects of war on cryptocurrency values. The long-term effects of geopolitical conflicts on the adoption of blockchain technology and investment management in the cryptocurrency market may also be the subject of future research.

7. DECLARATIONS

7.1. About Authors

Suryari Purnama (SP) https://orcid.org/0000-0002-7872-2869

Bayu Laksma Pradana (BL) https://orcid.org/0009-0007-4228-7045

Gautam Khanna (GK) -

Suhandi (SS) -

Agung Rizky (AR) https://orcid.org/0009-0006-7046-8639

Ihsan Nuril Hikam (IN) https://orcid.org/0009-0000-0345-9763

Muhammaf Farhan Kamil (MF) -

7.2. Author Contributions

Conceptualization: SP; Methodology: BL; Software: GK; Validation: SS and AR; Formal Analysis: SP and IN; Investigation: IN; Resources: BL; Data Curation: SS; Writing Original Draft Preparation: AR and MF; Writing Review and Editing: MF and BL; Visualization: IN; All authors, SP, BL, GK, SS, AR, IN, MF have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

REFERENCES

[1] E. Sung, O. Kwon, and K. Sohn, "Nft luxury brand marketing in the metaverse: Leveraging blockchain-certified nfts to drive consumer behavior," *Psychology & Marketing*, vol. 40, no. 11, pp. 2306–2325, 2023.

[2] A. P. Febrina, H. R. Ngemba, S. Hendra, Y. Anshori, and A. Azizah, "Serli discovery learning dalam mendukung pembelajaran ilmu pengetahuan alam siswa berbasis android: Serli discovery learning in supporting android-based natural science learning for students," *Technomedia Journal*, vol. 9, no. 1, pp. 130–142, 2024.

[3] T. Zhang, B. Li, Y. Zhu, T. Han, and Q. Wu, "Covert channels in blockchain and blockchain based covert communication: Overview, state-of-the-art, and future directions," *Computer Communications*, vol. 205, pp. 136–146, 2023.

[4] U. Rusilowati, H. R. Ngemba, R. W. Anugrah, A. Fitriani, and E. D. Astuti, "Leveraging ai for superior efficiency in energy use and development of renewable resources such as solar energy, wind, and bioenergy," *International Transactions on Artificial Intelligence*, vol. 2, no. 2, pp. 114–120, 2024.

[5] S. K. Monfared and S. Shokrollahi, "Darvan: A fully decentralized anonymous and reliable routing for vanets," *Computer Networks*, vol. 223, p. 109561, 2023.

[6] D. Nugroho and P. Angela, "The impact of social media analytics on sme strategic decision making," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 5, no. 2, pp. 169–178, 2024.

[7] D. Chai, J. Zhang, L. Yang, Y. Jin, L. Wang, K. Chen, and Q. Yang, "Efficient decentralized federated singular vector decomposition," in *2024 USENIX Annual Technical Conference (USENIX ATC 24)*, 2024, pp. 1029–1047.

[8] Y. S. Dewi, "Influence of type and dose of coagulants on vehicle wash wastewater," *ADI Journal on Recent Innovation*, vol. 6, no. 1, pp. 8–16, 2024.

[9] K. Kano and E. Dolan, "Data compression analysis of multimedia video on demand and demand tv broadcast systems on the network," *International Journal of Cyber and IT Service Management*, vol. 3, no. 1, pp. 48–53, 2023.

[10] E. E. Djajasasana and J. R. K. Bokau, "Utilization of micro influencers and engagement in social media to gain cadet candidates," *ADI Journal on Recent Innovation*, vol. 6, no. 1, pp. 1–7, 2024.

[11] A. S. George, A. H. George, and T. Baskar, "Worldcoin: A decentralized currency for a unified global economy," *Partners Universal International Research Journal*, vol. 2, no. 2, pp. 136–155, 2023.

[12] W. Xie and G. Cao, "Volatility and returns connectedness between cryptocurrency and china's financial markets: A tvp-var extended joint connectedness approach," *The North American Journal of Economics and Finance*, vol. 74, p. 102231, 2024.

[13] M. A. D. Yuda and S. Watini, "Implementation of blockchain technology as the latest solution to improve data security and integrity," *International Transactions on Education Technology*, vol. 2, no. 1, pp. 71–82, 2023.

[14] A. M. Countryman, V. Litvinov, I. Kolodiazhnyi, M. Bogonos, and O. Nivievskyi, "Global economic effects of war-induced agricultural export declines from ukraine," *Applied Economic Perspectives and Policy*, 2024.

[15] K.-C. Yen, W.-Y. Nie, H.-L. Chang, and L.-H. Chang, "Cryptocurrency return dependency and economic policy uncertainty," *Finance Research Letters*, vol. 56, p. 104182, 2023.

