A Conceptual and Doctrinal Study of Market Manipulation under the SEBI Act, 1992 in the Age of Artificial Intelligence

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***Abstract*—The prohibition of market manipulation in India rests on the Securities and Exchange Board of India Act, 1992 (SEBI Act) and the Prohibition of Fraudulent and Unfair Trade Practices (PFUTP) Regulations, 2003. Both were framed with human traders in mind. Trading is now carried out by algorithms, many built on machine learning, and false information can be generated at scale by artificial intelligence (AI). This article asks whether the existing doctrine can meet that challenge. It treats manipulation as an artificial distortion of price, volume or apparent trading interest, examines section 12A of the SEBI Act and the PFUTP Regulations, compares the United States, the United Kingdom, the European Union, Singapore and Australia, and reads selected judgments and enforcement orders against the questions of intent, attribution and proof. It argues that the framework is broad enough in principle to reach algorithmic conduct, but that uncertainty remains about the mental element and the attribution of liability for automated conduct. It proposes an integrated framework resting on control and foreseeability, with system registration, documentation, testing and monitoring, a rule of attribution, a rebuttable presumption and specialised evidence. The case material is largely interim and is treated as provisional.**

***Index Terms*—Algorithmic trading, artificial intelligence, attribution of liability, market manipulation, PFUTP Regulations, SEBI Act, spoofing**

I. INTRODUCTION

A person who buys shares on a stock exchange relies on the belief that the price reflects what the business is worth and what other participants think it is worth. That belief is the basic bargain of a securities market, and it is fragile. Market manipulation is the name given to conduct that pushes prices up or down in order to profit from the movement and not from the underlying value of the business. In India the principal response lies in the Securities and Exchange Board of India Act, 1992 (SEBI Act) and the regulations made under it [1], [2]. For the first two decades after the Act, manipulation was understood largely in human terms: a promoter arranging matched trades through friendly brokers, operators circulating tips to lift a small-cap scrip, or a broker trading ahead of a client's large order. The conduct was usually traceable to a person who could be held responsible. That picture is changing. Orders are now generated and executed in fractions of a second by algorithms, many of which adapt to the market conditions they observe, and large language models and synthetic media can produce a false announcement that appears to come from a chief executive. These developments raise harder questions about who manipulated, with what intent and through which device.

The article argues in three steps. First, manipulation is best understood as an artificial distortion of price, volume or the perception of trading interest, and the core of that concept survives technological change although its forms do not. Second, the general prohibition in section 12A of the SEBI Act and the detailed practices listed in the PFUTP Regulations are broad enough in principle to reach algorithmic conduct, but they rest on assumptions about intent, attribution and proof that AI systems put under pressure. Third, an integrated approach is needed, combining doctrinal clarification, accountability requirements for the deployment of automated trading systems and evidentiary tools suited to machine-generated conduct. The study does not claim that Indian law is deficient in every respect. Its concern is whether the doctrine will keep pace

with the conduct it prohibits and whether it gives participants sufficient guidance on what they may lawfully build and deploy.

The study proceeds on the hypothesis that the SEBI Act and the PFUTP Regulations broadly cover AI-enabled manipulation without new statutory definitions, but that autonomous systems create real uncertainty about intent and liability. Five questions guide it: the conceptual content of manipulation and its constant features; whether the Indian framework adequately captures algorithmic and AI conduct; how the mental element, attribution and standard of proof operate for automated conduct; what selected orders and judgments reveal about the doctrine; and what framework, consistent with the statute, would allow the Securities and Exchange Board of India (SEBI) to regulate such conduct fairly.

The method is doctrinal, supplemented by conceptual, comparative and case-analysis methods. It relies on publicly available primary sources, namely the statute, the regulations, circulars, judgments of the Supreme Court and the Securities Appellate Tribunal (SAT), and publicly released SEBI orders. Where an order is interim or subject to appeal, this is noted. Insider trading is discussed only where it intersects with manipulation, commodity markets are outside the scope, and the technical account of AI is limited to what is needed to identify legal questions. Part II reviews the literature, Part III develops the concept, Part IV examines the Indian framework, Part V compares other jurisdictions, Part VI analyses cases, Part VII proposes a framework and Part VIII concludes with recommendations.

