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TECHNICAL ANALYSIS FOR BUY OR SELL DECISIONS IN CRYPTOCURRENCY (BITCOIN)

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ABSTRACT

The purpose of this study is to determine how to provide recommendations for buy or sell decisions based on the price movements of cryptocurrency using technical analysis. This study employs a qualitative approach because the goal is to deeply and thoroughly understand the technical patterns in Bitcoin price charts to make informed buy and sell decisions. In this research, the data analysis technique used is Content Analysis. Content analysis is a research method that allows for the subjective interpretation of various types of data through a systematic classification process and the identification of themes or patterns.
In conclusion, the technical patterns identified during the period from June 2022 to October 2023 provide strong signals for buy decisions. The combination of volume confirmation, price movements above the 200-day moving average, chart patterns, breakouts, major trend patterns, and the integration of supporting theories provides a solid foundation for this analysis and reinforces the confidence that prices are likely to rise.

Keywords: Cryptocurrency and Buy or Sell Decisions

INTRODUCTION

In an era of advanced technology and rapid digitalization, a new innovation has emerged, particularly in the realm of currency or payment systems, which significantly impacts human life. This technology is known as Cryptocurrency. Cryptocurrency has garnered public attention, especially among economists and people worldwide, due to its digital financial concept that differs from fiat currency, or conventional money, which typically exists in physical form as paper and is commonly used. According to Venegas (2018) in the study by Meliza & Sadalia (2021), one of the advantages offered by Cryptocurrency is its ability to reduce transaction costs and money transfer fees anywhere and anytime, making it more efficient and faster.

Cryptocurrency uses the principles and science of cryptography, which can be defined as security during transactions to prevent counterfeiting of the currency. Cryptography enables various functions, such as online signature verification of each legitimate owner of the coins, with each signature being encrypted so that only the owner knows the approval message before sending it to the blockchain network. Cryptocurrency, particularly Bitcoin, is decentralized and not issued by anyone or any authority (Dynand & Kartawinata, 2018). Therefore, Bitcoin is immune to interference or manipulation, although its pricing in transactions is based on supply and demand.

Although Cryptocurrency, particularly Bitcoin, is a digital currency aiming to replace fiat currency with all its advantages, the characteristics of cryptocurrency, especially Bitcoin, still do not meet the prerequisites to replace fiat money. The extremely high volatility of Bitcoin as

a cryptocurrency makes it unsuitable as a medium of exchange, which ideally should be stable and reliable (as a store of value) (Yussof & Al-Harthy, 2018) in the study by Meliza & Sadalia (2021). On the other hand, according to Yuneline (2019) in the study by Fauzi (2023), cryptocurrency is not accepted as a means of payment by various countries because it is not supported by any monetary authority (Central Bank) of any country and is not created by any authority. In essence, the credibility of a currency created by a central bank signifies a country's ability and sovereignty to support its national currency. Therefore, to this day, Cryptocurrency, particularly Bitcoin, is still regarded as an alternative for investment or for trading as a commodity or digital asset.

