Multidisciplinary International Journal of Research and Development

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Algorithmic Trading in India: An Analytical Study of Market Growth, AI Integration, and Future Prospects

Dr. Rita Kakade

Assistant Professor, Faculty of Management – Finance,

ASM's Institute of Business Management and Research, Pune, India

Abstract— Algorithmic trading is transforming the way financial markets are traded, allowing traders to make decisions based on data and execute trades in an automated and high-speed manner. This shift is picking up pace in India with the advancement of technology, growing market engagement, and supportive regulations. The objective of this study is to understand the present market size of algorithmic trading in India, analyze the growth trends, study market segmentation based on the components, deployment models and trader types and identify the key drivers and challenges affecting the market growth. The research has been done based on the secondary data and analytical techniques like the trend analysis, CAGR estimation & comparative analysis have been used. The findings show that the algorithmic trading market in India is witnessing a strong growth trend, fueled by the adoption of artificial intelligence, cloud computing, and a surge of interest among institutional and retail investors. The market has good growth potential and will continue to grow significantly in future. But hurdles like regulatory complexity, cybersecurity threats, and infrastructure constraints still remain. The findings from the analysis emphasize India's shift towards an advanced, technology-driven trading environment and its increasing significance in the global algorithmic trading arena.

Keywords— AI, Algorithmic Trading, Financial Markets, Growth Trends, India, Market Size.

I. INTRODUCTION

Algorithmic trading involves the application of algorithms to execute financial transactions in accordance with certain commands and instructions. These systems are equipped with advanced technologies, such as artificial intelligence, machine learning, and high-frequency computing, which enable them to process vast amounts of data and execute trades quickly and accurately.

The global market for algorithmic trading has grown significantly over the past years. As per latest reports, the global market reached a value of USD 21.06 billion in 2024 and is expected to expand further to achieve USD 42.99 billion by 2030 at a CAGR of 12.9%. The primary factors that have contributed to the market expansion include the adoption of artificial intelligence and machine learning techniques, which help in making accurate predictions and decisions in real time. North America accounts for the highest market share of 33.6% in 2024 due to its sophisticated technology infrastructure and high frequency trading. On the other hand, the Asia-Pacific region represents the fastest-growing market because of rapid digitization and advancements in financial technology.

Algorithmic trading has seen widespread acceptance in India with the rise of online trading systems and the backing of the Securities and Exchange Board of India. Leading stock exchanges in India, like the National Stock Exchange of India and Bombay Stock Exchange, have played an active role in fostering algorithmic trading through

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

their superior technology and API systems. The Indian algorithmic trading industry had a value of USD 615.61 million in 2025 and is expected to increase its worth up to USD 1,350.34 million by 2034, at a compound annual growth rate of 9.12%. Even though it is smaller in size than other global markets, India has huge potential for growth because of the involvement of retail traders and cloud trading systems.

II. NEED OF THE STUDY

Indian capital markets are experiencing rapid change, shifting from the old manual trading system to the modern-day high-frequency trading, making it essential to have a solid analysis framework for predicting the future course of the capital markets. While the concept of algorithmic trading has spread across the globe, certain characteristics of the trading environment in India include unprecedented growth of individual retail investors, the rigorously enforced but flexible regulations of the SEBI authorities and the application of cutting-edge technologies such as Artificial Intelligence (AI) and Machine Learning (ML) at a local level. Although the industry has grown exponentially, no in-depth academic study is conducted on the future shape of the industry in the coming years (2026-2034). The research is very important to provide the much-needed vision of the next decade that can be used by institutional and retail investors, and policy makers alike. The main purpose of this paper is to value new technology adoption, as well as the evolution towards an autonomous trading framework, which will be assessed based on socio-economic and technological dimensions.

III. LITERATURE REVIEW

The phenomenon of algorithmic trading has become of considerable interest to academic researchers due to its profound influence on the effectiveness of trading, efficiency of financial markets, and liquidity. This type of trading implies computer programs and their automated implementation aimed at following certain rules in order to execute transactions according to pre-set instructions.

The literature review reveals that the advent of algorithmic trading is linked to the necessity of improving trade execution and increasing its efficiency in rapidly developing financial markets. In his article published in the Wall Street Journal, Thomas J. Peterffy, an inventor of electronic trading platforms, emphasizes that automated processes have revolutionized trade execution thanks to the minimization of errors and increased speed. Carole Comerton-Forde and Terrence Hendershott (2011) state that algorithmic trading has developed from simple systems into complex models applying AI technologies.