II. LITERATURE AND RESEARCH GAP

The writings discussed here are chosen because each supplies something the analysis needs. Manne argued that insider trading and related practices might be efficient ways of rewarding those who generate information, which forces any regulatory argument to explain why a practice is harmful and not merely unpopular [3]. Easterbrook and Fischel supply the economic rationale for securities regulation, and Mahoney explains disclosure chiefly as a means of monitoring managers and controlling shareholders, which supports a functional approach to attribution [4], [5]. Hazen sets out the American law of manipulation, including the requirement of deception and the case law on scheme liability, a body of doctrine often cited elsewhere [6].

On technology, Kearns and Roth show how algorithms optimised for one objective can produce outcomes their designers did not intend, so that intent cannot be read directly from code and governance of the objective is a practical regulatory lever [7]. Lin argues that new trading technologies allow forms of manipulation that older categories did not anticipate [8], and Lewis, though not a legal text, has shaped public debate on speed-based strategies [9]. The Indian framework for algorithmic trading is found in SEBI's circulars and exchange rules [10], and the Sodhi Committee report explains how the regulator understands the link between information and market integrity [11].

International bodies have begun to address AI. The OECD identifies risks including collusion, herding, opacity and concentration [12], and the IOSCO report, the most authoritative statement of how regulators should approach the subject, stresses governance, testing and accountability of firms using these tools [13]. Ben-Shahar and Schneider warn that information duties often fail those they protect, so any disclosure proposal must be designed to inform the regulator in practice [14]. SEBI's 2025 consultation paper is the most direct Indian source on responsible use of AI in the securities market [15].

Read together, these works show that the economic case against manipulation is well established and that international bodies have begun to address AI. Doctrinal work on attribution and mental state for algorithmic conduct is at an early stage, and Indian scholarship is thin. Four gaps follow. There is no sustained analysis of whether the mental element can be satisfied by a machine or by the people who design and deploy it. The attribution of algorithmic manipulation to an institution has received little treatment. The evidentiary problem of separating manipulative behaviour from legitimate optimisation has not been translated into legal standards of proof. And SEBI's enforcement record on automated trading has not been read systematically against these doctrinal questions. This article addresses those gaps.

III. CONCEPTUAL FOUNDATIONS

A. Meaning and Protected Interest

A securities market allocates capital and prices instruments so that price reflects the best available

estimate of value. It performs that function only if participants can trust that prices result from genuine supply and demand and not from artifice, so the regulation of manipulation is part of the foundation of market regulation. Manipulation may be described as conduct by which a person creates an artificial price, volume or impression of trading interest in a security in order to benefit from the distortion. It has three features: an act or series of acts, whether trades, orders or statements; an actual or intended effect on prices, volumes or perceived interest; and artificiality, meaning that the effect does not reflect the real economic position of the security or the genuine intentions of participants.

The description avoids the language of fraud, because manipulation can exist without misrepresentation to a particular person. A trader who places a large order to suggest demand and cancels it once the price has moved may deceive no identifiable counterparty and yet distorts the market. The protected interest is the integrity of the market, understood as the reliability of prices as signals of value and the fairness of the conditions under which trades are made.

B. Forms of Manipulation

The recognised forms overlap and most real cases combine several. Price manipulation includes marking the close and price rigging. Volume manipulation creates an impression of activity through wash trades, where the same beneficial owner is on both sides, and circular trades among a group of accounts. Spoofing and layering involve orders placed without any intention of execution to create a false impression of supply or demand. Pump-and-dump schemes promote a security through false or misleading information and then sell. Front running trades ahead of a known large order, and it distorts the price path while breaching a duty of confidence. Finally, the dissemination of false or misleading information may come from companies, commentators or anonymous persons. Each form raises a distinct question about the required act, effect and state of mind.

C. Theoretical Basis

Three strands support the prohibition. The efficient market hypothesis, though criticised and qualified, retains the insight that prices are informative only when undistorted. Agency theory explains that investors entrust money to intermediaries they cannot monitor, and rules against manipulation reduce the risk of exploitation. The third strand treats market integrity as a public good whose benefits no single trader can capture, so the law acts for the public and not only for the individual harmed. These theories matter here because an algorithm that distorts prices imposes the same costs as a human who does so, which supports a functional and not a formal approach to who or what is the manipulator.

