

Role of AI In Preventing Securities Marketplace Malpractices,
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FastForward Justice's Law Journal (e-ISSN: 2581-6713)
Volume VI Issue III (May–June,2026)

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(e-ISSN: 2581-6713)

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Abstract/Preface

The rapid evolution of securities markets, driven by technological advancements and increasing digitisation, has significantly transformed the nature of market operations and the forms of misconduct that arise within them¹. Traditional malpractices such as insider trading, market manipulation and front-running have become more sophisticated, often embedded within complex trading strategies and executed at high speeds through algorithmic systems². This has posed substantial challenges for regulatory authorities, whose conventional methods of surveillance and enforcement are increasingly strained by the scale, speed and complexity of modern financial markets.

In this context, Artificial Intelligence (AI) has emerged as a powerful tool with the potential to enhance market surveillance and detect securities market malpractices. By enabling the analysis of large volumes of data, identifying patterns and detecting anomalies in real time, AI systems offer significant improvements over traditional rule-based regulatory mechanisms³. However, the integration of AI into financial markets also raises important legal, ethical and practical concerns, particularly in relation to transparency, accountability, data governance and the attribution of liability⁴.

This dissertation examines the role of Artificial Intelligence in controlling securities market malpractices, with a primary focus on the Indian regulatory framework. It analyses the

¹ Arner, D. W., Barberis, J., & Buckley, R. P. (2016). *The Evolution of Fintech: A New Post-Crisis Paradigm?*, Georgetown Journal of International Law.

² Yadav, E. (2015). *The Algorithmic Leviathan*, Vanderbilt Law Review

³ Securities and Exchange Board of India (SEBI). *Annual Report 2023-24*

⁴ Pasquale, F. (2015). *The Black Box Society: The Secret Algorithms That Control Money and Information*, Harvard University Press

nature and evolution of market misconduct, the functioning of AI within financial systems and the applicability of existing legal provisions, including the SEBI Act, 1992 and related regulations. A comparative perspective is also adopted to assess global regulatory approaches.

The study finds that while AI significantly enhances the detection and monitoring capabilities of regulators, it cannot serve as a complete substitute for traditional legal processes. The regulation of securities markets continues to depend on human judgment, particularly in the interpretation of intent and the application of legal standards⁵. The effectiveness of AI is therefore contingent upon its integration within a broader regulatory framework that ensures transparency, accountability and oversight.

CHAPTER 1 - INTRODUCTION

Background and Context

In the modern financial system, securities markets are a central component that directs capital to specific areas and supports the increase of economic activity⁶. It is a place where companies obtain money to grow and maintain their daily work. As a result individuals who provide capital have the chance to earn profits. The way those markets operate is connected to the steadiness of the economy, the trust of the public plus the growth of financial systems.

Transactions in the markets occurred on physical floors where people spoke loudly to complete deals - those environments are described by a small number of people who took part, a low speed for processing trades and a level of clarity that let officials watch actions

⁵ Supreme Court of India. *SEBI v. Rakhi Trading Pvt. Ltd.* (2018)

⁶ Aparna Viswanathan, *Law of Capital Markets* (2023)

directly or check records after trades finished - but the structure and operation of those markets changed greatly during the last multiple decades. By moving from physical locations to electronic systems, the industry reached a major change⁷. To process trades more quickly, the systems became digital, which also made it easier for more individuals to enter the market but also created clearer records. On the online systems, the distance between locations is less important and the number of people who use securities markets is now much larger. If those changes are considered, it is clear that they make the process more efficient and open to more people but they also create new challenges.

Algorithmic and high frequency trading have become integral components of modern markets which allow participants to execute large volumes of trades based on pre-programmed instructions⁸. While these systems contribute to liquidity and market efficiency, they also create opportunities for misuse. Securities market malpractices, such as insider trading, market manipulation and front-running have evolved side by side with these technological developments. In addition to the aforesaid malpractices, new practices such as spoofing, layering and algorithmic manipulation have emerged. These practices are often subtle, data-driven and executed at a high speed, making them difficult to detect through conventional methods.

