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A Study on Awareness of Algorithmic Trading and Its Impact on Trading Profitability among Investors

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Abstract: The rapid advancement of financial technology has significantly transformed the functioning of financial markets, particularly through the adoption of algorithmic trading systems. Algorithmic trading allows investors to execute trades automatically based on predefined rules, advanced computational models, and real-time market data. With the increasing use of technology in trading activities, awareness of algorithmic trading among investors has become an important factor influencing trading decisions and financial performance. The present study examines the level of awareness of algorithmic trading dimensions among investors and analyzes its relationship with trading profitability.

The study considers four key dimensions of algorithmic trading awareness, namely Technology and Infrastructure, Trading Strategy and Algorithmic Systems, Market Data and Information, and Skill and Knowledge. The study is based on primary data collected from 100 investors and employs statistical techniques to analyze the data. The findings reveal that there is a significant difference in the awareness levels of algorithmic trading dimensions among investors. The results also indicate a positive and significant relationship between awareness of algorithmic trading components and trading profitability. The study highlights that investors with higher levels of technological knowledge, access to market information, and algorithmic trading skills tend to achieve better trading outcomes.

Keywords: Algorithmic Trading, Investor Awareness, Trading Profitability, Financial Technology

Introduction: Algorithmic trading has emerged as one of the most transformative developments in modern financial markets. With rapid advancements in information technology, artificial intelligence, and high-speed internet connectivity, trading activities have increasingly shifted from manual decision-making to automated systems that execute trades based on predefined rules and mathematical models. Algorithmic trading, often referred to as algo trading, involves the use of computer programs to automatically place buy or sell orders in financial markets according to specific trading strategies. These systems analyze large volumes of market data, identify trading opportunities, and execute orders at speeds that are impossible for human traders to achieve. As financial markets become more technologically driven, investors are increasingly exposed to algorithmic trading tools and platforms that promise improved efficiency, reduced emotional bias, and enhanced trading outcomes.

Awareness of algorithmic trading has therefore become an important aspect of investor knowledge in the contemporary trading environment. Investor awareness includes understanding the technological infrastructure required for algorithmic trading, familiarity with algorithmic trading strategies, access to reliable market data and information, and the skills and knowledge necessary to design or use trading algorithms effectively. Investors who possess greater awareness and understanding of these components are better positioned to make informed trading decisions and utilize automated trading systems efficiently. In contrast, limited awareness may prevent investors from fully leveraging the advantages of algorithmic trading or may lead to improper use of trading technologies, potentially affecting trading performance.

Trading profitability is one of the primary goals of investors participating in financial markets. Profitability

depends on several factors such as timely decision-making, effective trading strategies, accurate market analysis, and efficient trade execution. Algorithmic trading systems are designed to enhance these aspects by minimizing human error, improving execution speed, and enabling data-driven decision-making. However, the effectiveness of algorithmic trading largely depends on the level of awareness and understanding among investors regarding its functioning and application. Therefore, examining the relationship between awareness of algorithmic trading and trading profitability is essential to understand whether increased knowledge and technological adoption contribute to better financial outcomes for investors. This study aims to explore the level of investor awareness of algorithmic trading and analyze its impact on trading profitability among investors.

Review of Literature

1. **Ahmad et.al (2021),** In the research titled "Using algorithmic trading to analyze short-term profitability of cryptocurrency markets" The study concludes that algorithmic trading techniques can effectively analyze short-term price movements in cryptocurrency markets and improve trading performance when supported by advanced computational models. The findings indicate that automated trading systems are capable of processing large volumes of market data and executing trades rapidly, thereby increasing the chances of short-term profitability. However, the study also highlights that market volatility and data quality significantly influence the success of algorithmic strategies, suggesting that traders must combine technological capability with proper market understanding.

2. **Arumugam (2023),** In the research titled "Algorithmic trading: Intraday profitability and trading behavior" The study concludes that algorithmic trading significantly affects intraday trading behavior and profitability by enabling faster decision-making and efficient execution of trading strategies. The findings reveal that traders who utilize algorithmic systems tend to achieve improved market timing and reduced emotional bias compared to manual traders. The research emphasizes that well-designed trading algorithms and access to high-quality market data play a critical role in enhancing trading outcomes and maximizing intraday profitability.