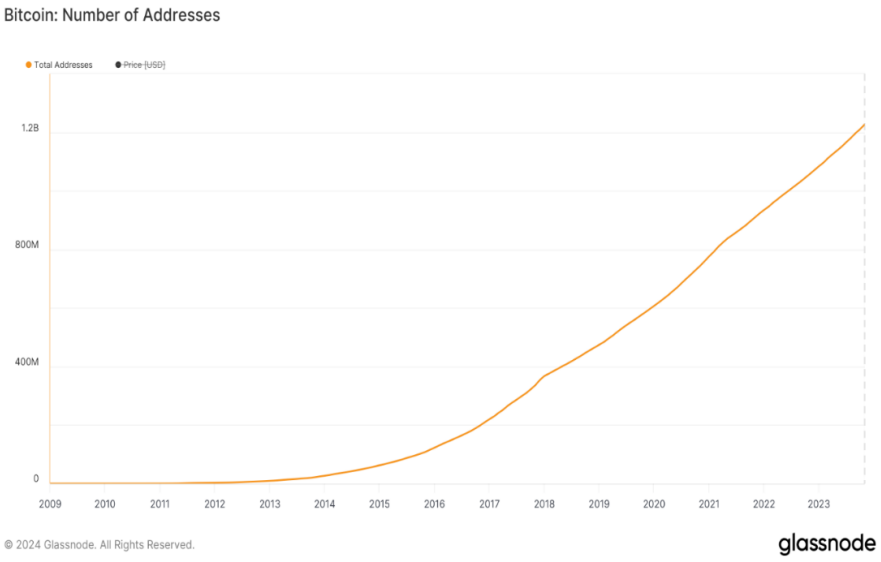

Figure 1 – Total Number of Bitcoin Wallet Addresses, Source: Glassnode.com

As seen from the data taken from Glassnode, the ownership or transactions of Bitcoin Cryptocurrency from each wallet continue to increase over time, reaching 1.2 billion and likely to keep growing. This trend makes Cryptocurrency an attractive or alternative option for investment among investors and traders. However, when investors, traders, or the public wish to purchase, invest in, or trade Cryptocurrency—whose price is determined by supply and demand—a solid rationale is necessary before making buy or sell decisions.

There are various methods and approaches for analyzing financial instruments to make informed buy or sell decisions. Some commonly used techniques include Fundamental Analysis, Technical Analysis, and even relying on intuition and gut feelings, which can verge on gambling. The primary difference between analysis-based investment decisions and a gamblers is the level of understanding and the strategic methods employed by the investor or trader. A wise investor does not rely solely on intuition or feelings without having a foundational concept or theory, or even confirmation. A wise investor or trader has a clear understanding of how theory is applied to data trends and facts, and knows what and why the decision is made. Therefore, a method to analyze and make decisions is essential (Montier, 2007).

In determining buy or sell decisions for a financial instrument, many methods and approaches are used to analyze and draw the right conclusions. Some commonly used techniques include Fundamental Analysis and Technical Analysis. These analyses are typically applied in the stock market. Fundamental Analysis focuses on the intrinsic value of an

instrument (Yuliansyah & Sukedarsana, 2019), while Technical Analysis is centered on price as the primary data point, based on the belief that all factors influencing market activity—whether fundamental, political, or psychological—are reflected in price movements that can be observed through charts (Hartono, 2022b). In this study, the researcher intends to explore buy and sell decisions through the lens of Technical Analysis applied to a highly volatile and relatively new asset: Bitcoin Cryptocurrency.

Technical analysis in various markets reveals different characteristics of price movements and volatility (Hull & Basu, 2016). For instance, technical analysis in the stock market shows significant differences compared to the commodities market, especially with newer commodities like cryptocurrency. The application of technical analysis to cryptocurrency is still under-researched compared to its application in the stock market. This leads to limitations in using indicators or combining techniques for cryptocurrency assets, resulting in lower prediction probabilities. In the investment world, particularly in the stock market, technical analysis is a commonly used method to analyze price movements based on historical data. The application of technical analysis to cryptocurrency, such as Bitcoin, has not been widely researched despite its significant potential. Technical analysis is a technique that studies past price movements to predict and anticipate future prices (Pring, 2014). However, a single indicator is not sufficient to fully understand market behavior. Therefore, additional indicators, techniques, and pattern recognition are needed in technical analysis to increase confidence in making buy or sell decisions.

By using technical analysis, investors can identify trends, support and resistance levels, and price patterns to make more measured decisions and avoid speculative elements. Technical analysis allows investors to draw conclusions or decisions to buy, sell, or do nothing with a financial instrument by combining several tools and patterns.

This study will combine various indicators and methods in technical analysis, such as Moving Average, Candlestick, Trend, Support and Resistance, Volume, and Chart Patterns. Although technical analysis is generally used in stock and forex markets, this research will apply it to determine buy and sell decisions in the cryptocurrency market, specifically Bitcoin.

RESEARCH METHOD

This study employs a qualitative approach because its goal is to deeply and thoroughly understand the technical patterns in Bitcoin price charts to make informed buy and sell decisions. Qualitative research allows researchers to explore complex phenomena in a more flexible and descriptive manner.

The object of the research refers to the primary focus or reference point analyzed to investigate or address the issues, using relevant theories. In this study, the object of research is Cryptocurrency (Bitcoin). The research subjects act as tools or informants who provide information regarding the situation and conditions related to the research object. The subjects in this research involve Technical Analysis.