Numerous academic sources provide evidence for the claim that algorithmic trading increases market efficiency. In particular, Terrence Hendershott, Charles M. Jones, and Albert J. Menkveld (2011) state that algorithmic trading facilitates better liquidity and lower bid-ask spreads, which positively affect market efficiency. Moreover, the research done by Joel Hasbrouck (2018) proves that high-frequency algorithmic trading provides a great contribution to price discovery due to rapid processing of information in the price formation process. Still, according to some scholars, algorithmic trading can be one of the factors that cause high volatility. In this regard, the 2010 Flash Crash incident is widely recognized as a case where automated trading led to high short-term volatility.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Nowadays, artificial intelligence (AI) and machine learning (ML) models are commonly used in algorithmic trading systems. Within this context, academic works focus on the importance of smart trading models that are able to learn from data and make accurate predictions and adapt rapidly to changes. For example, as the use of AI grows, the ability to improve the prediction and adaptation capabilities has been enhanced, thanks to the rapid learning and real-time data processing capabilities. (Marcos López de Prado, 2018). Neural networks and reinforcement learning are examples of machine learning techniques that can uncover complex patterns, enabling traders to make better-informed decisions.

Several studies have analyzed the adoption of algorithmic trading in emerging markets such as India. These studies state that advancements in digital technology and connectivity have helped drive algorithmic trading in these markets. Some studies specifically mention India and discuss how advancements in exchanges, like National Stock Exchange, and regulations made by institutions like SEBI have made trading more transparent and facilitated innovations. Based on the findings of market reports, algorithmic trading makes up a significant portion of all trade volume in India, especially derivatives markets. Nevertheless, some issues like regulatory hurdles, limited investor awareness, and infrastructure shortcomings are mentioned by scholars as well.

Recent scholarly studies indicate an increasing tendency of retail participation in algorithmic trading. Low-cost platforms, API availability, and cloud computing services are among the factors that have encouraged retail investors to engage in algorithmic trading. According to the RBI and SEBI research papers, improved financial literacy and the increased use of digital payments systems have played a vital role in this regard. However, some literature mentions that retail traders face certain challenges, particularly regarding their lack of knowledge about developing trading algorithms.

IV. RISKS AND CHALLENGES OF ALGORITHMIC TRADING

Even though algorithmic trading has several advantages, it is also fraught with some risks and challenges. The major issues that have been identified include:

- **Systemic Risks:** Faults in algorithms can cause massive disruptions.
- **Threats in Cyber Security:** Growing dependence on technology makes markets vulnerable to cyber-attacks and data theft.
- **Regulation Challenges:** It becomes challenging to comply with emerging regulations.

Several research works by international financial organizations and regulatory agencies highlight the importance of having an effective risk management system and regulatory structure in place to overcome the above-listed challenges.

V. RESEARCH GAP

Though many research works have been done about algorithmic trading around the world, very little emphasis has been placed on studying the Indian market in terms of market size, growth trends, and forecasts. There is a clear requirement to carry out an integrated study on market size, technological trends, and regulation framework in India.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

VI. OBJECTIVES OF THE STUDY

- To determine the current market size of algorithmic trading in India
- To understand the growth pattern of the algorithmic trading market in India
- To perform a segmentation analysis of the market by its components, deployments, and trader categories
- To know the various factors that drive and hinder the market's growth

VII. RESEARCH METHODOLOGY

The present study follows a descriptive and analytical approach for examining the algorithmic trading market in India. It uses secondary data sourced from industry studies, stock exchange reports of the National Stock Exchange of India and the Bombay Stock Exchange, as well as policy reports from the Securities and Exchange Board of India.

The study employs trend analysis, CAGR analysis, and comparative analysis for analyzing the market's growth patterns and different segments within and outside India.

VIII. GROWTH TRENDS IN THE INDIAN ALGORITHMIC TRADING MARKET

There are many growth trends that currently characterize the algorithmic trading market in India. Some of the major ones include:

Automation: With the advent of technology, algorithmic trading has become a common strategy in the market in India with the majority of trades being made using algorithms, especially in equities and derivatives. Institutions are adopting automation to enhance trading efficiency.

The advent of Artificial Intelligence and Machine Learning: With the aid of big data sets, including trends in price movements and macroeconomic factors, Artificial Intelligence and Machine Learning have revolutionized the development and implementation of trading strategies in the market.

More Participation from Retail Traders: With user-friendly platforms, algorithmic trading is not an exclusive trading strategy for institutional traders in India anymore as there are more retail traders implementing the strategy on their own using trading platforms and APIs.

Cloud Computing Infrastructure: Cloud computing technologies provide the necessary platform to build efficient, low-cost, and reliable automated trading systems.

IX. KEY DRIVERS OF MARKET GROWTH

Table 1: Drivers of the Algorithmic Trading Market

Driver	Impact
AI & Machine Learning	Enhances trading accuracy and predictive capabilities by analyzing large datasets, identifying patterns, and improving decision-making in real time.
Cloud Technology	Improves scalability and flexibility by enabling high-performance computing, reducing infrastructure costs, and supporting seamless deployment of trading algorithms.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Digitalization	Expands accessibility by enabling broader participation of retail and institutional investors through online trading platforms, APIs, and mobile-based systems.
Regulatory Framework	Ensures transparency and market stability by enforcing compliance standards, reducing manipulation risks, and promoting fair trading practices.
High-Speed Infrastructure	Enables efficient execution by reducing latency, improving order processing speed, and supporting high-frequency trading strategies in competitive markets.