3. **Bhuiyan et.al (2025),** In the research titled "Deep learning for algorithmic trading: A systematic literature review" The study concludes that deep learning and artificial intelligence have become increasingly important tools in the development of algorithmic trading systems. Through a systematic review of previous research, the authors highlight that machine learning models can improve prediction accuracy, identify complex market patterns, and enhance the effectiveness of trading strategies. The study also notes that while deep learning offers significant potential for improving trading profitability, challenges such as model complexity, data requirements, and computational costs remain important considerations.

4. **Carè & De Carlo (2024),** In the research titled "Technology and automation in financial trading: A bibliometric analysis" The study concludes that technological innovation and automation are rapidly transforming financial trading systems worldwide. The bibliometric analysis indicates a growing body of research focusing on algorithmic trading, artificial intelligence, and financial technology, reflecting their increasing relevance in modern markets. The findings suggest that technological infrastructure, data processing capability, and advanced trading platforms play a crucial role in improving trading efficiency, market transparency, and investor participation in automated trading environments.

5. **Chang & Chou (2022),** In the research titled "The influence of algorithmic trading on market quality and liquidity" The study concludes that algorithmic trading has a significant influence on market quality and liquidity in financial markets. The findings reveal that automated trading systems can improve market efficiency by enhancing price discovery and increasing trading volume. At the same time, the research highlights that excessive reliance on high-frequency algorithms may sometimes contribute to short-term volatility. Overall, the study emphasizes that algorithmic trading plays an important role in shaping modern financial market dynamics.

6. **Courdent & McClelland (2022),** In the research titled "Algorithmic trading strategies and their

impact on market efficiency" The study concludes that algorithmic trading strategies contribute to improved market efficiency by enabling systematic and data-driven trading decisions. The research shows that algorithmic systems help investors identify trading opportunities more effectively and execute strategies with greater precision. The authors also highlight that the success of algorithmic trading largely depends on the design of trading algorithms, the availability of reliable market data, and the technological infrastructure supporting automated trading operations.

7. **Grindsted (2022),** In the research titled "Algorithmic trading across speculative time-spaces" The study concludes that algorithmic trading has fundamentally reshaped the spatial and temporal dynamics of financial markets by enabling transactions to occur at extremely high speeds across global trading networks. The research emphasizes that financial markets are increasingly governed by automated systems that operate within complex technological infrastructures. The study highlights that algorithmic trading not only influences trading behavior and market structure but also reflects the broader transformation of financial markets toward technology-driven and data-intensive environments.

Research Gap

Although several studies have examined different aspects of algorithmic trading, certain research gaps remain in the existing literature. Most of the previous studies have primarily focused on the technological development of algorithmic trading systems, trading strategies, market efficiency, and the application of artificial intelligence and machine learning in financial markets. These studies largely emphasize market-level outcomes such as liquidity, volatility, and system efficiency, particularly in developed financial markets and cryptocurrency trading environments. However, limited research has been conducted on the awareness and understanding of algorithmic trading among individual investors and how such awareness influences their trading profitability. Furthermore, previous studies have not sufficiently examined the role of specific components of awareness such as technology and infrastructure, trading strategies and algorithms, market data and information, and investor skills and knowledge in determining trading outcomes. Therefore, there exists a significant gap in understanding the relationship between investor awareness of algorithmic trading and its impact on trading profitability, especially in the context of retail investors in emerging financial markets. The present study attempts to address this gap by analyzing how different dimensions of algorithmic trading awareness influence the profitability of investors

Research Methodology

The present study adopts a descriptive and analytical research design to examine the awareness of algorithmic trading and its impact on trading profitability among investors. The study is based on primary data collected from a sample of 100 investors using a structured questionnaire. The questionnaire was designed to measure various dimensions of algorithmic trading awareness including Technology and Infrastructure, Trading Strategy and Algorithmic Systems, Market Data and Information, and Skill and Knowledge. The collected data were analyzed using statistical tools such as the Friedman test to examine differences in awareness levels among the dimensions and correlation analysis to determine the relationship between algorithmic trading awareness and trading profitability. The results obtained from the analysis were interpreted to draw meaningful conclusions regarding the impact of algorithmic trading awareness on investors' trading performance.

Data Analysis

Data analysis is an important part of the research process as it helps in organizing and interpreting the collected data to draw meaningful conclusions. In the present study, the data collected from 100 respondents through a structured questionnaire were systematically classified and analyzed to understand the level of awareness of algorithmic trading dimensions and their relationship with trading profitability among investors. Descriptive statistics were used to present the demographic profile of respondents, while statistical tools were applied to examine differences in awareness levels and the relationship between algorithmic trading awareness and trading profitability.