In this study, the data analysis technique used is Content Analysis. Content analysis is a research method that allows for the subjective interpretation of various types of data through systematic classification processes and the identification of themes or patterns (Bengtsson, 2016). Miles & Huberman (1994) identify three main steps in qualitative data analysis: data reduction, data display, and conclusion drawing/verification. This technique aims to provide structure and flow to the data analysis process, allowing for systematic data management.

RESULTS AND DISCUSSION

Combining Technical Analysis for Decision Making

In previous subsections, we discussed techniques, indicators, and phenomena such as patterns in Technical Analysis separately. Although these elements are explained separately in this study, all indicators and techniques in Technical Analysis are interrelated. For instance, an upward trend confirmed by the 200-day Moving Average, the use of Support and Resistance to identify Chart Patterns, the application of breakouts to assess the strength of momentum and the potential continuation of price movement, and the use of volume to confirm the strength of that movement (Faijareon & Sornil, 2019).

By combining these indicators, buy or sell decisions can be made with greater confidence, as strong technical signals provide a more measured foundation for determining the optimal moments to enter or exit the market. On the other hand, by integrating various indicators, the risk of errors or losses can be minimized, while the flexibility and probability within the strategy allow for more responsive adjustments to changing market conditions for decision-making in any situation (Gadallah et al., 2015).

From a technical analysis perspective, the more confirmations and information available, the higher the probability and conviction of investors and traders in making decisions. Below is a visualization of the combined indicators and techniques.

This image illustrates the price movement of Bitcoin with a focus on the formation of Higher Low (HL) and Higher High (HH) patterns, which indicate the continuation of a bullish trend. This trend begins with the establishment of Strong Support at the Lowest Low (LL), showing that the market has identified a level where selling pressure starts to decrease and buying pressure (demand pressure) begins to increase.

The Primary Trend Support line shown in the graph serves as the main foundation supporting the overall bullish trend. This support keeps the price within a longer-term upward trend, despite short-term fluctuations. When the price approaches or touches this support line, we often see an increase in buying pressure, signaling market confidence that the bullish trend will persist.

After the price repeatedly encounters strong resistance, a significant breakout eventually occurs. This breakout, which happens after the price breaches the upper resistance level, indicates that buying pressure has been strong enough to push the price past this barrier, and it is accompanied by a significant increase in volume. Post-breakout, the former resistance level becomes new support (Resistance Becomes Support), providing a higher base for the price to continue rising.

The formation of Higher Low (HL) after this breakout confirms that buying pressure remains strong and that any price corrections or declines are held at higher levels than before. This strong bullish trend is expected to continue with the formation of Higher High (HH). Additionally, smaller market fluctuations or trends, known as secondary trends, can also be observed and used as additional confirmation and combination for decision-making. The function of the secondary trend is to provide insights into the market in the short term and make buy or sell decisions more precise (Wu et al., 2014). We have identified patterns in the secondary trend as shown in the image below

The Double Bottom pattern observed in this secondary trend is one of the patterns studied in the research. This pattern is characterized by two nearly horizontal low points, indicating that the price has found a strong support level, even though it is only within a secondary trend. After reaching the support level for the second time, the price begins to rise, signaling that selling pressure has diminished and buyers are starting to dominate the market. This pattern is then confirmed by a breakout above the previous resistance, accompanied by an increase in volume. This confirmation provides a strong signal that a trend reversal from bearish to bullish is occurring, and thus can serve as a solid basis for increasing confidence in buying decisions.

In the following chart, we will examine the Ascending Triangle pattern that appears in the secondary trend, which can also reinforce the rationale for decision-making. The image below illustrates the Ascending Triangle that occurred in the secondary trend.

This pattern is characterized by a horizontal resistance line and an upward-sloping support line, reflecting increasing buying pressure in the market. It is typically considered a continuation pattern, indicating that the ongoing trend is likely to continue due to the rising support that signifies increasing demand. Confirmation of this pattern occurs when the price successfully breaks through the upper resistance with high volume, showing that the market strongly accepts this signal. With this confirmation, the Ascending Triangle pattern in the context of the secondary trend provides additional grounds for taking a buying position with confidence that the uptrend will continue.