X. PROBLEMS ASSOCIATED WITH ALGORITHMIC TRADING (INDIA)

- **High Initial Investment Cost:** Implementation of algorithmic trading entails huge costs incurred on purchasing necessary hardware and software that would facilitate the process. This poses an impediment for small-scale traders who cannot afford to invest heavily at the beginning.
- **Stringent Regulatory Environment:** The capital market operates under stringent regulatory laws that change constantly; therefore, the system has to undergo constant changes to align with new regulations.
- **Security Breaches:** The trading systems are prone to security risks such as hacking, virus attacks, malware, and data theft. As a result, there is the possibility of financial loss or damage to reputation.
- **Limited Understanding:** Most individual traders have inadequate information and technical expertise on how to implement algorithmic trading.
- **Reliance on Technology:** Dependence on technological advancements in algorithmic trading poses a great threat to the system since technical problems arise now and then.
- **Market Volatility:** Automated executions in the capital market may exacerbate the effects of volatility, particularly when operating under abnormal market conditions.
- **Infrastructure Inequality:** Institutional investors have better resources for carrying out trades compared to individual traders.

XI. MARKET SIZE, GROWTH, AND SEGMENTATION

A. Overview of the Global Market (2024–2030)

The global market for algorithmic trading has seen substantial growth over the last ten years, mainly due to the fast pace of technological development and the increased use of automated trading platforms in financial institutions.

The market had a valuation of around USD 21.06 billion in 2024 and is estimated to grow to USD 42.99 billion by 2030, marking a robust compound annual growth rate (CAGR) of 12.9%.

The continuous growth of the market can be attributed to the increasing adoption of advanced technology such as AI, ML, and HFT systems.

These systems allow participants in the market to analyze large amounts of financial data in real-time and identify trading opportunities, enabling more efficient execution of trades than traditional methods.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

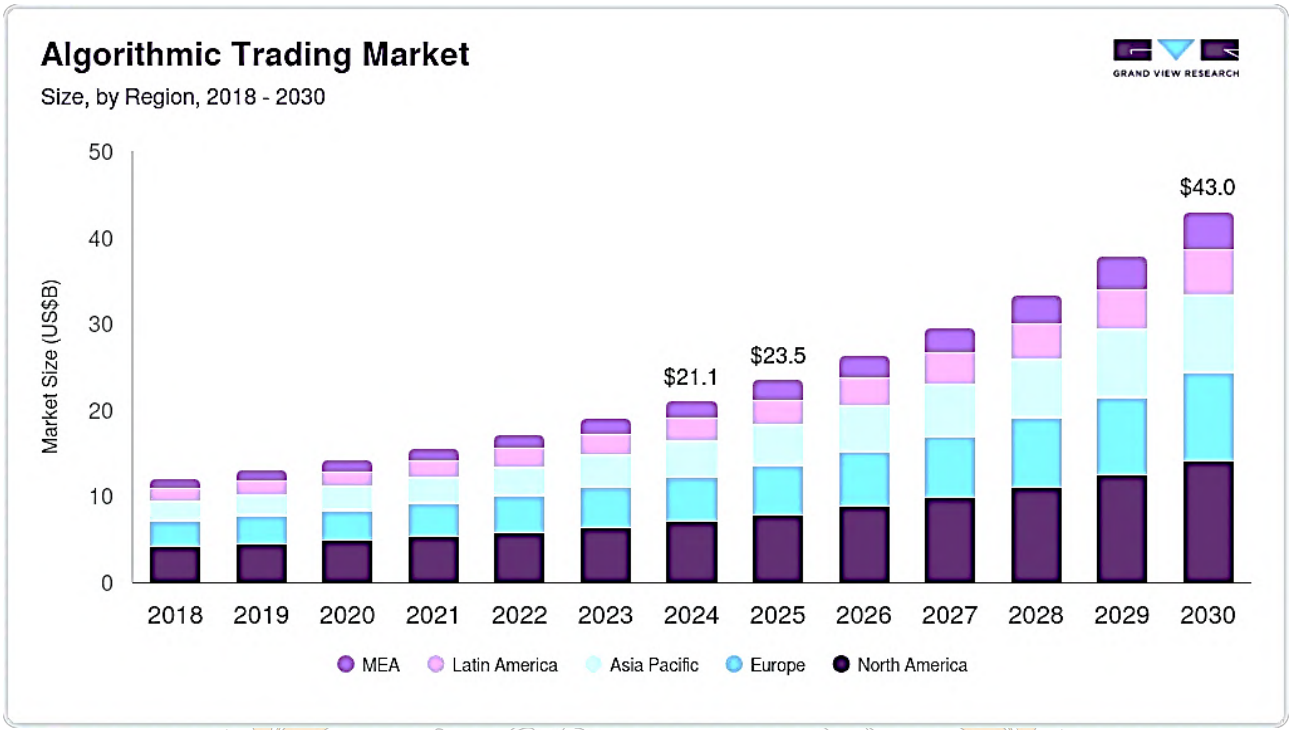


Figure 1: Global Algorithmic Trading Market Size by Region (2018–2030)

Source: Grand View Research (2024). Algorithmic Trading Market Size & Share Report, 2025-2030.