D. Artificial Intelligence and the New Frontier

Three kinds of technology should be distinguished. Rule-based automation executes instructions specified in advance and resembles a tool, so the question is who designed and deployed the rule. Machine learning systems learn from data, and their behaviour depends on training data and objective function, which raises questions about emergent behaviour and whether the operator can be said to have intended conduct it did not specify. Generative systems produce text, images and other content, which raises questions of authorship and attribution of synthetic information. Algorithmic and high-frequency trading bring narrower spreads and liquidity but also manipulation that is hard to detect, since a pattern of placing and cancelling orders thousands of times in a session may be indistinguishable in isolation from legitimate market making [10].

Several risks are specific to AI. Emergent manipulation arises when a system trained to maximise profit or minimise execution cost discovers manipulative patterns as a by-product of optimisation. Collusion without agreement arises when independent systems converge on strategies that move prices in a coordinated way. Synthetic disinformation allows false announcements to be produced cheaply and to move prices before they are identified as fake. Surveillance evasion arises where systems adapt to enforcement. A further risk concerns the regulator, since AI-based surveillance may produce false positives and be hard to explain to those affected, raising its own questions of due process.

These risks change the form of manipulation but not its core. An AI-enabled price distortion is still an artificial distortion. What changes is the mechanism, the difficulty of identifying a responsible person and

the evidence available to prove the mental element. A doctrine that requires proof of a person's intention will struggle with conduct designed without a particular intention, and one that assumes a single identifiable trader will struggle with conduct spread across a chain of actors. For this study, market manipulation is any act, practice or device, carried out directly or indirectly by a person, a group of persons or an automated system under their control, that creates or is likely to create an artificial distortion of the price, volume or apparent trading interest in a security, and that is designed or foreseeably likely to induce others to deal on the basis of that distortion. The definition is functional and is a conceptual tool, not a substitute for the statutory language.

IV. THE INDIAN LEGAL FRAMEWORK

A. Statutory Basis and Section 12A

Regulation of securities trading is a restriction on the freedom to carry on trade and business under Article 19(1)(g) of the Constitution, justified as a reasonable restriction in the public interest. The SEBI Act gives the Board the duties of protecting investors, promoting the development of the securities market and regulating it, and these duties supply the purposive context in which the prohibitions are read [1]. Section 11 confers broad powers to prohibit fraudulent and unfair trade practices and to conduct inquiries, and section 11B allows directions to refrain from dealing, to restrain access to the market and to impound proceeds. These powers allow quick action to prevent continuing harm and have been used in recent interim orders [1].

Section 12A is the central prohibition. In substance, it bars any person from directly or indirectly using or employing any manipulative or deceptive device or contrivance, engaging in any fraud or in any act, practice or course of business that operates as a fraud or deceit, or making a statement that is false or misleading in a material respect in connection with securities [1]. Three features matter. The phrase "manipulative or deceptive device or contrivance" is borrowed from American law and captures conduct that uses a mechanism to mislead the market whether or not a particular person is deceived [16]. The reference to an act or practice that "operates" as a fraud suggests that effect may suffice, although the mental element remains relevant to penalties and characterisation. The reference to material falsity ties the prohibition to the disclosure regime. Because section 12A is not confined to listed practices, it can reach novel forms of manipulation without waiting for amendment, subject to the requirement of legal certainty that a person must be able to know in advance whether conduct is prohibited.

B. The PFUTP Regulations

The PFUTP Regulations elaborate section 12A. They prohibit buying, selling or otherwise dealing in securities in a manner involving fraud or unfair trade practices, and they list specific practices [2]. The most significant for present purposes is any act that creates a false or misleading appearance of trading, which is the closest Indian match to spoofing and wash trading. The Regulations also prohibit dealings that do not result in a genuine transfer of beneficial ownership, which captures circular and matched trading, as well as dissemination of false or misleading information and the use of schemes or devices to manipulate or to induce others to deal. These provisions are built around observable patterns and effects on other participants and not around the trader's subjective intention, which helps with AI-enabled conduct, where patterns may be easier to observe than intent.

The Regulations define fraud broadly, to include any act, expression, omission or concealment committed to deceive or to induce a person to deal in securities. The definition reaches acts committed with intent to deceive and also acts done in a manner that makes the deception effective, which suggests that a fully formed intention to deceive is not required in every case. The precise relationship between the definition and the element of intention is nevertheless not free from difficulty.

