INSIDER TRADING IN INDIA: EVALUATING SEBI'S REGULATORY GAPS AND THE PROMISE OF AI-BASED SURVEILLANCE

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ABSTRACT

Insider trading remains one of the most difficult forms of market abuse to regulate in India. Currently, there are millions of people entering the Indian securities market every day. They are all prejudiced by the inequity that is created due to insider trading. India's primary market watchdog-SEBI- has introduced a robust and comprehensive legal and regulatory framework as per the SEBI (Prohibition of Insider Trading) Regulations, 2015 to counter this problem. However, these regulations continue to face multiple challenges, specifically in relation to its enforcement. This paper critically evaluates the strengths and limits of SEBI's insider trading regime, focusing specifically on institutional inefficiencies, delays in procedure and the low rate of successful convictions.

This paper further examines the state at which modern technological advancements such as artificial intelligence(AI) and machine learning(ML) have been implemented in market surveillance mechanisms. Drawing comparative insights from the U.S Securities and Exchange Commission and their utilisation of systems like ARTEMIS and MIDAS, the paper evaluates how SEBI's own initiatives such as IMSS, DWBIS and the Data Lake project may lead to a more efficient Indian regulatory system.

Keywords: Insider Trading, SEBI, Market Surveillance, Artificial Intelligence, Enforcement Challenges, Unpublished Price Sensitive Information (UPSI), Data Analytics, DWBIS, SEC, Comparative Regulation

Introduction

"Insider trading occurs when a corporate insider trades on information before it is disclosed to the general public."[1] The spectrum of the financial markets are asymmetrically skewed towards the agents and employees, or otherwise known as corporate insiders as compared to people who trade based on external market information.[2] This spectrum is in reference to the speed at which information gets disseminated and which person gets what specific information. This creates some inherently 'unfair' situations where the corporate personnel are privy to price sensitive information which may affect the market in ways the other participants may not know about.[3]

However, it is to be noted, that insider trading was not seen as a problem until recently. The main argument in favour of insider trading is two pronged. Firstly, when talking about the ethical side, according to Thomas Aquinas, as a potential buyer, one is not obliged or responsible to any other potential buyer or seller.[4] In a capitalistic society, where every person is looking to maximise their own utility and thus maximise social utility, insider trading at the face of it does not seem ethically wrong. Secondly, when talking directly about the markets, those who are pro insider trading argue that "Insider trading will bring new and useful information into asset prices. Decision makers-both portfolio managers and

firms making real investment decisions-can reduce risk and improve performance when prices reflect better information."[5] Therefore, the regulations regarding insider trading took a great deal of time to come into force and was left untouched till the 1970s.

Insider trading was finally recognised for its unfairness and inequity in the 1970s in India. In 1979, the Sachar Committee recognised and suggested that corporate entities and their personnel may use price sensitive information to unfairly manipulate the stock market and cause massive losses to outside investors.[6] The utilitarian model of insider trading does not

[1] Ayan Roy, Project Report on Insider Trading in India, SSRN Elec. J., 1, 1, (2010), https://ssrn.com/abstract=1620386.
[2] Iman Anabtawi. "Toward a Definition of Insider Trading." *Stan. L. Rev*, vol. 41, no. 2, 1989, 378.
[3] Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015, Reg. 2(n), Gazette of India, Extraordinary, Part III, Sec. 4 (Jan. 15, 2015) (India).
[4] Robert W. McGee, Applying Ethics to Insider Trading, 77 J. Bus. Ethics 205, 205–17 (2008), http://www.jstor.org/stable/25075554.
[5] Hayne E. Leland, Insider Trading: Should It Be Prohibited?, 100 J. Pol. Econ. 859, 859–87 (1992), http://www.jstor.org/stable/2138691..
[6] Sankalp Jain, Insider Trading in Indian Market: Legal and Regulatory Framework, SSRN Elec. J., 1, 1–8 (2015), https://ssrn.com/abstract=2775362.

holistically look at each section of society, instead it focuses on a select few to calculate the net gain. Understanding this inequity, countries around the world have taken multiple steps to curb this scourge. Therefore, "Empowered by the Securities and Exchange Board of India Act, 1992, the Board passed SEBI (Prohibition of Insider Trading) Regulations, 1992 and Prohibition of Fraudulent and Unfair Trade Practice Regulation, 2003 prohibiting insider trading in securities and fraudulent and unfair trade practices relating to securities markets."[7] This was eventually replaced by the SEBI (Prohibition of Insider Trading) Regulations, 2015 which streamlined the definitions, rules and obligations regarding insider trading. However, there remains many challenges in the enforcement mechanisms with few convictions and sporadic success.

