CSE438

Task 1

Paper Report

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Section: 1

Paper Title:

Machine Learning-Based Analysis of Cryptocurrency Market Financial Risk Management

Paper Link:

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Summary:

Introduction:

The introduction of the PDF file provides an overview of the challenges and complexities in the financial market, particularly in the context of the rapidly evolving cryptocurrency landscape. The authors emphasize the inadequacy of traditional risk assessment methods in capturing the unique risks associated with cryptocurrencies, prompting the need for more advanced approaches. They highlight the emergence of over 2500 cryptocurrencies with significant trading volumes, underscoring the dynamic and unpredictable nature of the cryptocurrency market. Additionally, the introduction emphasizes the decentralized nature of cryptocurrencies and the absence of traditional banking intermediaries, further complicating risk management. The authors propose leveraging hierarchical risk parity and unsupervised machine learning to address the inherent risks and uncertainties in the cryptocurrency market. Overall, the introduction sets the stage for the subsequent discussion on the application of advanced risk management techniques to navigate the challenges posed by cryptocurrencies.

State of The Art:

The "State-of-the-Art" section of the PDF file provides a brief overview of the decentralized nature of cryptocurrency and its evolution since its inception in 2008. It emphasizes the absence of traditional banking involvement in cryptocurrency transactions, highlighting the peer-to-peer nature of these transactions. The section also touches upon the challenges associated with risk management in the cryptocurrency ecosystem, particularly in terms of assessing and mitigating inherent risks. Additionally, it briefly mentions the importance of understanding the professional accounting and associated risks of cryptocurrency, as well as the need for effective risk ranking and evaluation. Overall, the "State-of-the-Art" section sets the context for the subsequent discussion on the proposed risk management system and its potential implications for addressing the complexities of cryptocurrency risk management.

Methodology:

The methodology outlined in the PDF file involves the application of Hierarchical Risk Parity and unsupervised machine learning techniques to address the complexities of

risk management in the cryptocurrency market. The authors propose using these advanced methods to assess and manage the inherent risks associated with cryptocurrencies, particularly focusing on the likelihood of occurrence and the financial impact of these risks. The methodology aims to provide a robust framework for evaluating and ranking exchange-level control risks, as well as identifying the highest likelihood risks within the cryptocurrency ecosystem. Additionally, the methodology involves a systematic structure for risk management, including the implementation process and development environment details. Overall, the proposed methodology seeks to leverage advanced risk assessment techniques to navigate the unique challenges presented by cryptocurrencies and enhance risk management practices in this evolving financial landscape.

Result:

The results presented in the PDF file demonstrate the effectiveness of the proposed risk management system in addressing the complexities of the cryptocurrency market. The authors show that the Hierarchical Risk Parity technique provides a better output in terms of returning the adjusted risk tail, resulting in improved risk management outcomes. The results also indicate that the proposed model is robust to various intervals and re-balancing periods, providing meaningful alternative asset allocations and enhancing the risk management process. Overall, the results suggest that the application of advanced risk assessment techniques, such as Hierarchical Risk Parity and unsupervised machine learning, can significantly improve risk management practices in the cryptocurrency ecosystem.

Conclusion:

The conclusion of the PDF file emphasizes the importance of advanced risk management techniques in navigating the complexities of the cryptocurrency market. The authors highlight the effectiveness of the proposed risk management system, which leverages Hierarchical Risk Parity and unsupervised machine learning, in addressing the unique risks associated with cryptocurrencies. They suggest that the proposed methodology can enhance risk management practices in the cryptocurrency ecosystem and provide meaningful alternative asset allocations. The conclusion also highlights the need for further research to extend the proposed technique and optimize its performance in terms of risk management. Overall, the conclusion underscores the importance of advanced risk assessment techniques in managing the inherent risks of the rapidly evolving cryptocurrency landscape.

Future Scope and Limitation:

The limitations suggest that while the research presents promising advancements in cryptocurrency risk management, further refinement, validation, and adaptation are necessary to address the dynamic nature of the cryptocurrency ecosystem. The future scope involves exploring the integration of advanced technologies and methodologies, such as machine learning, artificial intelligence, and blockchain technology, to refine risk assessment and management processes. The authors also emphasize the need for continued research into optimizing the performance of Hierarchical Risk Parity and reinforcing its applicability in diverse risk management scenarios within the cryptocurrency ecosystem.