North America remains a key leader in the global market as the share of the market held by this region accounts for about 33.6% in 2024. The reason behind the dominance of the region is the existence of modern financial infrastructure and institutional investors together with high-frequency trading strategies. Furthermore, favorable regulatory frameworks encourage innovations that help to ensure market transparency and stability. Meanwhile, the Asia-Pacific region will become a market leader with respect to growth rate in the forecasted period. There are several factors that drive market development in the region. They include high speed of digitalization, investments in FinTech, and capital market development in such countries as India, China, and Japan. The growth can be also fueled by initiatives undertaken by governments aimed at promoting digital finance and technologies. As far as the global market as a whole is concerned, the use of cloud computing, real-time analysis, and artificial intelligence is likely to increase.

B. Algorithmic Trading Market Segmentation Analysis (Global)

The following graph shows the segmentation of the global algorithmic trading market according to the type of traders in the year 2024. The highest proportion of the market share belongs to the segment of institutional investors, showing that they are at the forefront when it comes to implementing algorithmic trading because of their access to infrastructure facilities, financial capabilities, and technical know-how. The combination of both long-term and short-term traders holds a considerable percentage of the market, which shows the increasing preference for using automated trading algorithms among traders from both segments. The retail investor segment has the lowest share, but there is a growing trend of involvement by these participants in the algorithmic trading process, thanks to easy-to-use APIs. Generally, the above-mentioned chart demonstrates the ongoing trend

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

towards democratization of algorithmic trading due to technology advancement. The main criterion used in the segmentation of the global algorithmic trading market is the type of traders.

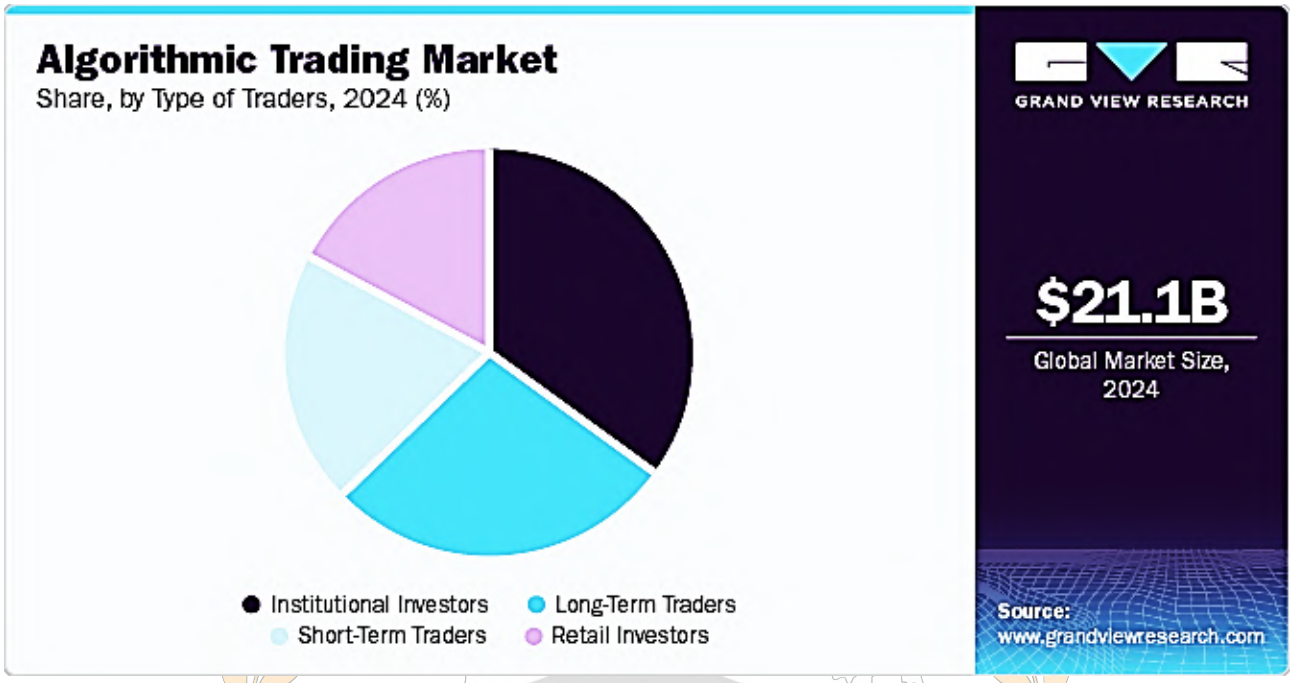


Figure 2: Distribution of Global Algorithmic Trading Market Share by Trader Type (2024)

Source: Grand View Research (2024). Algorithmic Trading Market Size & Share Report, 2025-2030.

As depicted in Fig. 2, institutional investors form the highest percentage of participants in algorithmic trading, signifying the dependence of such institutions on automated mechanisms that increase efficiency, cut down transaction costs, and speed up the process of transactions. Long-term and short-term traders form another substantial portion of the market, suggesting the increased usage of algorithmic techniques in different types of investments.