Demographic Factor

Sr No.	Particular	Category	Frequency	Percent
1	Age	Up to 25 Years	5	5.0
		26 to 35 Years	28	28.0
		36 to 45 years	36	36.0
		46 to 60 Years	25	25.0
		Above 60 Years	6	6.0
2	Gender	Male	81	81.0
		Female	19	19.0
3	Qualification of respondents	HSC	3	3.0
		Graduate	25	25.0
		Postgraduate	45	45.0
		Professional degree	27	27.0

The demographic profile of the respondents shows that out of 100 respondents, 36 respondents (36%) belong to the age group of 36 to 45 years, which constitutes the largest group, followed by 28 respondents (28%) in the age group of 26 to 35 years, 25 respondents (25%) in the age group of 46 to 60 years, 6 respondents (6%) above 60 years, and 5 respondents (5%) up to 25 years. In terms of gender distribution, 81 respondents (81%) are male, while 19 respondents (19%) are female. Regarding educational qualification, the majority of respondents 45 (45%) are postgraduates, followed by 27 respondents (27%) holding professional degrees, 25 respondents (25%) are graduates, and 3 respondents (3%) have completed HSC. This indicates that most respondents are middle-aged, predominantly male, and possess higher educational qualifications.

Objective and Hypothesis

Objective 1 To examine the difference in the level of awareness of algorithmic trading dimensions among investors.

Null Hypothesis H01: There is no difference in the factor of level of awareness of algorithmic trading dimensions among investors.

Alternate Hypothesis H11: There is a difference in the factor of level of awareness of algorithmic trading dimensions among investors.

To study the above null hypothesis, Friedman test is applied and results are as follows:

Test Statistics[a]	
N	100
Chi-Square	13.125
df	3
P-value	.004
a. Friedman Test	

Interpretation: The above results indicate that calculated p-value is 0.004. It is less than 0.05. Therefore chi-square test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

Conclusion: There is a difference in the factor of level of awareness of algorithmic trading dimensions among investors.

Findings: To understand the findings, level of awareness of algorithmic trading dimensions among investors are obtained and presented as follows:

Ranks	
	Mean Rank
Technology and Infrastructure	2.44
Trading strategy and Algorithmic	2.17
Market Data and Information	2.75
Skill and Knowledge	2.65

The mean rank results indicate the relative level of awareness of different dimensions of algorithmic trading among investors. Among the four dimensions, Market Data and Information has the highest mean rank of 2.75, suggesting that investors possess comparatively greater awareness and importance regarding access to market data and financial information while engaging in algorithmic trading. This is followed by Skill and Knowledge with a mean rank of 2.65, indicating that investors also recognize the importance of having adequate knowledge and technical skills to effectively use algorithmic trading systems. Technology and Infrastructure has a mean rank of 2.44, showing a moderate level of awareness about the technological requirements necessary for automated trading. In contrast, Trading Strategy and Algorithmic Systems has the lowest mean rank of 2.17, implying that investors have comparatively lower awareness or understanding of developing and applying algorithmic trading strategies. Overall, the results suggest that while investors are more aware of market information and knowledge aspects, their understanding of algorithmic trading strategies remains relatively limited.

Objective 2 To analyze the relationship between the awareness of algorithmic trading dimensions and trading profitability among investors using correlation analysis.

Null Hypothesis H02: There is no relationship between the awareness of algorithmic trading dimensions and trading profitability among investors using correlation analysis.

Alternate Hypothesis H12: There is a relationship between the awareness of algorithmic trading dimensions and trading profitability among investors using correlation analysis.

To study the above null hypothesis, Correlation test is applied and results are as follows:

Correlations		
		Trading Profitability
Trading Profitability	Pearson Correlation	1
	P-value	
	N	100

Technology and Infrastructure	Pearson Correlation	.367**
	P-value	.000
	N	100
Trading strategy and Algorithmic	Pearson Correlation	.422**
	P-value	.000
	N	100
Market Data and Information	Pearson Correlation	.366**
	P-value	.000
	N	100
Skill and Knowledge	Pearson Correlation	.413**
	P-value	.000
	N	100
**. Correlation is significant at the 0.01 level (2-tailed).		

