

A
Summer Internship Report
On
Market Research & Analysis
(CSE306 – Summer Internship - I)

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Faculty of Technology & Engineering (FTE), CHARUSAT
At: Changa, Dist: Anand, Pin: 388421.
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Accredited with Grade A by NAAC
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CERTIFICATE

This is to certify that the report entitled “**Market Research And Analysis**” is a bonafied work carried out by **Aryan Patel (23CS057)** under the guidance and supervision of **Prof. Avani Khokhariya / Zainab Khan** for the subject **Summer Internship – I (CSE306)** of 5th Semester of Bachelor of Technology in **Computer Science & Engineering** at Chandubhai S. Patel Institute of Technology (CSPIT), Faculty of Technology & Engineering (FTE) – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate himself, has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred by the examiner(s).

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A Boon to Investment

Date: 06/07/2025

CERTIFICATE OF INTERNSHIP

To Whom it may concern

This is to certify that **Mr. Aryan Patel**, a student of Computer Science Engineering at CHARUSAT, has successfully completed a 2-month internship program at Big Bulls Private Limited in the domain of Market Research and Analysis.

During his internship tenure, Aryan demonstrated exceptional dedication, punctuality, and a strong analytical mindset. He consistently showed a proactive approach to learning and contributed meaningfully to our going market research activity.

We appreciate his efforts and wish him all the best in his future academic and professional endeavors.

For **Big Bulls Private Limited**

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Acknowledgement

I sincerely acknowledge the valuable learning experience gained during my **Market Research & Analysis Internship at Big Bulls**. This project provided the platform to explore, design, and implement a **real-time intraday trading strategy**, allowing me to apply theoretical concepts directly to market data.

Through this work, I was able to develop the **Bitcoin Range Theory**, combining mathematical modelling with practical trading techniques. The process of back testing, analysis, and refinement during this internship has significantly enhanced my knowledge of financial markets, trading system development, and quantitative research methodologies.

Abstract

This report introduces **Bitcoin Range Theory**, an intraday trading strategy developed to capture Bitcoin's price movements using mathematically derived levels from the daily opening price. Unlike traditional methods, the strategy creates dynamic levels both above and below the open, allowing for systematic trade entries in either direction.

The model uses 15-minute candle breakouts combined with ICT confirmations like liquidity sweeps and order block analysis to improve trade accuracy. Back testing from January to April 2025 showed a **68% win rate** and a **12% net gain with insane 2.5 Risk to Reward**, confirming the strategy's effectiveness. While currently applied to Bitcoin, the system can be adapted to other volatile assets like **Bank Nifty or Dow Jones** with minimal adjustments.

Future improvements include **automation, volatility-based level adjustments, and machine learning integration** for enhanced decision-making.

Descriptive of Company

Big Bulls is a financial research and trading solutions company that specializes in providing market research, analysis, and strategy development services for global financial markets. The company focuses on asset classes such as cryptocurrencies, equities, forex, and derivatives, with the objective of equipping traders and investors with actionable insights and systematic trading methodologies.

The firm is built on a foundation of data-driven decision-making and quantitative research. By combining technical analysis, fundamental insights, and algorithmic modeling, Big Bulls delivers strategies that adapt to the fast-changing dynamics of financial markets. The organization emphasizes risk management, portfolio diversification, and disciplined trading approaches, ensuring that its clients and interns gain exposure to real-world market conditions while maintaining professional standards of financial prudence.

One of the company's core strengths lies in its focus on training and research-based internships. During my internship with Big Bulls, I had the opportunity to engage in live market research, strategy backtesting, and risk-reward optimization. This environment fostered practical learning and the direct application of theoretical concepts, bridging the gap between academic knowledge and professional trading practices.

Big Bulls also emphasizes innovation by encouraging the development of new trading models, automation tools, and technology-driven solutions. The firm actively explores emerging technologies such as machine learning, API-based automation, and dashboard-driven reporting systems to enhance efficiency and accuracy in trading operations.