While retail investors still form a lower proportion, their presence in the market has been consistently rising. This can be attributed to the emergence of easy-to-use trading applications, APIs, and inexpensive digital brokerages.

C. Overview of India Algorithmic Trading Market (2025–2034)

Although the algorithmic trading market in India may not be of great magnitude when compared with its counterpart at the global level, it continues to experience steady and healthy growth. The market size is currently estimated at about USD 615.61 million in 2025 and is expected to grow to USD 1,350.34 million in 2034.

Table 2: India Algorithmic Trading Market – Size, Growth, and Segmentation

Category	Subcategory	Metric / Share	Notes
Market Size & Growth	2025	USD 615.61 Million	Base year market size
	2034 (Forecast)	USD 1,350.34 Million	Projected market size

All rights are reserved by www.mijrd.com

	CAGR (2026–2034)	9.12%	Steady growth trajectory
Component-wise Share	Solutions	62%	Dominated by integrated platforms
	Services	38%	Support and advisory services
Deployment-wise Share	Cloud	55%	Preferred due to scalability and cost efficiency
	On-Premise	45%	Traditional deployment model
Trading Type	Stock Market	Dominant	High liquidity and transaction volume
	Others	Forex, ETFs, Derivatives	Diversified instruments
Trader Type	Institutional	36%	Major contributor to trading volume
	Others (Retail, etc.)	64%	Growing retail participation

Source: IMARC Group, "India Algorithmic Trading Market: Size, Growth Trends, and Forecast Analysis," 2026.

The Indian algorithmic trading market is growing consistently because of increasing use of digital technology, higher internet connectivity, and greater involvement of institutional and individual investors in the market.

The improvement in trading infrastructure provided by prominent exchanges, like the NSE and BSE, has helped promote the market growth.

Besides, the changes made by the Securities and Exchange Board of India (SEBI) in regulations have helped make the algorithmic trading environment more transparent, efficient, and secure, which has increased investor trust in the market.

Application Programming Interfaces (APIs) and trading platforms have enabled individual investors to use algorithmic trading systems that were available exclusively for institutional investors before.

At the same time, technologies such as cloud computing and artificial intelligence have started shaping the market through the development of more scalable, accurate, and efficient trading systems.

However, despite the significant opportunities for the future, several challenges, including complex regulation and security risks, continue existing in the Indian algorithmic trading market.

XII. DATA ANALYSIS AND INTERPRETATION

A. Trend Analysis

From the trend analysis of the algorithmic trading market, it is evident that there is consistency in the trend in terms of positive growth at both global and Indian levels. The global algorithmic trading market is expected to value USD 21.06 billion in 2024 and reach USD 42.99 billion by 2030.

This implies rapid growth as a result of technological advancement through AI, ML, and HFT. On the other hand, the Indian algorithmic trading market will grow from USD 615.61 million in 2025 to an estimated USD 1.35 billion

All rights are reserved by www.mijrd.com

by 2034, although on a much lower scale than the global market. From the analysis, the trend indicates a slow but continuous growth path due to the introduction of algorithms in the Indian market.

In the trend analysis, the following patterns can be seen. First, the global algorithmic trading market experiences rapid growth with an indication of maturity and advanced technological application. On the other hand, the Indian algorithmic trading market grows steadily and consistently over the years.

B. CAGR Calculation

The Compound Annual Growth Rate (CAGR) is used to measure the average annual growth rate of the market over a specified period.

Formula:
$$CAGR = \left(\frac{V_f}{V_i}\right)^{\frac{1}{n}} - 1 \quad (1)$$

Where: V_f = Final Value; V_i = Initial Value; n = Number of years

Global Market

Initial Value (2024): 21.06 (USD billion)

Final Value (2030): 42.99 (USD billion)

Period: 6 years

CAGR ≈ 12.9%

India Market

Initial Value (2025): 0.615 (USD billion)

Final Value (2034): 1.35 (USD billion)

Period: 9 years

CAGR ≈ 9.12%

Interpretation: This is evaluated in terms of CAGR and the figure of 12.9% is high for the global market as compared to India. Contrastingly, India's CAGR is comparatively lower at 9.12% that indicates stable growth.

C. Comparative Analysis

When compared with the worldwide algorithmic trading market, the Indian algorithmic trading market size is small, is growing at a moderate rate, and is structurally very different.

Table 3: Comparative Analysis of Algorithmic Trading Markets: India vs. Global (2025–2034)

Parameter	India	Global
Market Size	Smaller	Large-scale
CAGR	9.12%	12.9%
Growth Stage	Emerging	Rapid expansion
Key Drivers	Retail participation, fintech growth	AI, HFT, institutional dominance

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

D. Analysis and Interpretation

Algorithmic trading is a fairly sophisticated and technologically advanced market on the international arena. It requires a high amount of institutional participation, and has a high volume of operations and employs active high frequency trading methodology.