The paper looks to explore the multiple facets of the SEBI regulations and the many nuances involved in the enforcement of such procedures. It further analyses the possible ways in which modern technology such as data analytics and artificial intelligence can be used to fix some of the issues with the implementation of the SEBI regulations. This paper will look to answer two central questions:-

1) How effective is SEBI in regulating, detecting, and prosecuting insider trading in India?

2) Can technological advancements like AI and data analytics improve the detection and prevention of insider trading in India?

1.1 SEBI's regulatory framework

Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015(Hereinafter referred to as "the act") does not directly define insider trading however provides us with regulations which broadly refer to it. Regulation 3 of the act states "No insider shall communicate, provide, or allow access to any unpublished price sensitive information, relating to a company or securities listed or proposed to be listed, to any person including other insiders except where such communication is in furtherance of legitimate purposes, performance of duties or discharge of legal obligations."[8]

Unpublished price sensitive information refers to any information that is generally not available which upon becoming generally is going the affect the price of the securities. It non-

[7] Ibid., 2.
[8]SEBI (Prohibition of Insider Trading) Regulations, 2015, Reg. 3(1), Gazette of India, Extraordinary, Part III, Sec. 4 (India).

exhaustively refers to financial results, dividends, change in capital structure, mergers, de-mergers, delisting, disposals and expansion of business, change in key managerial personnel, etc.[9]

Importantly, it is to be noted that, regulation 4 states that if an insider commits a trade while being in possession of price sensitive information, it is a crime. As given in the explanation, if a person has traded in securities and has been found to have been in possession of UPSI, the motive of the trade would be presumed[10]. Therefore, intent is technically, statutorily irrelevant

1.2. Mechanisms and Detection

SEBI has a dual role in controlling insider trading in India. Firstly, it serves the regulatory purpose of laying down rules and guidelines for corporate entities to follow in their dealings including in relation to insider trading. This is stated in s.11 of the SEBI act, 1991 which states "Subject to the provisions of this Act, it shall be the duty of the Board to protect the interests of investors in securities and to promote the development of, and to regulate the securities market, by such measures as it thinks fit."[11] Secondly, it serves as a watchdog to survey the markets and make sure that the corporations are following the rules it has laid down. SEBI does this through various ways as laid down by multiple notifications and as stated in the market surveillance and research document.

Firstly the use of Market Alerts and Watch mechanisms through the use of pre-determined parameters which gives alerts based on abnormal fluctuations of prices or volumes.[12] This also tracks variations in orders and prices and quantities flowing through the market. Secondly, SEBI uses rumour and news verification mechanisms to monitor media reports and price movements which are related to market rumours. If securities are bought and sold in a suspicious manner right before price sensitive information is publicised then it can constitute insider trading.[13] Thirdly, the dissemination of Price Sensitive Information to the market or public has been made a requirement by SEBI. "Any price sensitive information in relation to

[9] Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015, Reg. 2(n), Gazette of India, Extraordinary, Part III, Sec. 4 (Jan. 15, 2015) (India).
[10] SEBI (Prohibition of Insider Trading) Regulations, 2015, Reg. 4, Gazette of India, Extraordinary, Part III, Sec. 4 (India).
[11] Securities and Exchange Board of India Act, 1992, s. 11, No. 15, Acts of Parliament, 1992 (India).
[12] Securities and Exchange Board of India, *Chapter 9: Market Surveillance and Investigation*, in SEBI Annual Report 2002–2003, 86 (2003), https://www.sebi.gov.in/sebi_data/commondocs/ch9_p.pdf.
[13] Ibid.

any securities received from a company shall be disseminated to the market or public through electronic display, as soon as possible".[14]

Furthermore, in references to advancements in market detection systems, the use of the Integrated Market Surveillance System (IMSS) by the SEBI allows the real time tracking of data from the stock exchange and other market intermediaries. This was notified by SEBI through the press release titled "Agreement signed for implementation of IMSS" dated May 17th, 2005[15]. "The System envisages integration of data available from Stock Exchanges (cash and derivatives segments), Clearing Corporation and Depositories into a single Integrated Market Surveillance System. The IMSS is expected to generate alerts that will help SEBI to identify and detect serious market violations such as market manipulations, insider trading and other types of frauds that undermine market integrity."[16]

SEBI has also implemented a Data Ware Housing and Business Intelligence System (DWBIS) which aims to expedite investigations and complete quasi-judicial orders related to securities exchange. A data warehouse system retrieves and consolidates data periodically from source systems and creates a data storage[17]. It has the characteristics of being subject-oriented, non-volatile, integration of various application systems, structured data storage and summarized data[18]. It enables pattern recognition, data mining and link analysis along with cross-market surveillance.[19]