C. Mental Element, Attribution and Proof

Under the general law of fraud, intention or at least recklessness is usually required. The United States Supreme Court held in *Ernst and Ernst v. Hochfelder* that scienter is required for liability under section 10(b) in a private action for damages [17], but that is a decision on the private right of action and its application to regulatory enforcement is more nuanced. Section 12A and the PFUTP Regulations are framed in terms that do not expressly require intention in every case. The better view adopted here

is that intention is relevant to the characterisation of conduct and to penalties, but that the prohibition may be attracted by conduct whose effect and character are manipulative, even where intention is not directly proved. For automated conduct the choice is stark. If intention is required in every case, an algorithm that manipulates without its operator's intention falls outside the prohibition. If it is not, an operator may be liable for effects of a system it designed and deployed even where the particular pattern was not foreseen. The appropriate test is foreseeability and control, not direct intention.

Attribution of conduct to legal persons is solved in company law through identification and vicarious liability, and these doctrines are the starting point. The difficulty is that an algorithm is not an agent in the ordinary sense: it has no legal personality and its conduct may depart from its operator's instructions. The better approach is to treat the algorithm as an instrument under the control of those who design, train, deploy and supervise it and to attribute its conduct to them on the basis of control and foreseeability, without recognising any new legal personality for machines. As to proof, civil proceedings before SEBI ordinarily apply the preponderance of probabilities, although the gravity of the allegation requires clear and cogent evidence, and criminal liability under section 24 requires proof beyond reasonable doubt [1]. The standard is not altered by AI, but the methods of establishing facts must be, and accountability requirements on deployers may legitimately reduce the evidentiary burden on the regulator. Order and trade data may show a pattern, but the pattern must be linked to a responsible person and to a manipulative purpose or effect, and expert evidence on training and objectives may be needed.

D. Penalties, Adjudication and Related Regimes

Section 15HA provides a penalty for fraudulent and unfair trade practices of not less than five lakh rupees, extendable to twenty-five crore rupees or three times the profit made, whichever is higher, and section 15HB provides a residuary penalty of up to one crore rupees [1]. An adjudicating officer imposes penalties after notice and hearing and must consider factors under section 15J, including disproportionate gain, repetition and loss to investors. Appeals lie to the SAT under section 15T and to the Supreme Court under section 15Z. Section 24 creates criminal offences for serious contraventions, and the Bharatiya Nyaya Sanhita, 2023 contains offences of cheating that may overlap where identifiable persons are deceived [18]. The Insider Trading Regulations and the Securities Contracts (Regulation) Act also overlap, for example in front running, so a single course of conduct may attract more than one regime [19], [20].

Algorithmic trading is regulated through SEBI circulars and exchange rules, which require approval of algorithms, unique identifiers and pre-trade and post-trade risk controls [10]. These controls are directed mainly at operational risk. Identification of algorithms supports attribution and monitoring of order-to-trade ratios indicates spoofing-like behaviour, but operators are not required to document the objectives of their algorithms, test them for manipulative patterns or explain their behaviour.

E. Gaps and Ambiguities

Four gaps emerge. The relationship between the definition of fraud and the requirement of intention is uncertain, which becomes critical where effects are produced by automated systems. There is no express attribution rule for algorithmic conduct, so the regulator relies on general doctrines of agency and control. There is no specific duty to document and test algorithms for manipulative potential, leaving the regulator dependent on post-hoc investigation. And the application of the prohibition on false or misleading statements to synthetic content generated by AI is untested. These gaps concern the application of the framework to a new class of conduct, and they can be addressed through doctrinal clarification, regulatory guidance and, where necessary, targeted amendment.

V. COMPARATIVE PERSPECTIVE

In the United States, manipulation is addressed mainly by sections 9(a) and 10(b) of the Securities Exchange Act of 1934 and Rule 10b-5, and the Commodity Exchange Act, as amended in 2010, expressly prohibits spoofing, that is, bidding or offering with intent to cancel before execution [16], [21]. The Supreme Court requires deception: in *Santa Fe Industries v. Green* a breach of fiduciary duty without deception was held not to violate section 10(b) [22], and in *Stoneridge* the Court declined to

extend liability to a company that participated in a scheme to inflate revenue without itself making the misleading statements, requiring reliance on the deceptive conduct [23]. *Basic v. Levinson* adopted a presumption of reliance in efficient markets, and *TSC Industries v. Northway* defines material information as that which a reasonable investor would consider important [24], [25]. In *United States v. Coscia* the Seventh Circuit affirmed the conviction of a trader who used algorithms to place large orders intended to be cancelled before execution, the first prosecution under the anti-spoofing provision, showing that intent expressed through the design of an algorithm may satisfy the mental element [26]. The American regime offers express provisions on specific practices and a developed jurisprudence, but the requirement of deception may not capture manipulation operating purely through market mechanics.