This difference in the growth rate can be attributed to the high level of technological involvement in the global market, higher resource allocation and a well-developed financial infrastructure.

By comparison, the Indian market can be termed emerging and undergoing transformations. Factors contributing to growth include the rise in digitalization of operations, development of trading infrastructure, and regulatory measures taken by SEBI.

The crucial role played by the National Stock Exchange of India and the Bombay Stock Exchange in making possible algorithmic trading cannot be overlooked.

One distinguishing feature lies in the nature of market participants. While the global market has a preponderance of institutional investors engaged in high-level algorithms and HFT, the Indian market too has institutions as important players, but also sees the presence of growing retail interest through user-friendly tools, API integration, and cloud computing.

The next key difference is that the driving force behind growth is different for both markets. The global market is mainly based on technological advances and efficiency gains, while the Indian market is built on technology and increased financial inclusivity.

From a business strategy standpoint, the global market can be described as efficiency-based growth, whereas the Indian market represents expansion-based growth.

Insight: While the current state of the global algorithmic trading market shows higher maturity and growth rates, there is no denying that the Indian market offers promising long-term perspectives.

With the growing synergy of the technological and regulatory environment along with increased awareness among investors, the Indian market will become one of the main contributors to the global algorithmic trading market.

E. Forecast Analysis: The Indian Algorithmic Trading Landscape (2026–2034)

India's algorithmic trading market is poised to go through a decade of transformation.

The market is evolving from an unregulated growth phase to a structured and institutionalized ecosystem after the complete implementation of the SEBI Algorithmic Trading Framework in April 2026. The market is expected to grow with a strong rate with CAGR 9.12% and reaching more than USD 1.35 billion by 2034.

Forecasting Methodology

This analysis adopts a Compound Annual Growth Rate (CAGR) approach, with the following parameters as the starting points for high fidelity projections:

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Base Year Value: USD 615.61 Million (2025)

Forecast Horizon: 2026–2034

Growth Rate: 9.12% (Applied annually)

Formula:

$$V_{future} = V_{present} \times (1 + r)^t \quad (2)$$

where V is market value, r is CAGR, and t is the time horizon.

Core Assumptions

- Technological Integration: Fast adoption of AI/ML for signal generation prediction.
- Infrastructure Maturity: Cloud based trading for lower latency.
- Democratization: More retailers, more unified API access.
- Regulatory Stability: Ensuring ongoing regulatory oversight to counter systemic risks and promote innovation.

Market Growth Projections (2026–2034)

It shows an exponential trend, which is steady and is projected to become almost double during the nine-year period.

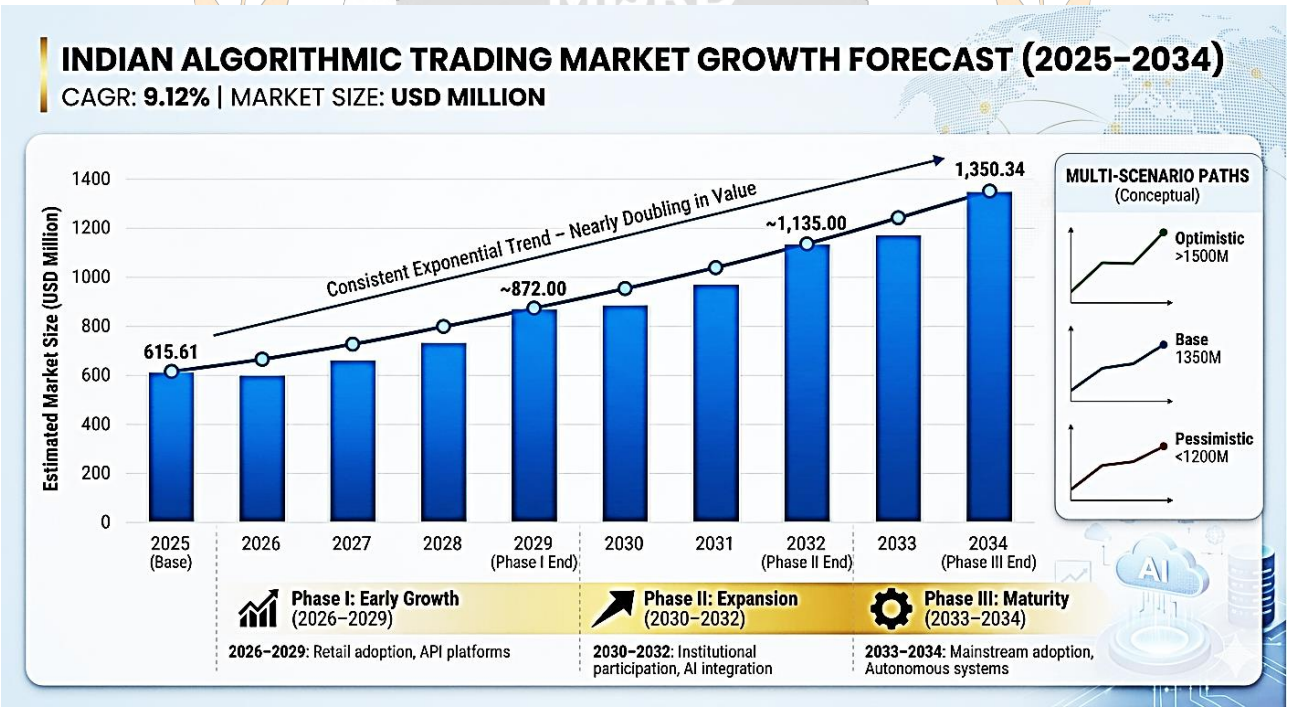


Figure 3: Indian Algorithmic Trading Growth Forecast: Base Scenario and Multi-Scenario Paths (2025–2034)