The IMSS and DWBIS were successful attempts by SEBI to modernise its technology to keep up with the times and to make their surveillance methods more efficient. However, Artificial Intelligence and machine learning should indubitably be the future of SEBI market surveillance technology. In 2019, SEBI conducted a survey to gain an in-depth understanding of the adoption of AI/ML technologies in the market and to prepare itself for future policies.[20] The

[14] Ibid.
[15] Press Release, Sec. & Exch. Bd. of India, *Agreement Signed for Implementation of Integrated Market Surveillance System*, Press Release No. 77/2005 (May 17, 2005), https://www.sebi.gov.in/sebi_data/docfiles/16155_t.html.
[16] Ibid.
[17] Vijay Gupta & Jayant Singh, *A Review of Data Warehousing and Business Intelligence in Different Perspective*, 5(6) Int'l J. Comput. Sci. & Info. Tech. 8263 (2014).
[18] Ibid., 8264.
[19] Press Release, Sec. & Exch. Bd. of India, *Caution to Public Against Fraudulent / Manipulative Activities on Social Media Platforms (SMPs) Related to Securities Market*, Press Release No. 22/2025 (Apr. 11, 2025), https://www.sebi.gov.in/sebi_data/docfiles/17129_t.html.
[20] Circular, Sec. & Exch. Bd. of India, *Reporting for Artificial Intelligence (AI) and Machine Learning (ML) Applications and Systems Offered and Used by Market Infrastructure Institutions (MIIs)*, Circular No. SEBI/HO/MRD/DOP1/CIR/P/2019/24 (Jan. 31, 2019), https://www.sebi.gov.in/legal/circulars/jan-

annual report for the year 2020-21 revealed that SEBI planned to implement AI to "identify evolving and increasingly complex fraudster manipulation techniques."[21] Furthermore, SEBI planned to utilise AI for data analytics and pattern recognition.[22] SEBI further implemented regulations regarding the use of AI in its consultation paper dated 13th November, 2024 to assign clear responsibility to institutions.[23] The implementation of AI and ML has therefore been at the forefront of SEBI for a while but there has yet to be any concrete implementation of Artificial Intelligence on market surveillance systems till date.

1.3 Effectiveness in implementation

The effectiveness of SEBI'S insider trading regulations has been up for debate for a long time. While the regulatory frameworks for SEBI are comparable to the larger global markets, its effectiveness, especially with regards to institutional blockages and excessive time duration bog down the already saturated system. In the matter of Dilip Pendse v. SEBI[24] the investigation procedure for insider trading came into question. It took from 31st March to April 30th 2001 for TFL's financial data regarding the 79.37cr loss of Nishkalpa to come out which would have undoubtedly prejudiced a wide range of investors.[25]

The absence of a realistic time range for an investigation to be completed in the act leads to cases in which there is a long delay in justice. In a fast moving corporate sector, especially in a developing nation such as India where there is a prevalence of 'tradition' in business, delays in justice often lead to key evidence being lost.[26] The regulations in India relating to insider trading give broad descriptions of various aspects to the point where the term 'insider trading'

2019/reporting-for-artificial-intelligence-ai-and-machine-learning-ml-applications-and-systems-offered-and-used-by-market-infrastructure-institutions-miis-_41927.html.

[21] Trisha Shreyashi, *Re-Engineering Regulation of Market: How SEBI Deploys Data & Tech*, Chartered Secretary, Apr. 2019, https://www.icsi.edu/media/webmodules/CSJ/April/19ArticleMsTrishaShreyashi.pdf.

[22] Ibid.

[23] Sec. & Exch. Bd. of India, *Consultation Paper on Proposed Amendments with Respect to Assigning Responsibility for the Use of Artificial Intelligence Tools by Market Infrastructure Institutions, Registered Intermediaries and Other Persons Regulated by SEBI* (Nov. 13, 2024), https://www.sebi.gov.in/reports-and-statistics/reports/nov-2024/proposed-amendments-with-respect-to-assigning-responsibility-for-the-use-of-artificial-intelligence-tools-by-market-infrastructure-institutions-registered-intermediaries-and-other-persons-regulated-b-_88470.html

[24] Dilip S. Pendse v. Securities and Exchange Board of India, MANU 0159 (SB 2009).

[25] Sparsh Saxena, Bhavya Pathania & Aditya Shenoy, *Effectiveness of Insider Trading Laws in India: Identifying and Addressing Legal Lacunae*, 3(3) Indian J. Integrated Rsch. L.,10(2023), https://ijirl.com/wp-content/uploads/2023/06/EFFECTIVENESS-OF-INSIDER-TRADING-LAWS-IN-INDIA-IDENTIFYING-AND-ADDRESSING-LEGAL-LACUNAE.pdf.