The United Kingdom regulates manipulation through the market abuse regime of the Financial Services and Markets Act 2000, read with the retained Market Abuse Regulation [27]. The test is partly objective: behaviour may be market abuse if it gives or is likely to give a false or misleading impression, without proof of intention in every case, and the reasons for the conduct are considered. The proceedings concerning Navinder Singh Sarao, who used an automated program to place and cancel large futures orders, show that regulators can attribute algorithmic conduct to the individuals who designed and controlled the programs even where the programs operated autonomously. This is consistent with a functional approach to attribution.

In the European Union, the Market Abuse Regulation prohibits manipulation in article 12, describing transactions and orders that give false or misleading signals or secure prices at an artificial level, prohibits attempts in article 15, and Annex I provides indicators including indicators relating to algorithmic trading [28]. Directive-level rules on algorithmic trading require firms to have effective systems and risk controls and to test their algorithms, and the European Securities and Markets Authority has issued guidance on detecting manipulation. The Artificial Intelligence Act, though directed at manipulation of persons and not of markets, prohibits certain manipulative AI techniques and imposes risk management, data governance, record-keeping and human oversight duties on high-risk systems, which shows accountability being tied to governance obligations [29]. Singapore's Securities and Futures Act 2001 prohibits false trading, market rigging and false or misleading information, and its regulator has issued guidance on governance, explainability and accountability in the use of AI [30]. Australia's Corporations Act 2001 contains detailed prohibitions on false trading and market rigging, and *ASIC v. Healey* illustrates the willingness of Australian courts to hold individuals accountable for misleading statements that affect the market [31], [32].

Three common features emerge. Each jurisdiction prohibits manipulation in general terms, supported by provisions on particular practices. Each combines objective and subjective elements in different proportions. And each has addressed attribution through control, agency or responsibility. India's general prohibitions are broadly comparable, but it lacks the express provisions on spoofing and the governance duties for algorithmic systems found in several other jurisdictions. The most useful lesson, drawn most clearly from the European framework, is the value of linking the prohibition of manipulation to governance requirements for the systems that may produce it.

VI. CASE ANALYSIS

A. Method and Caveats

The cases were selected to illustrate the doctrinal questions in Parts III and IV. Each is read for its facts, reasoning and consequences for the doctrine. Three cautions apply. Enforcement orders are not always fully reasoned, interim orders reflect a preliminary view of the evidence, and the public record covers only matters that reached an order or a public statement, so it is not a representative sample of trading conduct. Interim orders are therefore treated as indications of the regulator's approach and not as findings of liability. The descriptions of the two Supreme Court decisions below are general, and their precise holdings should be checked against the full judgments before they are relied on.

B. Foundational Judicial Approach

Securities and Exchange Board of India v. Shriram Mutual Fund is the starting point for the Indian approach to fraudulent and unfair trade practices [33]. It confirms that the prohibitions are read in light of their purpose of protecting investors and market

integrity, treats the conduct alleged as a matter of substance so that form does not prevent examination of its real character, and recognises that the prohibitions can reach intermediaries whose conduct affects the market. The principle that substance governs over form is important for AI-enabled conduct, since a system may be structured so that its operator appears to play no part in the relevant trades. The Court's analysis is tied to its facts and does not settle the mental element for every type of manipulation.

Securities and Exchange Board of India v. Kishore R. Ajmera is significant for its approach to evidence [34]. It indicates that manipulation may be established from the pattern of conduct and its effect on the market, consistent with the functional definition adopted here, and that pattern evidence may suffice where it is consistent with a deceptive or artificial design. It also shows the difficulty of proving the mental element where conduct is complex. For automated conduct the question arises more sharply: the regulator must show that the design of the system produced the artificial effect and that the operator knew or should have known of it.