The Indian Algorithmic Trading Growth Forecast, Base Scenario & Multi-Scenario Paths (2025–2034) graph is part of the insight. The insight also includes the Indian Algorithmic Trading Growth Forecast, Base Scenario & Multi-Scenario Paths (2025–2034) graph.

All rights are reserved by www.mijrd.com

Table 4: Projected Market Size and Developmental Phases for Algorithmic Trading in India

Year	Estimated Market Size (USD Million)	Phase
2025	615.61	Base Year
2029	872.00	Early Growth
2032	1,135.00	Expansion
2034	1,350.34	Maturity

The table displays the size of the projected algorithmic trading market and the different stages of algorithmic trading development in India.The table below shows the expected market size and the developmental phases of the algorithmic trading market in India.

Strategic Growth Phases

Today, the market can be segmented into three different strategic windows:

- ***In Phase I:*** Early Growth (2026-2029), it's all about meeting the 2026 SEBI guidelines – such as filling in Unique Strategy IDs, and Static IP whitelisting. During this time frame, the "cleaning" of the retail algospace will happen, which means better participation.
- ***Phase II:*** Expansion (2030-2032) marked by the introduction of Tier-2 institutional investors and the adoption of sentiment analysis by Large Language Models (LLMs) in high-frequency trading.
- ***Phase III:*** Maturity (2033-2034) Indian capital market's main mode of operation is algorithmic execution. Self-correcting risk parameters take the place of autonomous trading systems as the industry norm.

Scenario-Based Analysis

Three paths are considered: Three paths are taken into account to reflect market volatility:

- ***Pessimistic (<USD 1.5B):*** Aided by a probable "Fintech Boom" and perhaps quicker cloud adoption in rural India.
- ***Base (USD 1.35B):*** Technology growth is assumed as steady and macroeconomic conditions as stable.
- ***Pessimistic (USD 1.1B):*** Assumes that there may be some "Black Swan" event or a more stringent regulatory change that could limit the availability of APIs.

Key Forecast Insights and Drivers

- ***The AI Alpha:*** AI has become more than a "buzzword" and is now an integral part of the infrastructure, allowing traders to detect patterns in increasingly noisy markets.
- ***Cloud-First Infrastructure:*** With the transition of on-premise servers to cloud execution, this has lowered the entry barrier for small businesses by about 40%.
- ***Retail Evolution:*** As retail investors are no longer "hobbyists", no code platforms enable individual traders to battle institutional-grade logic.
- ***Global Positioning:*** By 2034 India would be a leading exporter of algorithms from a technology consumer to a strategy exporter.

All rights are reserved by www.mijrd.com

Looking forward to 2026-2034, the market is expected to be resilient and technologically advanced. The algorithmic trading market in India is expanding and is expected to reach USD 1,350.34 Million by the end of 2022, with a projected growth rate of 40.03%.

XIII. FINDINGS OF THE STUDY

Based on the secondary data analysis, trend analysis, CAGR calculation, and market segmentation of the Indian and international algorithmic trading markets, the following findings can be drawn:

1. There is fast growth in the global algorithmic trading market. It grows from USD 21.06 billion in 2024 to USD 42.99 billion by 2030 at a CAGR of 12.9%. This indicates high maturity and use of technologically advanced algorithms for stock trading (Grand View Research, 2025).
2. India has a smaller algorithmic trading market, but its growth rate is impressive. Thus, it will grow from USD 615.61 million in 2025 to USD 1,350.34 million by 2034 at a CAGR of 9.12% (IMARC Group, 2026).
3. The structure of these two markets differs significantly since the global algorithmic trading market includes mostly institutional investments, while India's market consists of retail investors' contributions amounting to almost 64% (IMARC Group, 2026).
4. According to the market segments, solutions contribute 62%, while services occupy 38%. It means that there is a high demand for the development of integrated trading platforms (IMARC Group, 2026).
5. In regard to deployment types, cloud systems account for 55% against 45% occupied by on-premise systems. This reflects a trend towards cost-effective infrastructure for stock trading (IMARC Group, 2026).
6. Algo trading in India mainly focuses on the equity and derivatives market because of higher volumes and liquidity (NSE, BSE Reports).
7. AI and ML play a vital role in providing predictive precision, faster decision making, and execution effectiveness, which proves their importance in terms of being primary technological forces (López de Prado, 2018; Fortune Business Insights, 2026).
8. Important factors behind the growth include the digitalization of financial markets, the emergence of fintech companies, support from the regulatory bodies such as SEBI, and development in infrastructure for high-speed trading (SEBI Reports; IMARC Group, 2026).
9. In spite of growth trends, there are significant obstacles such as high expenses, cybersecurity issues, regulations, and technical limitations on the side of small traders who lack necessary skills (SEBI Reports; RBI Studies).
10. Forecast estimates that the Indian market will surpass USD 1.3 billion by 2034, demonstrating steady growth trends along with its transition to a mature technological trading framework (IMARC Group, 2026).
11. To conclude, the results obtained prove that India is moving towards becoming a technologically advanced platform for automatic stock exchange operations.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