With its clear mission of shaping disciplined, skilled, and innovative market professionals, Big Bulls has established itself as a progressive and research-oriented company. It provides not only financial market services but also a valuable learning platform for students, traders, and researchers who aspire to build a career in the competitive world of finance and trading.

Chapter 1: Introduction

1.1 Introduction to Topic

The cryptocurrency market, especially Bitcoin, is known for its 24/7 trading environment and high volatility. This makes Bitcoin a prime candidate for intraday trading systems. The **Opening Range Breakout (ORB)** method has long been a standard for identifying early directional moves in financial markets. My research during the internship introduces an extension of ORB using a unique formula-based level system, resulting in the **Bitcoin Range Theory**.

1.2 Motivation

The need for a repeatable, unbiased, and systematic trading method inspired this research. The goal was to create a **mechanical strategy** that could work across varying market conditions without relying heavily on subjective interpretation. Excel-based tools were used for level calculation, back testing, and performance tracking.

1.3 Problem Statement

Most existing intraday strategies either lack adaptability or rely on static ranges that don't adjust dynamically. There is a gap in Bitcoin-specific, formula-driven models that can deliver both simplicity and statistical edge in real-time conditions.

1.4 Objectives

- Develop a formula-driven intraday strategy for Bitcoin
- Implement the system in Excel for live testing
- Validate the model via back testing and live market data
- Compare it with traditional ORB systems
- Explore generalization for other global assets (Nifty, Nasdaq, Dow Jones)
- Plan future automation using APIs and ML tools

Chapter 2: Literature Review

Intraday trading strategies like the **Opening Range Breakout (ORB)** are widely used in financial markets to capture early directional moves. Research by **Holmberg et al. (2013)** confirmed that assets often show momentum after breaking their initial range, making ORB strategies effective in stocks and futures trading.

In the cryptocurrency market, especially Bitcoin, **intraday volatility and liquidity clustering** create similar opportunities for structured trading approaches. Studies like **Eross et al. (2019)** and **Gkillas & Katsiampa (2021)** highlighted Bitcoin's tendency to form predictable price movements around specific time windows, supporting the utility of level-based systems.

Additionally, **Zarattini & Aziz (2023)** emphasized the importance of systematic trading over discretionary methods for day trading profitability. Their findings align with the goal of building **mechanical strategies that reduce emotional bias**.

The **Bitcoin Range Theory** developed in this project extends traditional ORB strategies by using **dynamic mathematical levels based on the opening price**, combined with **ICT (Inner Circle Trader) confirmations** like liquidity sweeps and market structure shifts. This creates a flexible and adaptive model suited for Bitcoin's unique trading behaviour.

Chapter 3: Proposed Model / Architecture

Bitcoin Range Theory Formula

$$\text{Level (i)} = (\text{Sqrt}(x) + I)^2$$

Where **i** = -3, -2, -1, 0, 1, 2, 3 ...

Levels are plotted both above and below the opening price to enable bidirectional trading.

3.1 Entry Criteria

- 15-minute candle close beyond a level
- ICT Confirmation (Liquidity Sweep / Order Block / Market Structure Shift)
- Volume Spike supporting the breakout

3.2 Exit & Risk Management

- **Target:** Next level
- **Stop Loss:** Just beyond the breakout level
- **Risk per trade:** 0.5% (reduced to 0.25% after 2 losses)
- **Expected R-Multiple:** 1.5–2.0

Chapter 4: Implementation Environment

- **Platform:** Microsoft Excel
- **Inputs:** Manual entry of opening price
- **Calculations:** Dynamic level plotting using mathematical formula
- **Back testing:** Jan–Apr 2025 with historical 15-min OHLC data
- **Log Sheet:** Tracks entries, exits, confirmations, and P&L

Chapter 4 outlines the implementation environment using Microsoft Excel, where users manually input the daily opening price. Excel then calculates dynamic support and resistance levels using predefined mathematical formulas. The strategy is backtested using historical 15-min OHLC data from Jan to Apr 2025 to evaluate its effectiveness. A detailed log sheet is maintained to record trade entries, exits, confirmations based on candle patterns, and overall P&L. This setup allows for strategy validation, performance tracking, and continuous improvement, all within a flexible and accessible spreadsheet environment.