The Ascending Triangle pattern formed within the primary trend emphasizes the continuation of a stronger long-term trend. In this pattern, the horizontal resistance line and the rising support line indicate steady and increasing buying pressure. When the price successfully breaks through resistance, supported by a significant increase in volume, it confirms that the longer-term bullish trend is likely to continue. In the context of the primary trend, this pattern provides a stronger and more sustained signal, making it a solid basis for bolstering confidence in investment decisions, especially for long-term oriented investors.

Integration of Supply and Demand Theory and Behavioral Economics in Technical Analysis Supply and Demand in Technical Analysis

The principles of Supply and Demand form the foundation of many concepts in technical analysis. Simply put, when the demand for an asset exceeds the supply, prices tend to rise, and conversely, when supply exceeds demand, prices tend to fall (Scott et al., 2016). This fundamental principle is applied in various aspects of technical analysis, particularly in identifying support and resistance levels and chart patterns.

Support indicates a strong enough demand to halt further declines, while resistance signifies a strong enough supply to prevent further price increases. When applied to chart patterns such as Ascending Triangle and Head and Shoulders, these patterns are also shaped by the interaction between supply and demand. For example, in the Ascending Triangle pattern, resistance remains constant while support continues to rise, indicating that demand is strengthening and approaching a point where it may break through resistance. Once demand is strong enough to overcome the supply at the resistance level, the price is likely to breakout upwards, signaling a continuation of the uptrend.

Previously, the dynamics between support and resistance were in opposition, where support represented demand and resistance represented supply. Thus, a breakout signifies a change in the dynamics between support and resistance, with demand winning the battle if resistance is breached, leading to price increases. Conversely, if a breakout occurs downward

through support, the dynamics shift in favor of supply, causing the price to fall (Garzarelli et al., 2014).

Therefore, Supply and Demand help in understanding the market dynamics behind the formation of observed price patterns and the price reactions to support and resistance levels, reflecting the market conditions and the optimism of demand and supply towards a particular price.

Behavioral Economics in Technical Analysis

In Behavioral Economics Theory, it is revealed that investor decisions are often influenced by psychological biases such as anchoring and loss aversion (Kahneman, 2011). In the context of technical analysis, anchoring occurs when traders rely on historical data and believe that patterns or trends from this data will repeat in the future, in line with Dow Theory principles.

Thus, when current price data is identified, traders or investors tend to look for and match price movements that are similar to those in the past based on historical data and existing technical analysis theories (Kahneman, 2011). For example, when a specific pattern or chart pattern, such as Ascending Triangle or Head and Shoulders, is identified, or when there is a breakout at a Resistance level, the belief that this pattern will repeat as it did in the past drives traders to take action, such as buying, based on past experiences and resulting positive outcomes. This belief is reinforced by anchoring, where past price levels or patterns become a primary reference for current trading decisions.

In addition to anchoring, loss aversion also plays a significant role in trading decisions. Loss aversion is the tendency to experience the negative impact of losses more acutely than the satisfaction of equivalent gains. In technical analysis, loss aversion may drive traders to buy immediately after a breakout, fearing they might miss out on a significant profit opportunity (Kahneman, 2011). When prices break through Resistance levels and show potential for further increases, traders affected by loss aversion might feel compelled to enter the market quickly, worried that delaying might lead to missed opportunities.

The combination of anchoring and loss aversion strengthens decision-making confidence for traders and investors. Anchoring provides a historical basis that traders or investors rely on, while loss aversion ensures they do not miss profit opportunities.

Furthermore, loss aversion can also be linked to portfolio management in technical analysis. In portfolio management, loss aversion encourages investors to adopt more cautious strategies in the face of risk. For example, a trader influenced by loss aversion might be more likely to add positions in assets showing bullish technical signals, such as a breakout from an Ascending Triangle pattern, to reduce the risk of missing potential profits. At the same time, they might set stop-loss orders to minimize losses if the market moves against their expectations. Conversely, investors with a long-term perspective but who want to enter at the right time may diversify their assets to mitigate losses.

Therefore, loss aversion not only drives quick actions to seize opportunities but also supports the implementation of effective risk management strategies within a portfolio. In this context, loss aversion helps traders and investors maintain a balance between seizing opportunities based on technical signals and protecting their portfolios from significant potential losses.