XIV. CONCLUSION

The analysis conducted in the Indian Algorithmic Trading Market: Size, Growth Trends, and Forecast Analysis report demonstrates that algorithmic trading is changing the structure and dynamics of the Indian financial markets quickly. The market is experiencing rapid growth because of advanced technology, including the use of AI, ML, cloud computing, and high-frequency trading infrastructure. It can be concluded from the results obtained that the Indian market for algorithmic trading valued at about USD 615.61 million in 2025 will experience substantial growth to approximately USD 1,350.34 million in 2034 with an attractive annual CAGR of 9.12%. Even though it is less sizable than the global one, India is a fast-growing market with promising opportunities driven by its increasing digitalization, fintech ecosystems, and investor involvement.

It should also be admitted that several issues, including regulation difficulties, cybersecurity concerns, the considerable cost of building algorithms, and retail investors' lack of knowledge, remain unresolved. Nevertheless, with continuous technological innovation and assistance from such institutions as SEBI, India may become more stable and transparent. Thus, the study concludes that a shift to automated, data-driven, and technologically advanced trading processes takes place in India now.

XV. RECOMMENDATIONS

- ***Increase Awareness among Retail Investors:*** Hold seminars and training sessions to sensitize retail investors on the use of algorithms in trading.
- ***Improve Cybersecurity Measures:*** Adopt state-of-the-art cybersecurity measures, such as encryption technology and surveillance mechanisms to prevent hacking attacks on trading platforms.
- ***Promote the Use of AI and ML Technologies:*** Motivate banks and fintech companies to develop trading algorithms using artificial intelligence and machine learning technologies to enhance efficiency and predictive analysis.
- ***Make Trading Regulations Simple but Transparent:*** Simplify trading regulations while ensuring that the process is transparent to promote innovations and the adoption of algorithmic trading.
- ***Develop Trading Infrastructure:*** Invest in efficient trading infrastructures, including low latency technology, high speed trading networks, and cloud computing services.
- ***Support Fintech Innovations:*** Offer incentives to innovative firms working towards creating trading algorithms.
- ***Risk Management:*** Encourage businesses to adopt strong risk management policies to manage risks associated with fluctuations in the stock market and algorithm errors.

XVI. LIMITATIONS OF THE STUDY

- ***Secondary Source Dependency:*** This study relies heavily on secondary sources, such as reports by the industries, publications, and regulatory authorities, which can be limited in terms of precision and freshness.
- ***Inaccessibility of Proprietary Trading Algorithms:*** Specific trading algorithms and proprietary trading systems could not be assessed due to confidentiality constraints imposed by financial institutions.

All rights are reserved by www.mijrd.com

Volume: 06 / Issue: 01 / 2026 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

- ***Forecasting Limitation:*** Projections for up to 2034 are based on calculations made with CAGR estimates that might change depending on various socio-economic conditions, policies, and technologies.
- ***Dynamic Technology Environment:*** Algorithmic trading space is very dynamic, and emerging technologies could modify the market behavior much quicker than anticipated by this research study.
- ***Limited Geographical Coverage:*** This research project has been conducted focusing on India, with comparative analysis on the international level. Detailed micro-country analysis is limited.
- ***Dynamic Regulatory Environment:*** Continuous changes in SEBI and international finance regulations could have an impact on market dynamics beyond the scope of this research.

REFERENCES

[1] Grand View Research, "Algorithmic trading market size & trends analysis (2025–2030)," 2025.

[2] IMARC Group, "India algorithmic trading market: Size, growth trends, and forecast analysis," 2026.

[3] Fortune Business Insights, "Algorithmic trading market size, share & industry analysis (2026–2034)," 2026.

[4] National Stock Exchange of India, Annual Reports, Market Data, and Publications, various years.

[5] Securities and Exchange Board of India, Reports, Guidelines, and Regulatory Publications, various years.

[6] Bombay Stock Exchange, Market Reports and Statistical Data, various years.

[7] Various authors, Research Articles on Algorithmic Trading, Artificial Intelligence in Finance, and Financial Market Analysis, peer-reviewed journals, recent years.

[8] IMARC Group, "India algorithmic trading market report," 2026. URL: https://www.imarcgroup.com/india-algorithmic-trading-market.

All rights are reserved by www.mijrd.com