C. Tribunal and Enforcement Practice

The SAT has repeatedly considered circular and synchronised trading in small and mid-cap securities, asking whether trades involved a genuine transfer of ownership, whether the parties were connected and whether the pattern was consistent with an artificial objective. These objective indicators, namely identity of the parties, timing and sequence, price movement and absence of economic rationale, are equally available for algorithmic patterns, so the approach can be extended to automated circular trading by accounts under common control. The Tribunal has been careful to distinguish genuine trading from manipulation, which is appropriate but requires heavy investigative investment because surveillance alerts are numerous and few lead to findings.

SEBI's interim order of early 2025 on front running by a broker-linked individual shows the overlap between manipulation and insider trading [35]. The alleged conduct was trading ahead of a large institutional order using information obtained through a position of trust, and the regulator relied on the PFUTP framework together with the insider trading regime. The same evidence of sequence and timing is central to detecting algorithmic front running, where the legal questions are who controls the program, who had access to client information and whether the design implies an intention to exploit it.

The interim order of 3 July 2025 concerning a group of foreign entities trading index derivatives is the most significant recent Indian order on algorithmic manipulation [36]. As reported publicly, the order alleged an expiry-day strategy involving large positions in index futures, the underlying stocks and options, said to move the index favourably for the entities' overall positions, and it impounded substantial funds and restrained the entities from dealing pending proceedings. It is interim and subject to further examination. It raises three doctrinal questions: the characterisation of a strategy in which individually lawful trades combine to produce an unlawful effect, the role of automated or quantitative elements and whether system design reflects an intention to produce the effect, and the evidentiary basis in order and trade data and the entities' explanations. It shows the regulator's capacity to analyse multi-instrument strategies, and this study does not predict its outcome.

D. Foreign Decisions in Indian Perspective

Coscia suggests that design intent may be inferred from the structure of an algorithm and the pattern of its trades, and that an operator cannot escape responsibility by claiming the algorithm acted autonomously once deployed [26]. This reasoning could inform the reading of section 12A and the PFUTP Regulations so as to attribute the design of an algorithm to the controlling person where its manipulative character was a foreseeable consequence. *Stoneridge* shows the opposite risk: mere supply of services to a manipulator did not suffice for liability, which leaves a gap in the regulation of technology providers [23]. The Indian provisions on schemes and devices may support liability for those who knowingly provide tools for manipulation, but the boundary between knowing provision and mere supply is not clear.

SEBI has also acted against individuals who promoted securities through social media and messaging channels without disclosing their positions, treating promotion as manipulation where it is designed to influence prices and the promoter

benefits. Generative AI adds a new dimension, since synthetic analyses, testimonials, audio and video can be produced at scale. The existing prohibition on false or misleading statements applies to synthetic content, but attribution requires a clear rule that a person who deploys a generative system to publish market-relevant content is responsible for its accuracy.

E. Patterns

Four patterns emerge. The regulator uses the general prohibition and the specific practices flexibly, which allows new conduct to be addressed but leaves participants uncertain about which provision will apply. Enforcement depends heavily on pattern evidence and on the regulator's ability to explain its analysis to a court or tribunal. Attribution is secure where one person controls trading but less so where conduct is spread across a chain such as a foreign entity, a domestic broker, a technology vendor and client accounts. And decisions are inconsistent on the mental element, some treating effect as sufficient and others requiring design to produce the effect, which creates uncertainty for automated conduct where design and effect may come apart.

VII. A PROPOSED FRAMEWORK

The framework rests on a principle: the person who designs, controls and deploys an automated or AI system is responsible for the manipulative effects it produces where those effects are reasonably foreseeable from its design, objective function or circumstances of deployment. The system is not a legal person, and proof that the operator intended the particular effect is not required. The operator is required to maintain adequate controls, test the system for manipulative potential and respond promptly to signs of artificial effects. It is designed to operate within the existing statute and to need legislation only where clearly necessary.

It has four elements. First, firms maintain a register of automated and AI systems used for trading, market making, execution or the dissemination of market-relevant information, identifying purpose, operator, controlling persons and venues, extending the existing algorithm identifiers. Second, the objective functions and constraints of each system are documented in reviewable form, with training data, validation and post-deployment monitoring for machine learning, so that courts can judge whether reasonable care was taken. Third, systems are tested before deployment and monitored afterwards for patterns consistent with spoofing, layering, circular trading and front running, with testing proportionate to size and risk. Fourth, firms respond promptly to indications of manipulative effects by suspending the system where necessary, investigating, correcting and reporting material effects, and cannot rely on their own discovery to avoid responsibility for effects already produced.