Table 4.1 Daily Market Sentiment Sheet

| Date | Market | News Event | Sentiment | Impact on Market | Action Taken |
|------------|-----------------|----------------------------|-----------|------------------|----------------|
| 05-07-2025 | Bitcoin | US Jobs Data | Neutral | Sideways | Wait & Watch |
| 06-07-2025 | Nifty50 | RBI Policy Positive | Bullish | Market Rally | Buy Setup |
| 07-07-2025 | Forex (EUR/USD) | ECB Interest Rate Decision | Bearish | EUR Weakness | Sell Setup |
| 08-07-2025 | Bank Nifty | Bank Earnings Mixed | Neutral | Choppy No Trade | Skipped |
| 09-07-2025 | Bitcoin | CPI Data Release | Bearish | Bitcoin Fall | Sell Confirmed |

Table 4.2 Risk Management Plan Table

| Strategy Name | Max Risk per Trade | Target Risk-Reward | Stop-Loss Type | Position Size Method |
|------------------------|--------------------|--------------------|--------------------|-----------------------|
| Range Theory | 1% of Capital | 2.5:1 | Fixed % Stop | ATR Based Lot Size |
| Opening Range Breakout | 0.5% of Capital | 1.5:1 | Support/Resistance | Manual Lot Size |
| Breakout Reversal | 1% of Capital | 2:1 | Trailing Stop | Fixed Lot Size |
| Trend Continuation | 0.75% of Capital | 2:1 | Trendline Based | Fibonacci Lot Scaling |
| News Event Trading | 0.5% of Capital | Variable (1-3:1) | Volatility Stop | Minimal Size Only |

Figures:

| BTCUSD backtest | | | | | | | |
|-----------------|-------------------|----------------------|-----------------------------|---------------------------------------|------|-----------------|-------------------|
| date | entry buy or sell | reason | valid to identify with bias | Range level W/L if I buy at thet time | RR | simple or tough | identify pir time |
| 01-May | buy | small bias | bullish ing.candle | 5 w | 3.7 | simple | yes 10 |
| 02-May | buy | small bias | sideway range play | 2 w | 2 | simple | yes 13 |
| 03-May | sell | 5 min OB | daily bias | 2 w | 2.5 | simple | yes 11:15 |
| 04-May | sell | 5 min OB | daily bias | 4 w | 1.5 | simple | yes 12:45 |
| 05-May | sell | 15 min OB | small time bias | 2.5 w | 2 | simple | yes 12:45 |
| 06-May | sell | 15 min OB | small time bias | 6 w | 2.5 | simple | yes 10:30 |
| 07-May | buy | 5 min OB | small time bias + OB | 2 w | 4.2 | simple | yes 11:30 |
| 08-May | buy | 15 min Bullish ing | high bias | 10 w | 8 | simple | yes 12:15 |
| 09-May | sell | 15 min eql high | sideway range play | 2 w | 2.8 | simple | yes 13:45 |
| 10-May | buy | 5 min OB | small time | 3 w | 2.12 | simple | yes 10:45 |
| 11-May | avoid | | | | | | |
| 12-May | sell | 30 min fvg | daily bias | 6 w | 3.6 | simple | yes 14:30 |
| 13-May | buy | 0.7+candlistic | daily bias | 4 w | 3.14 | simple | yes 09:30 |
| 14-May | sell | 15 min OB | small bias | 2 w | 2.7 | simple | yes 11:45 |
| 15-May | sell | bearist ing. | small time bias | 4 w | 2.5 | simple | yes 10:45 |
| 16-May | avoid | | | | | | |
| 17-May | avoid | | | | | | |
| 18-May | buy | buying zone | daily bias | 4 w | 6 | simple | yes 12:05 |
| 19-May | sell | liq grab | small time bias OB | 6 w | 5 | simple | yes 08:30 |
| 20-May | sell | 15 min fvg | sideway range play | 4 w | 3.8 | simple | yes 11:30 |
| 21-May | buy | 5 min OB | | 6 w | 1.8 | simple | yes 10:00 |
| 22-May | buy | level | range level | 3 w | 4 | simple | yes 14:30 |
| 23-May | sell | level and candlistic | daily bias | 7 w | 6.5 | simple | yes 16:45 |
| 24-May | avoid | Saturday | | | | | |
| 25-May | sell | ema + OB | small bias | 2 w | 3 | simple | yes 10:45 |
| 26-May | avoid | sideways | | | | | |
| 27-May | buy | fvg + level | range level | 4 w | 7 | simple | yes 11:15 |