⁷ Arner, D. W., et al., "The Evolution of Fintech" (2016)

⁸ SEBI (Prohibition of Algorithmic Trading) Guidelines

Evolution of Securities Markets and Emerging Challenges

The evolution of securities markets can be understood as a transition from simple, manually operated systems to highly complex, technology-driven environments. This transformation has occurred in distinct phases, each of which has introduced new opportunities as well as challenges.

However, the benefits of electronic trading were accompanied by increased complexity. The volume of transactions grew exponentially, and market participants began to rely on technology to gain competitive advantages. This led to the development of algorithmic trading, where trades are executed based on pre-defined rules and conditions.

In recent years, the integration of Artificial Intelligence has added another dimension to this evolution. Unlike traditional algorithms, which operate based on fixed rules, AI systems can learn from data and adapt their behaviour over time. This makes them particularly effective in analysing complex patterns and identifying anomalies. At the same time, the adaptive nature of AI systems introduces new challenges. Their decision-making processes may not always be transparent, and their behaviour may change over time in ways that are difficult to predict. This raises important questions regarding their regulation and oversight.

The evolution of securities markets thus presents a dual challenge. On the one hand, technological advancements have improved efficiency and accessibility. On the other hand, they have created an environment in which misconduct can occur in more sophisticated and less detectable forms. Addressing these challenges requires a re-evaluation of existing regulatory approaches and the adoption of new tools and methodologies.

CONCEPTUAL FRAMEWORK OF SECURITIES MARKET MALPRACTICES

What constitutes a marketplace malpractice?

In order to properly evaluate the role of Artificial Intelligence in controlling securities market malpractices, it becomes necessary to understand the nature of these malpractices themselves. While the idea of market misconduct is not new, the way in which it manifests in modern securities markets has undergone a significant transformation. This transformation is largely attributable to the increasing use of technology, the growth in market participation and the complexity of financial instruments.

At a basic level, securities markets are expected to function on principles of fairness, transparency and efficiency. Investors make decisions based on available information and prices are expected to reflect genuine market forces of demand and supply. However, market

malpractices interfere with these principles and, create artificial conditions in the market, mislead investors and provide certain participants with undue advantages.

Meaning and Scope of Securities Market Malpractices

The expression “securities market malpractice” is not defined in a single, comprehensive provision under Indian law. Instead, it has to be understood through a combination of statutory provisions, regulatory frameworks and judicial interpretations. In a broad sense, it refers to any act or omission that disrupts the fair and orderly functioning of the securities market or results in an unfair advantage to certain participants at the expense of others⁹.

In the Indian context, the regulation of such practices is primarily carried out by the Securities and Exchange Board of India (SEBI), which has been vested with wide powers to regulate and supervise the securities market. Various regulations have been framed by SEBI to address different forms of market misconduct, the most notable being the SEBI (Prohibition of Insider Trading) Regulations, 2015¹⁰ and the SEBI (Prohibition of Fraudulent and Unfair Trade Practices) Regulations, 2003¹¹.

⁹ Sarkar, supra note 10 at 9

¹⁰ SEBI (Prohibition of Insider Trading) Regulations, 2015

¹¹ SEBI (Prohibition of Fraudulent and Unfair Trade Practices) Regulations, 2003

One of the defining features of these regulations is their broad and principle-based approach. Instead of providing an exhaustive list of prohibited acts, they set out general standards of conduct, such as prohibiting fraudulent, deceptive, or manipulative practices. This allows the regulatory framework to remain flexible and capable of addressing new and evolving forms of misconduct.

It is also important to note that the scope of securities market malpractices is not static. As markets evolve, new forms of misconduct also emerge, often exploiting gaps in existing regulations. This dynamic nature makes it necessary for regulators to adopt flexible and adaptive approaches, rather than relying solely on rigid definitions.