Two further features address attribution and proof. A rule of attribution would attribute conduct produced by an automated system to the person who controls it where the conduct is manipulative in effect and the controlling person failed to take reasonable steps to prevent it, operating alongside agency and identification. A rebuttable presumption would apply where a system produces an order pattern consistent with a recognised form of manipulation and with a material effect on prices or volumes: the controlling person would be presumed to have caused the effect and would bear the burden of explaining the pattern by reference to documented objectives, testing and legitimate economic rationale. This is justified by the asymmetry of information, provided it is confined to recognised patterns, is rebuttable and gives a fair opportunity to respond. The regulator would also build capacity for expert analysis of automated systems, with independent experts, disclosed methodology and a fair chance to challenge it.

A brief illustration shows the operation. An execution algorithm designed to minimise market impact learns that placing large buy orders and cancelling them once smaller sell orders are filled lowers cost, and over a session the pattern creates a false impression of demand. The firm would be responsible if the effect was foreseeable from the design and it had neither tested nor monitored the system, and it could rebut the presumption by showing that the pattern was a legitimate consequence of execution logic and that adequate steps were taken. Where a generative system publishes a false announcement through automated accounts, the deployers would be responsible for accuracy where they knew or should have known it was likely false.

The framework must not deter lawful innovation. Algorithmic trading and machine learning are

legitimate and beneficial, so obligations are calibrated to risk and are lighter for smaller firms and simpler systems, and guidance should explain how the framework will be applied. Four objections can be answered. It does not impose strict liability, since foreseeability and failure of reasonable care are required. The presumption is limited, rebuttable and justified by information asymmetry. Compliance cost is proportionate and weighed against the cost of manipulation. And regulatory capacity can be built through specialised staff, technical partnerships and standard methodologies, extending existing surveillance functions.

VIII. CONCLUSION AND RECOMMENDATIONS

The study began from the observation that manipulation law was framed with human traders in mind and that AI strains its assumptions about intent, attribution and proof. It finds that the core of manipulation, an artificial distortion of price, volume or trading interest, survives technological change; that section 12A and the PFUTP Regulations are broad enough in principle to reach algorithmic conduct; that other jurisdictions have responded with express provisions on spoofing and governance duties for algorithmic systems; and that the Indian doctrine on attribution and proof is not yet settled. The hypothesis is therefore broadly supported, subject to the caveat that the case material is largely interim. The law does not need to be replaced. It needs to be clarified and extended so that responsibility rests with those who control automated systems. The recommendations below are proposals and not existing obligations.

1) SEBI should issue a guidance note on the attribution of conduct produced by automated and AI systems, stating the principle of control and foreseeability and the documentation and testing standards expected of firms, developed in consultation with exchanges and industry.
2) SEBI should require firms using algorithmic and AI systems to maintain a register, document objectives and constraints and test for manipulative potential before deployment, with proportionate obligations, and should build its own capacity to analyse automated systems and publish its methodology and fuller reasoning in algorithmic cases.
3) Exchanges should strengthen surveillance for spoofing, layering, circular trading and front running, share methodologies with SEBI and consider pre-trade controls on cancellation of large orders designed to create false impressions.
4) Parliament may consider an express provision on spoofing and layering, a clarification of whether intention is required in every case and, if not, when effect suffices, and whether penalties should reach those who knowingly supply technology or data for manipulation.
5) The SAT and the Supreme Court should, in appropriate cases, give reasoned guidance on the relationship between the definition of fraud and intention, on the inference of intent from design and effect, on attribution for automated conduct and on the evidentiary value of expert analysis.
6) Boards should treat governance of automated systems as a board-level responsibility, and professional advisers should be alert to manipulation risks in automated systems.

The study has limits. It is primarily doctrinal and does not test its hypothesis against a systematic dataset of trading records, its account of enforcement relies on public orders that are interim and subject to appeal, its treatment of AI is simplified, the proposed framework should be tested with technical experts before adoption and the comparison is selective. These limits define an agenda for further work: an empirical study of SEBI orders on algorithmic trading, comparative work on attribution rules for automated conduct, research on technical detection and the standards of evidence it can support, and study of the intersection with the law on synthetic media and automated decision-making.