[26] Ishani Pathak, *Insider Trading Regulations: An Empirical Analysis*, 1(4) J. Legal Rsch. & Juridical Sci., 601 (2022), https://jlrjs.com/wp-content/uploads/2022/07/83.-Ishani-Pathak.pdf.

itself is not specifically defined. The lack of specificity in the act results in a great amount of judicial discretion causing long drawn out civil cases.

The settlement between Salil Parekh(CEO and managing director of Infosys) and SEBI[27] in 2024 showed the increasing ineffectiveness of SEBI's market surveillance and the lack of aggressiveness in properly punishing those who commit insider trading. SEBI had investigated trades that occurred between June 29th, 2020 and September 27th, 2021 where some UPSI was not disclosed to stock exchanges. This constitutes a clear breach of the provisions laid down in regulation 3 of the Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 2015. Parekh got away with a slap on the wrist as he settled the matter without admitting to guild and paying a settlement of 25 lakh rupees. This case showed the ineffectiveness of the enforcement of SEBI regulations in two ways. Firstly, The settlement without any real or consequential repercussions showed a clear lack of intent by SEBI in actually punishing the internal trading. The regulations laid down in the act were clearly violated, however SEBI refused to properly pursue the insider trading regime instead focusing on mere procedural lapses. Secondly, the delayed response of SEBI, only announcing the settlement in mid-2024 when the actual trades occurred between 2020 and 2021 highlighted the lack of quick response of SEBI in these matter. Traders on the outside were entirely unaware of what was happening and were thus unjustly prejudiced in the securities markets.

Therefore, it is clear to see that even though the regulations put down by SEBI look proper from the outside and meet the global standards, the internal institutional problems with respect to intent and speed persist. This greatly holds back the Indian securities markets from being a smooth operating entity, instead, prejudice seems to be ingrained in it.

2.1 Artificial intelligence and Machine learning in market surveillance

The increased focus of society on Artificial Intelligence and Machine learning has resulted in all sectors of commerce being affected by it. Corporations are increasingly looking to adopt this new technology to streamline business, overlook workings and make exchanges. The prevalence of this technology in the private sector has led to governments around the world adopting it for public activities. SEBI is no different. As discussed prior, the implementation

[27] Settlement Order, Sec. & Exch. Bd. of India, *In the Matter of Salil Parekh, CEO, Infosys Ltd.*, Settlement Order No. SO/EFD-2/SD/138/JUN/2024 (June 27, 2024), https://www.sebi.gov.in/enforcement/orders/jun-2024/settlement-order-in-the-matter-of-salil-parekh-ceo-infosys-limited_81012.html..

and integration of AI into SEBI workings has been in discussion since 2019. However, there has been no concrete framework laid down for this to be implemented in terms of market surveillance and insider trading. It is nigh impossible for people individually to keep up with the millions of trades made every hour in India. Therefore, artificial intelligence must be a priority to make the enforcement of SEBI regulations and prevent insider trading more effective.

"Through AI technologies, SEBI can evaluate enormous volumes of trading data in real time, improving the speed and accuracy of identifying fraudulent activity and market manipulation. Advanced surveillance is made possible by AI-driven technologies, which can spot odd trading patterns and warn authorities of possible dangers".[28] Artificial intelligence can provide real time updates through on spot data analysis of a large amount of information. The speed at which AI works is impossible to replicate through traditional means is incomparable. Another way in which AI can help SEBI stop the scourge of insider trading Is through trade simulations based on the current environment to assess the likelihood of UPSI being used for that trade through the analysis of the surrounding market trends and news. Furthermore, the mandating of a singular AI based compliance system for adoption by corporations, will allow for SEBI regulations to be internally followed without excuse. The Salil Parekh case for example, could have been based on insider trading instead of compliance failures if there was a mandated AI based compliance system created by SEBI.

The adoption of 'Data Lake' by SEBI is a step in the correct direction to integrate machine learning systems in the current environment. The data lake system provides a platform for data analytics and has the capabilities for the provision of an integrated environment for the deployment of machine learning models.[29] In fact, a machine learning model is required for the smooth processing of such large scale information. Therefore, the data lake project is the first step to a wholly integrated AI/ML surveillance program for SEBI.