Historical Evolution

An understanding of the historical development of securities market malpractices helps in appreciating why current regulatory challenges exist. While the underlying motives behind such practices—primarily the pursuit of unfair financial gain—have remained largely unchanged, the methods used to achieve these objectives have evolved significantly over time.

In the early stages of securities markets, trading was conducted through physical exchanges using open outcry systems. Transactions were relatively slow and the number of participants was also limited. In such an environment, although malpractices such as price rigging and

insider trading did occur, they were often more visible and easier to trace. Regulatory oversight, while not necessarily robust, was comparatively simpler due to the limited scale of operations.

The transition to electronic trading systems marked a major shift.

The emergence of algorithmic and high frequency trading further transformed the landscape. These systems use computer algorithms to execute trades at extremely high speeds, often based on pre-defined criteria. While they contribute to market liquidity and efficiency, they also create opportunities for new forms of manipulation. For instance, strategies such as spoofing and layering rely on placing and cancelling orders within milliseconds, making them difficult to detect through conventional means.

In recent years, the increasing integration of advanced technologies, including Artificial Intelligence, has added another layer of complexity. While these technologies offer new tools for both trading and regulation, they also introduce new risks. Market participants may use sophisticated algorithms to exploit micro-level market inefficiencies, while regulators are required to keep pace with these developments.

Insider Trading

Insider trading is one of the most significant and extensively regulated forms of securities market malpractices. It involves trading in securities on the basis of information that is not available to the general public but is likely to have a material impact on the price of those securities¹².

Under the SEBI (Prohibition of Insider Trading) Regulations, 2015, insider trading is prohibited when a person who is in possession of unpublished price-sensitive information (UPSI) trades in securities. The regulations define UPSI to include any information relating to a company or its securities that is not generally available and which, upon becoming public, is likely to materially affect the price of the securities.

The regulations also define who qualifies as an “insider,” including connected persons such as directors, employees and other individuals who may have access to confidential information by virtue of their position or relationship with the company. The rationale behind prohibiting insider trading is rooted in the principle of fairness. Securities markets are expected to operate on the basis that all participants have equal access to relevant information.

Evidentiary and Enforcement Challenges

¹² Regulation 2(1)(g) of SEBI (PIT) Regulations, 2015

One of the most significant challenges in regulating insider trading lies in proving that at the time of trading, the person was in possession of UPSI. Unlike other forms of misconduct, insider trading does not necessarily involve any visible or suspicious activity. The trades themselves may appear entirely legitimate.

Even with such evidence, establishing a clear link between the information and the trade can be difficult. This makes insider trading cases particularly complex and resource-intensive. Another issue is that information may pass through multiple intermediaries, making it harder to identify the original source. In modern markets, where information flows rapidly and across different channels, tracing the movement of UPSI becomes increasingly challenging. These limitations highlight the need for more advanced tools and techniques for detection. Technologies such as data analytics and Artificial Intelligence have the potential to assist regulators in identifying patterns and anomalies that may indicate insider trading, which will be explored in later chapters.

Market Manipulation

Market manipulation is one of the most complex and wide ranging forms of securities market malpractice. Unlike insider trading, which is primarily based on the misuse of information, market manipulation involves conduct that directly interferes with the natural forces of

demand and supply in the market. The objective is typically to create an artificial price or trading volume, thereby misleading other market participants.

In the Indian regulatory framework, market manipulation is primarily addressed under the SEBI (Prohibition of Fraudulent and Unfair Trade Practices) Regulations, 2003 (PFUTP Regulations), framed by the Securities and Exchange Board of India. These regulations adopt a deliberately broad approach, prohibiting any act or practice that is fraudulent, deceptive, or manipulative in nature.