Verification of Historical Data

To verify the reliability of the technical signals generated from this research, an analysis was conducted by comparing the findings with historical Bitcoin data. The following images illustrate how technical patterns observed in the past, such as Falling Wedge and other chart patterns, were followed by significant price increases after breakout and volume confirmation. This provides evidence that the current Bitcoin price movement may reflect similar movements

that occurred in the past, in line with Dow Theory's principle, "History Repeats Itself."

In the image above, a Falling Wedge formation from 2015 is visible. After the breakout from the Falling Wedge, Bitcoin's price moved sideways for a while, indicating market accumulation and consolidation. During this sideways movement, the price formed a Triple Bottom pattern, characterized by three nearly horizontal support points at the same price level. This pattern suggests that selling pressure has decreased, and there is increased buying pressure at those support levels.

The breakout from the Triple Bottom pattern eventually occurred, confirmed by a significant increase in volume, as shown in the image. After the breakout, the price rose sharply, indicating that the technical signals generated from the combination of these patterns can be relied upon to predict price increases.

Although the breakout from the Falling Wedge was initially not accompanied by significant volume increase, the subsequent price movement forming a Triple Bottom and the volume confirmation during the breakout from this pattern demonstrate that the accumulation of these signals provides a strong indication that a bullish trend is forming.

The image above shows the price movement pattern of Bitcoin from late 2018 to 2020. During this period, the price experienced a significant decline, followed by a consolidation phase where a Falling Wedge pattern formed, indicating an attempt at a reversal. After this consolidation phase, the price successfully broke out, supported by increased volume, leading to a reversal and then a subsequent rise, forming a Broadening Wedge chart pattern before

continuing its upward trend.

The two images described above show significant similarities in price movement patterns compared to what was observed in this study for the period from June 2022 to October 2023. In both 2015 and 2019, Bitcoin's price first declined, followed by accumulation and consolidation before eventually forming chart patterns. In Bitcoin's case, the pattern observed was a Falling Wedge. After the Falling Wedge breakout, the price formed another chart pattern before eventually signaling a Continuation Trend or a sign of continued upward movement after the breakout, which was confirmed by significant volume increases.

Investors often use these lows as benchmarks, which then influence their decision to buy when the price reaches these levels. This is reinforced by the confirmation of increased volume during the breakout, which provides additional validation to the belief that the price will continue to rise.

In the context of behavioral economics, this aligns with the anchoring concept introduced by Kahneman (2011). Investors tend to use historical price patterns as "anchors" or benchmarks to predict future price movements. When they observe technical patterns similar to those seen in the past, such as certain patterns followed by price increases, they tend to assume that similar patterns will occur again. Thus, this verification not only strengthens the existing technical signals but also affirms that investor behavior patterns, as explained by Kahneman (2011) through anchoring, play a significant role in shaping price movement patterns in the market. These patterns repeat because investors tend to rely on past experiences as a guide for their investment decisions, making historical data a strong indicator that history tends to repeat itself in financial markets, and this is consistent with Dow Theory's principle of "History Repeats Itself."

This underscores that past price movements and technical patterns have the potential to provide valuable insights for current price movements, reinforcing the belief that history indeed tends to repeat itself in financial markets. The repeating history is held by investors or traders as a guide for their investment decisions. Therefore, these patterns can provide a strong foundation for investors in making buy decisions, with the expectation that Bitcoin's price upward trend is likely to continue, as observed in historical price movements.

Discussion on Conclusion Triangulation and Uncertainty

Conclusion Triangulation

The triangulation of conclusions in this study is based on technical analysis approaches that have been tested and verified through various methods and data sources. This triangulation process ensures that the conclusions drawn are not solely the result of one perspective or method but are the result of integrating multiple different analytical techniques, providing more valid and reliable results.

Triangulation Based on Historical Data

Firstly, the use of historical data as a verification tool provides a strong foundation for asserting that the technical patterns identified in this study have reliable predictive capabilities according to Dow Theory. The similarity between past price movement patterns and those observed from June 2022 to October 2023 indicates that price movements tend to follow recurring patterns, consistent with the Dow Theory principle of "History Repeats Itself," which also impacts human psychology according to the Behavioral Economics theory presented by Kahneman.

Triangulation of Methods with Additional Indicators

Secondly, the validity of the conclusions is further reinforced by volume confirmation observed during breakouts of the technical patterns. Significant volume increases during breakouts indicate that price movements are supported by strong market participation, which is a crucial indicator of technical signal validity. Additionally, using supplementary indicators such as MA 200 for trend confirmation enhances confidence in the conclusions drawn.