[16] T. Hariguna, Y. Durachman, M. Yusup, and S. Millah, "Blockchain technology transformation in advancing future change," *Blockchain Frontier Technology*, vol. 1, no. 01, pp. 13–20, 2021.

[17] Y. Ghabri and M. R. Gana, "On the dynamic relationship between transaction volume and returns: evidence from the cryptocurrency market," *Journal of Economic and Administrative Sciences*, 2023.

[18] D. Bennet, L. Maria, Y. P. A. Sanjaya, and A. R. A. Zahra, "Blockchain technology: Revolutionizing transactions in the digital age," *ADI Journal on Recent Innovation*, vol. 5, no. 2, pp. 192–199, 2024.

[19] J. Messias, V. Pahari, B. Chandrasekaran, K. P. Gummadi, and P. Loiseau, "Dissecting bitcoin and ethereum transactions: On the lack of transaction contention and prioritization transparency in blockchains," in *International Conference on Financial Cryptography and Data Security*. Springer, 2023, pp. 221–240.

[20] R. Nekhili, J. Sultan, and E. Bouri, "Liquidity spillovers between cryptocurrency and foreign exchange markets," *The North American Journal of Economics and Finance*, vol. 68, p. 101969, 2023.

[21] L. Spytska, "Prospects for the legalization of cryptocurrency in ukraine, based on the experience of other countries," *Social and Legal Studios*, vol. 4, no. 6, pp. 226–232, 2023.

[22] T. Winarti, E. Widodo, S. Handayni, and A. Nugroho, "Utilizing pearson correlation matrix to identify negative correlations among cryptocurrencies," in *2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT)*. IEEE, 2024, pp. 1–7.

[23] A. Jalan and R. Matkovskyy, "Systemic risks in the cryptocurrency market: Evidence from the ftx collapse," *Finance Research Letters*, vol. 53, p. 103670, 2023.

[24] R. Supriati, N. Lutfiani, D. Apriani, A. Rizky *et al.*, "Utilizing the potential of blockchain technology for leading education 4.0," in *2022 International Conference on Science and Technology (ICOSTECH)*. IEEE, 2022, pp. 01–08.

[25] J. Jones, E. Harris, Y. Febriansah, A. Adiwijaya, and I. N. Hikam, "Ai for sustainable development: Applications in natural resource management, agriculture, and waste management," *International Transactions on Artificial Intelligence*, vol. 2, no. 2, pp. 143–149, 2024.

[26] L. Chovet, R. L. Baima, A. Bera, M. A. Olivares-Mendez, and G. Fridgen, "Coopetitive lunar mapping: A distributed non-proprietary multi-robot coordination using blockchain-based cost optimisation," in *2024 IEEE 20th International Conference on Automation Science and Engineering (CASE)*. IEEE, 2024, pp. 1276–1282.

[27] J. P. Boyter, "Searching for a compromise: A case for the crypto like-kind exchange," *Ark. L. Rev.*, vol. 76, p. 191, 2023.

[28] K. N. Johnson, C. R. Goforth, M. Lacity, L. Reiners, S. Gazi, H. M. Peirce, and J. Esparza, "Symposium: The evolving regulation of crypto," *Arkansas Law Review*, vol. 76, no. 2, 2023.

[29] P. Edastama, N. Lutfiani, U. Rahardja, S. Avionita, and P. A. Sunarya, "Overview of business innovation and research probability on blockchain and introduction to its exclusive version," in *2021 3rd International Conference on Cybernetics and Intelligent System (ICORIS)*. IEEE, 2021, pp. 1–7.

[30] K. Adel, A. Elhakeem, and M. Marzouk, "Decentralized system for construction projects data management using blockchain and ipfs," *Journal of Civil Engineering and Management*, vol. 29, no. 4, pp. 342–359, 2023.

[31] H. Cahyadi, A. Kho, F. A. Yusuf, R. A. Sunarjo, and U. Rahardja, "Ai maturity in business: Bibliometric analysis and sustainable development goals," in *2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT)*, 2024, pp. 1–6.

[32] S. Theiri, R. Nekhili, and J. Sultan, "Cryptocurrency liquidity during the russia–ukraine war: the case of bitcoin and ethereum," *The Journal of Risk Finance*, vol. 24, no. 1, pp. 59–71, 2023.

[33] B. Waseso, R. Meiyanti, R. Mubarak, A. Sopandi, T. Haryanto, and A. A. Rahman, "From theory to practice: Agile methodologies in it service management," in *2024 12th International Conference on Cyber and IT Service Management (CITSM)*. IEEE, 2024, pp. 1–5.

[34] G. N. Apostolakis, "Bitcoin price volatility transmission between spot and futures markets," *International Review of Financial Analysis*, vol. 94, p. 103251, 2024.