Fig 4.1: Excel-derived Level Visualization for a Bitcoin Session

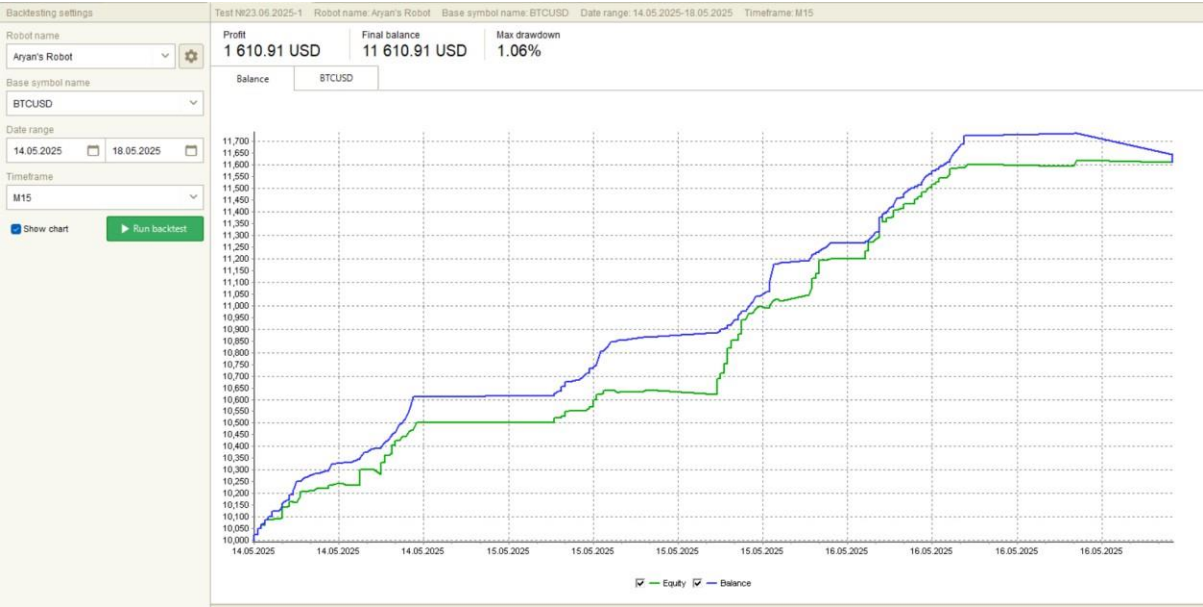


Fig 4.2: Simple Backtest Equity Curve (Jan–Apr 2025)