Uncertainty and Qualitative Elements

Despite providing a strong foundation, it is important to consider the inherent uncertainty in financial markets. This study focuses on technical analysis, which aims to identify historical patterns that may signal future price movements. However, it is crucial to remember that qualitative elements such as market sentiment, global economic conditions, monetary policy, and other external news and events can also influence price movements in ways that technical analysis alone may not predict. This uncertainty reflects the dynamic and complex nature of financial markets, where price decisions are driven not only by historical patterns but also by fluctuating qualitative factors. Therefore, although this study focuses on technical analysis, it is important for traders and investors to consider other elements as part of a comprehensive decision-making process.

Probability Issues in Qualitative Analysis

In the context of qualitative analysis used in this study, it is important to understand that probabilities are not expressed in definite numerical values as in quantitative analysis. Instead, probabilities in qualitative analysis are more descriptive and based on observed trends and patterns. For instance, although historical data shows that patterns like Falling Wedge and Triple Bottom are often followed by price increases, there is no absolute guarantee that these patterns will always produce the same results in the future. Therefore, probabilities in this context should be understood as indications or tendencies based on historical data rather than numerical certainties.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study aims to address how technical analysis can determine buy or sell decisions regarding the weekly price movements of Bitcoin from June 2022 to October 2023. Based on the conducted technical analysis, several technical patterns such as Ascending Triangle, Double Bottom, and Falling Wedge were identified as key patterns providing important signals during this research period. Additionally, confirmation from larger trends and the Moving Average (MA 200) also played a crucial role in reinforcing the validity of these signals.

a) Trend and MA 200: Confirmation from the main trend and price movement above MA 200 strengthens the signals from these technical patterns. MA 200, as an average price indicator used for trend confirmation, indicates that a bullish momentum is forming and is likely to continue.
b) Ascending Triangle: This pattern shows increasing buying pressure with stable resistance. A breakout from this pattern, often followed by an increase in volume, provides a strong signal for the continuation of the bullish trend.
c) Double Bottom: This pattern indicates the formation of strong support after two tests, signaling decreased selling pressure and increased buying pressure. A breakout confirmed by high volume gives a strong indication that the price will reverse to a bullish trend.
d) Falling Wedge: This pattern signals a slowing price decline, showing that selling pressure is decreasing. A breakout from this pattern, especially if supported by significant volume and price movement above MA 200, provides a signal that the price is likely to experience an upward reversal.

The study also integrates concepts from behavioral economics, Dow Theory, and supply and demand to strengthen the analysis and provide a more comprehensive guide for investors. The findings show:

a) Behavioral Economics: The concepts of anchoring and loss aversion provide important insights into how investors may react to identified technical patterns. Anchoring

explains the tendency of investors to rely on previous prices as a reference point in decision-making, while loss aversion highlights that investors are more strongly motivated to avoid losses than to seek gains.

b) Dow Theory: Dow Theory principles emphasize the importance of identifying primary and secondary trends to determine the optimal timing for buying. Each identified trend should be confirmed by volume to ensure signal validity.
c) Supply and Demand: The technical patterns identified in this study essentially reflect changes in the balance between supply and demand. When demand exceeds supply, particularly when confirmed by increased volume, prices tend to rise.

In conclusion, the technical patterns identified during the period from June 2022 to October 2023 provide strong buy signals. The combination of volume confirmation, price movement above MA 200, chart patterns, breakouts, major trend patterns, and the integration of supporting theories provide a robust basis for this analysis and reinforce the confidence that prices are likely to rise.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are suggested:

a) Use of Combined Technical Patterns: Investors are advised not to rely solely on one pattern or technical method but to use a combination of several patterns, such as Ascending Triangle, Double Bottom, and Falling Wedge, supported by volume and confirmation of price movement above MA 200.
b) Pay Attention to Volume Confirmation: Before making a buy decision, it is important for investors to always wait for significant volume confirmation. This helps ensure that the identified technical pattern is supported by strong market demand.
c) Diversify Your Portfolio: Although technical analysis provides strong buy signals, investors should still consider diversification principles to mitigate risk. Combining investments in various assets or strategies can help protect the portfolio from market volatility.

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