Types of Market Manipulation

Spoofing

Spoofing involves placing orders in the market with no intention of executing them. The purpose is to create a false impression of demand or supply, thereby influencing the behaviour of other traders. Once the market reacts, the manipulator cancels the orders and executes trades in the opposite direction. This practice is particularly prevalent in high-frequency trading environments, where orders can be placed and withdrawn within milliseconds.

Layering

Layering is closely related to spoofing and involves placing multiple orders at different price levels to create the appearance of substantial market interest. These orders are usually cancelled before execution. The objective is to influence the order book and mislead other market participants into believing that there is significant buying or selling pressure.

Pump-and-Dump Schemes

In a pump-and-dump scheme, the price of a security is artificially inflated through false or misleading statements or coordinated trading activity. Once the price reaches a certain level, the perpetrators sell their holdings at a profit, leaving other investors to bear the losses.

This type of manipulation is often associated with smaller or less liquid securities, where prices can be influenced more easily.

Circular Trading

Circular trading involves a group of entities trading securities among themselves to create artificial trading volume. Although there may be actual trades, they do not represent genuine market activity. The objective is to create an illusion of liquidity and attract unsuspecting investors.

Price Rigging

Price rigging refers to deliberate attempts to influence the price of a security through coordinated actions. This may involve placing large orders, spreading rumours, or engaging in coordinated buying or selling.

Challenges in Detection and Enforcement

Despite the existence of a broad legal framework, the detection and enforcement of market manipulation remain challenging. Some of the key issues include:

- i. Modern markets generate enormous amounts of data, making manual analysis impractical
- ii. High-frequency trading occurs at speeds beyond human capability
- iii. Manipulative strategies are often designed to appear legitimate
- iv. Establishing intent is often the most challenging aspect
- v. Many transactions involve multiple jurisdictions, complicating enforcement

These challenges highlight the limitations of traditional regulatory approaches and reinforce the need for more sophisticated surveillance mechanisms.

Comparative Perspective

A brief comparison with other jurisdictions reveals that market manipulation is treated similarly across major securities markets. For instance, the U.S. Securities and Exchange Commission regulates market manipulation under provisions such as Section 10(b) of the Securities Exchange Act and Rule 10b-5, which broadly prohibit fraudulent and manipulative practices¹³.

Similarly, in the European Union, market manipulation is addressed under the Market Abuse Regulation (MAR), which provides a comprehensive framework for dealing with insider trading and manipulation.

CONCLUSION

The integration of Artificial Intelligence into securities markets represents not merely a technological advancement, but a fundamental shift in the manner in which financial systems operate and are regulated. It marks a transition from human-centric oversight to a hybrid model in which decision-making, surveillance and even elements of enforcement are increasingly influenced by automated systems. This transformation carries profound implications, not only for the efficiency of market regulation but also for the underlying philosophy that governs it.

¹³ U.S. Securities Exchange Act of 1934, Section 10(b)

Yet, this enhancement is accompanied by a degree of displacement. As AI systems assume a greater role in surveillance and analytical processes, the locus of regulatory activity begins to shift away from direct human observation towards algorithmic interpretation. This raises an important question: can regulatory legitimacy be sustained when critical aspects of market oversight are delegated to systems that are not fully transparent or easily understood? The answer to this question is not straightforward. While AI can produce highly accurate outputs, the inability to fully explain the reasoning behind those outputs may undermine confidence in regulatory decisions, particularly in adversarial legal settings where due process and reasoned justification are essential.

In conclusion, Artificial Intelligence offers significant promise in addressing the challenges of modern securities markets, particularly in the detection and monitoring of malpractices. Its ability to operate at scale and speed makes it an indispensable component of contemporary regulatory systems. At the same time, it does not—and cannot—replace the human and legal elements that underpin effective regulation. The future of securities market oversight lies in achieving a careful balance between technological innovation and principled governance. This balance will determine not only the success of AI as a regulatory tool but also the continued integrity and stability of financial markets as a whole.

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