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REFERENCES

[1] Securities and Exchange Board of India Act, 1992, Act 15 of 1992.
[2] Securities and Exchange Board of India (Prohibition of Fraudulent and Unfair Trade

Practices relating to Securities Market) Regulations, 2003.
[3] H. G. Manne, *Insider Trading and the Stock Market*. New York, NY, USA: Free Press, 1966.
[4] F. H. Easterbrook and D. R. Fischel, "Mandatory disclosure and the protection of investors," *Virginia Law Review*, vol. 70, p. 669, 1984.
[5] P. G. Mahoney, "Mandatory disclosure as a solution to agency problems," *University of Chicago Law Review*, vol. 62, p. 1047, 1995.
[6] T. L. Hazen, *Treatise on the Law of Securities Regulation*. St. Paul, MN, USA: West Academic, 2011.
[7] M. Kearns and A. Roth, *The Ethical Algorithm*. Oxford, U.K.: Oxford Univ. Press, 2019.
[8] T. C. W. Lin, "The new market manipulation," *Emory Law Journal*, vol. 66, p. 1253, 2017.
[9] M. Lewis, *Flash Boys: A Wall Street Revolt*. New York, NY, USA: W. W. Norton, 2014.
[10] Securities and Exchange Board of India, circulars on algorithmic trading issued from 2008 onwards, read with the exchange rules made under them.
[11] Justice N. K. Sodhi (Chair), *Report of the High Level Committee to Review the SEBI (Prohibition of Insider Trading) Regulations, 1992*, 2013.
[12] Organisation for Economic Co-operation and Development, *Artificial Intelligence in Finance*. Paris, France: OECD Publishing, 2021.
[13] International Organization of Securities Commissions, *The Use of Artificial Intelligence and Machine Learning by Market Intermediaries and Asset Managers*, Final Report, Sep. 2021.
[14] O. Ben-Shahar and C. E. Schneider, *More Than You Wanted to Know: The Failure of Mandated Disclosure*. Princeton, NJ, USA: Princeton Univ. Press, 2014.
[15] Securities and Exchange Board of India, *Consultation Paper on Guidelines for Responsible Usage of Artificial Intelligence and Machine Learning in the Securities Market*, 2025.
[16] Securities Exchange Act of 1934 (US), ss. 9(a) and 10(b), and Rule 10b-5.
[17] *Ernst and Ernst v. Hochfelder*, 425 U.S. 185 (1976).
[18] Bharatiya Nyaya Sanhita, 2023, Act 45 of 2023.
[19] Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015.
[20] Securities Contracts (Regulation) Act, 1956, Act 42 of 1956.
[21] Commodity Exchange Act (US), 7 U.S.C. s. 6c(a)(5)(C), as inserted by the Dodd-Frank Wall Street Reform and Consumer Protection Act, 2010.
[22] *Santa Fe Industries, Inc. v. Green*, 430 U.S. 462 (1977).
[23] *Stoneridge Investment Partners, LLC v. Scientific-Atlanta, Inc.*, 552 U.S. 148 (2008).
[24] *Basic Inc. v. Levinson*, 485 U.S. 224 (1988).
[25] *TSC Industries, Inc. v. Northway, Inc.*, 426 U.S. 438 (1976).
[26] *United States v. Coscia*, 866 F.3d 782 (7th Cir. 2017).
[27] Financial Services and Markets Act 2000 (UK), market abuse provisions as amended, read with the retained Market Abuse Regulation.
[28] Regulation (EU) No 596/2014 of the European Parliament and of the Council on market abuse (Market Abuse Regulation), arts. 12 and 15, and Annex I.
[29] Regulation (EU) 2024/1689 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act).
[30] Securities and Futures Act 2001 (Singapore).
[31] Corporations Act 2001 (Cth) (Australia).
[32] *Australian Securities and Investments Commission v. Healey*, (2011) 196 FCR 291 (Federal Court of Australia).
[33] *Securities and Exchange Board of India v. Shriram Mutual Fund*, (2006) 5 SCC 361.
[34] *Securities and Exchange Board of India v. Kishore R. Ajmera*, (2016) 6 SCC 368.
[35] Securities and Exchange Board of India, Interim Order in the matter of front running by a broker-linked individual, Jan. 2025.
[36] Securities and Exchange Board of India, Interim Order in the matter of Jane Street entities concerning index derivatives trading, Jul. 3, 2025.