Another way in which AI can be used to catch insiders is through the use of CNN (Convolutional Neural Networks and LSTM (Long Short-Term Memory networks). CNN is used to scan over behavioural logs and extract important patters like suspicious sequence of

[28] B. Sudhakar Reddy & Dhulipalla Lakshmi Pranathi, *Role of Artificial Intelligence in SEBI Protection of Investors*, 12(12) Int'l J. for Rsch. in Applied Sci. & Eng'g Tech, 158 (2024), https://www.ijraset.com/best-journal/role-of-artificial-intelligence-in-sebi-protection-of-investors.

[29] Sec. & Exch. Bd. of India, *Request for Proposal for Implementation of Data Lake at SEBI* (2019), https://www.sebi.gov.in/sebi_data/tenderfiles/mar-2019/1553069787046.pdf.

actions such as a used emailing a confidential file. LSTM then uses sequence analysis to look at the order and timing of actions in a session and can put a timeline of events where suspicious activities took place. Finally AI, puts the information together and then combines them to flag suspicious activities.[30] This combination provides immutable evidence to SEBI and would allow for quicker resolution to cases. It would also diminish the threat of the evidence being destroyed as it is stored in a common AI interface.

2.2 Comparative Study – USA

The ARTEMIS system in the United States is one of the forerunners in the field of AI surveillance and it focuses on the analysis of suspicious trading patterns and relationships among multiple traders. "ARTEMIS combines about 10 billion equity and options trade records from SEC and FINRA and uses advanced analytics, created by Division staff, to rank trades bases on different metrics."[31] ARTEMIS can also be used to find previously undetected traders who might be involved in an existing investigation. The SEC is globally recognised for its effectiveness at preventing and prosecuting insider trading. Armed with ARTEMIS, the SEC uses a trader based approach in which they look for patterns of trading in multiple securities among traders who may be acting concert or have common sources of material non-public information.[32]

Furthermore, the SEC utilises the Market Information Data Analytics System (MIDAS) to promote a better understanding of the markets through the analysis of an immense amount of information. "Every day MIDAS collects about 1 billion records from the proprietary feeds of each of the 13 national equity exchanges time-stamped to the microsecond. MIDAS allows us to readily perform analyses of thousands of stocks and over periods of six months or even a year, involving 100 billion records at a time."[33] The integration of this large scale data processing system which can analyse billions of small trades at once helps the SEC identify

[30] Ahmed Hasan Saaudi et al., *Insider Threats Detection Using CNN-LSTM Model*, in Proc. of the 2018 Int'l Conf. on Computational Sci. & Computational Intelligence (CSCI) (2019), https://www.researchgate.net/publication/332138206_Insider_Threats_Detection_using_CNN-LSTM_Model.
[31] Daniel M. Hawke, *SEC Data Analysis in Insider Trading Investigations*, CLS Blue Sky Blog (Aug. 21, 2019), https://clsbluesky.law.columbia.edu/2019/08/21/sec-data-analysis-in-insider-trading-investigations/.
[32] Ibid.
[33] U.S. Sec. & Exch. Comm'n, *MIDAS: Market Information Data Analytics System* (June 14, 2024), https://www.sec.gov/securities-topics/market-structure-analytics/midas-market-information-data-analytics-system.

suspicious market activities and trends. This is especially important to identify insider trading through the analysis of market spikes and data.

The effectiveness of the SEC is bolstered by its use of AI and machine learning which allows them to be widely regarded as the leading financial surveillance institution in the world. SEBI as a whole has yet to utilise the full potential of AI and is thus lagging behind. A future cooperative effort between the two bodies as is present with the SEC and FCA can greatly help in the modernisation of SEBI. India is one of the biggest markets in the world, and is growing exponentially, the adoption of modern technology is a must for success.

Conclusion

Insider trading continues to pose a serious challenge to market fairness and equity in India. SEBI's 2015 regulations marked the first step to a more efficient market supervision framework in India. However, the framework suffers from various issues ranging from long delays in investigations and an over-reliance on procedural settlements as seen in cases like that of Salil Parekh.

The provisional introduction of tools like IMSS and DWBIS to improve detection of insider trading is the first step to fixing an overburdened Indian system. These tools however, still remain in their nascent stage and are limited in their scope and speed. In contrast, the U.S. SEC's introduction of advanced AI-based systems such as ARTEMIS and MIDAS, enables them to process billions of trade records and identify the patterns hidden in them more effectively. SEBI must take more concrete steps to implement similar systems in India, especially when considering the immense scope of Indian markets.

India being home to the largest population in the world and having millions of people investing their hard earned money into the markets every day, must stay up to date with the latest advancements across the globe. Furthermore, with the rapid digitalization of the market, it is imperative for the rights of the common people to be protected. A technology-backed enforcement mechanism is no longer a far-fetched concept but a requirement for the country.