CHAPTER V
CONCLUSION

5.1 Conclusion

This research successfully developed a web-based Decision Support System (DSS) to help interpret the direction of Bitcoin's price movement through a combination of technical, structural, and market sentiment indicators. Technical indicators are formed using patterned datasets based on Range (R), Top Range (TR), Lower Range (LR), PTR, and PLR variables to generate market patterns such as Diamond Crash and Diamond Moon. The structural indicator is formed using Bitcoin Dominance (BTC. D) which is classified using a quantile approach, while sentiment indicators are formed using the Fear and Greed Index (FGI). All indicators are then integrated into a one-hour time-series dataset and analyzed using a rule-based approach to produce market direction signals in the form of Strong Bullish, Bullish, Neutral, Bearish, and Strong Bearish on multiple evaluation horizons. The validation results showed that the rule-based system developed was able to achieve an accuracy of 97.27%, an average ROI of 8.71%, a win rate of 97.27%, and a coverage of 100% in the main historical data of the study. Further validation using new data for the period November 2025 to April 2026 also showed consistent performance with an accuracy level of 95.65%–97.55%, thus demonstrating the ability to generalize rules to market conditions that have never been used before. In addition, this study also implements the ARIMAX model as a supporting feature for short-term Bitcoin price estimation and integrates all analysis results into a Streamlit-based DSS that is able to present market conditions, indicator visualizations, rule-based signals, and price estimates in an integrated, transparent, and user-understandable manner.

5.2 Suggestions

1. The research can further add other market indicators such as trading volume, open interest, and on-chain data to enrich the representation of

crypto market conditions and improve the quality of analysis of indicator combinations.

2. The developed Decision Support System can be further developed into a real-time system that is directly connected to live market data and uses other prediction methods as a comparison to the ARIMAX model.