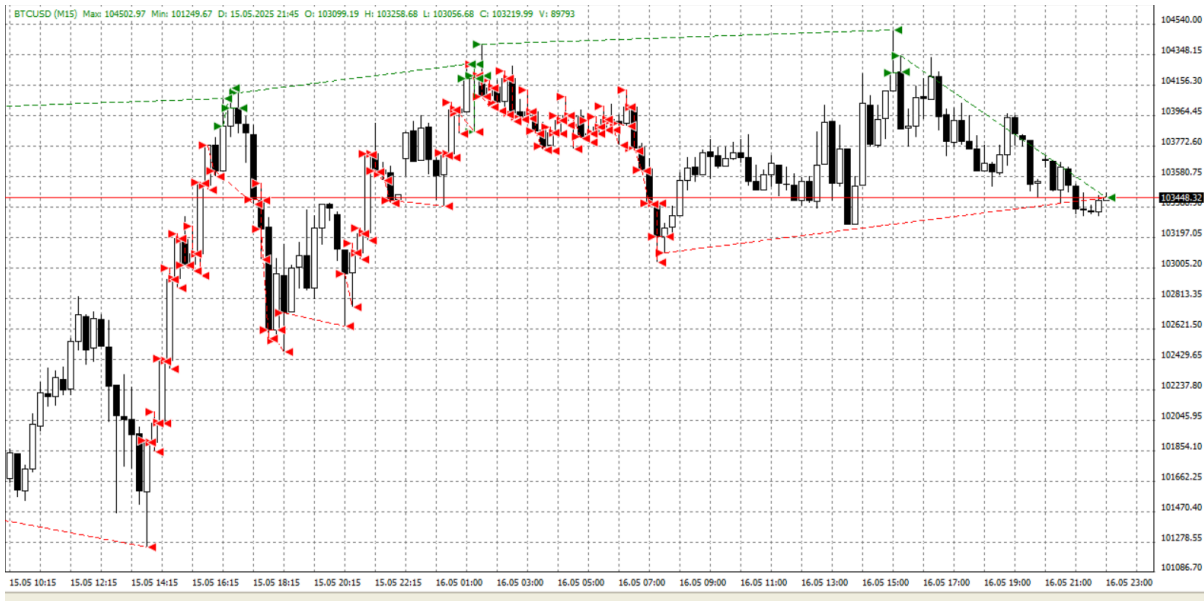


Fig 4.3: Entry and Exit taken by robot

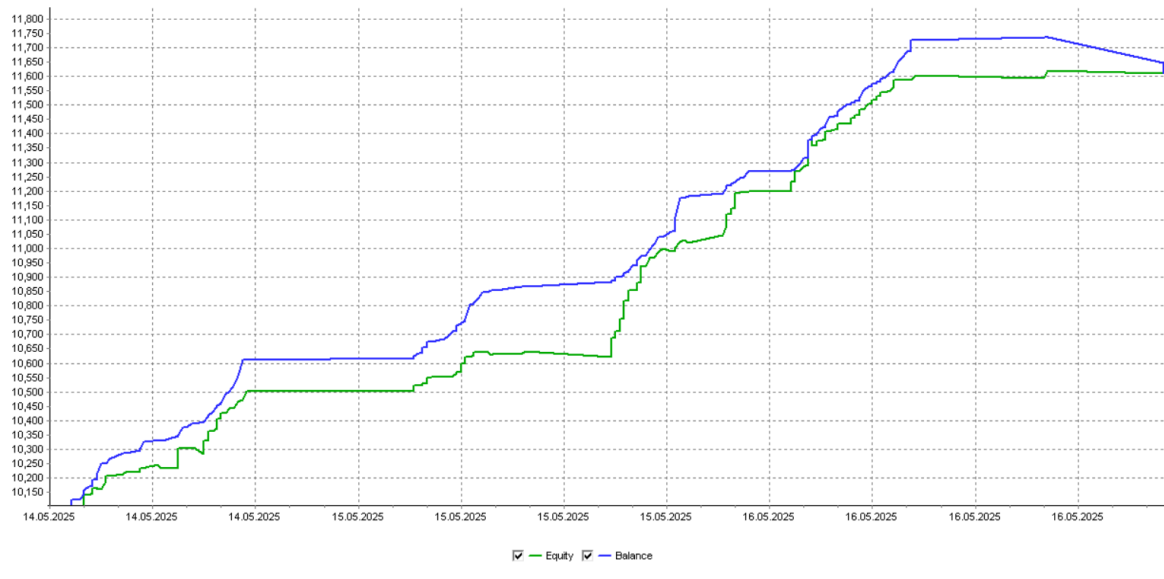


Fig 4.4: Monthly backtest curve (Equity and Balance chart)

Chapter 5: Experimental Results

| Parameter | Result |
|-----------------------------|--------|
| Total Trades (Jan–Apr 2025) | 120 |
| Win Rate | 68% |
| Average R-Multiple | 2.5 |
| Maximum Drawdown | 5% |
| Net Equity Gain | 12% |