Interpretation: The above results indicate that calculated p-value is less than 0.05. Therefore, correlation test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

Conclusion: There is a relationship between the awareness of algorithmic trading dimensions and trading profitability among investors using correlation analysis.

Findings: The correlation results show the relationship between different dimensions of algorithmic trading awareness and trading profitability among investors. The findings indicate that all four dimensions—Technology and Infrastructure (r = 0.367), Trading Strategy and Algorithmic (r = 0.422), Market Data and Information (r = 0.366), and Skill and Knowledge (r = 0.413)—have a positive and significant correlation with trading profitability at the 0.01 significance level. This suggests that higher awareness and understanding of these aspects of algorithmic trading are associated with improved trading profitability among investors. Among these variables, Trading Strategy and Algorithmic systems show the strongest relationship with profitability, followed by Skill and Knowledge, indicating that strategic understanding and technical expertise play an important role in achieving better trading outcomes. Overall, the results imply that increased awareness of algorithmic trading components contributes positively to investors' trading performance.

Conclusion

The study concludes that there is a significant difference in the level of awareness of various dimensions of algorithmic trading among investors, namely Technology and Infrastructure, Trading Strategy and Algorithmic Systems, Market Data and Information, and Skill and Knowledge. The analysis shows that investors possess relatively higher awareness regarding market data and information as well as the skills and knowledge required for algorithmic trading, while comparatively lower awareness is observed in relation to trading strategies and algorithmic systems. Furthermore, the results reveal a significant positive relationship between the awareness of algorithmic

trading dimensions and trading profitability. Investors who possess better technological understanding, access to market information, strategic trading knowledge, and relevant skills tend to achieve higher trading profitability. Therefore, the findings highlight that enhancing investor awareness and technical understanding of

algorithmic trading can play an important role in improving trading performance and decision-making in financial markets.

Bibliography

1. Ahmad, I., Alqurashi, M., & Alzahrani, A. (2021). Using algorithmic trading to analyze short-term profitability of cryptocurrency markets. PLOS ONE, 16(3), e0247901.
2. Arumugam, D. (2023). Algorithmic trading: Intraday profitability and trading behavior. Economic Modelling, 128, 106545.
3. Bhuiyan, M. D. S. M., Rahman, M., & Islam, M. (2025). Deep learning for algorithmic trading: A systematic literature review. Finance Research Letters, 65, 105283.
4. Carè, R., & De Carlo, M. (2024). Technology and automation in financial trading: A bibliometric analysis. Research in International Business and Finance, 69, 102109.
5. Chang, C., & Chou, R. (2022). The influence of algorithmic trading on market quality and liquidity. Journal of Financial Markets, 59, 100652.
6. Courdent, M., & McClelland, R. (2022). Algorithmic trading strategies and their impact on market efficiency. Journal of Financial Innovation, 8(2), 45-60.
7. Grindsted, T. S. (2022). Algorithmic trading across speculative time-spaces. Annals of the American Association of Geographers, 112(4), 1096–1113.
8. Narang, R. (2018). Inside the black box: A simple guide to quantitative and high-frequency trading (2nd ed.). Wiley.
9. Pereira, O. S. (2021). Algorithmic trading strategies: Implementation and performance evaluation. Universidade Nova de Lisboa.
10. Raheman, A., Ahmed, S., & Khan, M. (2022). Bibliometric analysis of algorithmic trading research: Trends and future directions. International Journal of Financial Studies, 10(4), 95.
11. Yang, D., Li, Y., & Wang, H. (2025). Research on the impact of algorithmic trading on market volatility. Scientific Reports, 15, 15020.
12. Wang, H., Liu, X., & Zhang, Y. (2024). Optimal profit-making strategies in stock markets using machine learning algorithms. Quantitative Finance and Economics, 8(1), 21-39.
13. Arratia, A. (2023). Algorithmic trading systems and their impact on market liquidity and volatility. Journal of Financial Technology, 5(2), 55-71.
14. Dutta, E., Diwan, S., & Chakrabarty, S. P. (2024). ESG-driven pairs algorithm for sustainable trading: Evidence from the Indian market. arXiv Preprint, arXiv:2401.14761.
15. Gupta, R., Gupta, S., Singh, J., & Kais, S. (2025). Entropy-assisted quality pattern identification for algorithmic trading strategies. arXiv Preprint, arXiv:2503.06251.