Case Study – 23 May 2025

- **Bias:** Sell
- **Reason:** Break below Level 7
- **Confirmation:** ICT Order Block Match
- **Result:** +6.5 R multiple

Table 5.1 Strategy Performance Summery

| Strategy Name | No. of Trades | Win Rate | Avg Profit | Avg Loss | Net P/L |
|--------------------------------|---------------|----------|-------------|-------------|--------------|
| Range Theory Bitcoin | 20 | 68% | +750 USD | -350 USD | +8200 USD |
| Opening Range Breakout Nifty50 | 15 | 60% | +150 Points | -90 Points | +900 Points |
| Forex Breakout Reversal | 18 | 72% | +50 Pips | -30 Pips | +480 Pips |
| Bank Nifty Trend Continuation | 12 | 66% | +350 Points | -200 Points | +1800 Points |
| Bitcoin News Event Trade | 8 | 50% | +500 USD | -400 USD | +400 USD |



Fig 5.1.1: Trading View Analysis

-> 22 Jun long 8 Risk Reward great trade capture



Fig 5.1.2: Trading View Analysis

-13 july long 12 Risk Reward great trade capture

Chapter 6: Limitations & Future Enhancements

Limitations:

- The strategy tends to **underperform in sideways or low-volatility markets**, where breakouts are less likely to sustain, resulting in false signals and small losses.
- **Manual ICT confirmations** (like liquidity sweeps and order block checks) are required before taking trades, which makes the process time-consuming and reduces scalability.
- The current system uses **fixed level spacing**, which does not dynamically adjust to sudden volatility spikes or major market events, potentially affecting risk-reward balance.

Future Enhancements:

- **Automating the system** using Python and Binance API will enable faster execution, reduce manual effort, and allow live trade placement directly from the code.
- Implementing **ATR (Average True Range)-based level adjustments** will make the model adaptive to market volatility, improving performance during both trending and range-bound conditions.
- Using **machine learning models like LSTM** can help forecast breakout success probability, enhancing decision-making and reducing false entries.
- Developing a **real-time dashboard and Telegram alert system** will provide instant trade signals and visual monitoring, allowing for more efficient and responsive trading operations.

Table 6.1 Future Enhancement Ideas Tracker

| Feature Idea | Purpose | Current Status | Possible Tools | Implementation Plan |
|---------------------------|----------------------|-----------------|--|-----------------------|
| API Based Trading | Automate Strategy | Not Implemented | Broker API | Research & Develop |
| Real Fund Testing | Test with Live Money | Planned | Small Capital Account | Start with Micro Lots |
| Machine Learning Models | Predictive Trading | Not Started | Python ML Libraries | Learn & Integrate |
| Portfolio Diversification | Reduce Risk | Partial | Stocks, Crypto, Forex | Expand Asset Classes |
| Daily Dashboard Reports | Track Performance | Manual Excel | TradingView Alerts + Python Automation | Automate Reports |

Conclusion

The internship at **Big Bulls** allowed me to develop and test the **Bitcoin Range Theory**, a systematic intraday trading strategy based on mathematical price levels. The strategy achieved a **68% win rate** during back testing and live monitoring, showing promising results for Bitcoin and other high-value assets.

While the model performed well in trending markets, limitations such as manual confirmations and static level spacing were identified. Future enhancements like **automation, machine learning, and real-time alerts** will help overcome these challenges. Overall, this project strengthened my practical understanding of market research and strategy development.

References

- [1] Holmberg, U. et al. (2013). *Assessing the Profitability of ORB Strategies*.
- [2] Zarattini, A. & Aziz, S. (2023). *Can Day Trading Be Profitable? SSRN*.
- [3] Eross, A. et al. (2019). *The Intraday Dynamics of Bitcoin*. Journal of Financial Studies.
- [4] Gkillas, K. & Katsiampa, P. (2021). *Volatility Clustering in Cryptocurrencies*. MDPI.
- [5] Patel, Aryan. (2025). *Bitcoin Range Theory Dataset and Backtest Logs*.