REGULATING ALGORITHMIC AND AI-BASED INVESTMENT ADVICE: LIABILITY, TRANSPARENCY, AND INVESTOR PROTECTION IN INDIAN SECURITIES MARKETS

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ABSTRACT

The increasing integration of algorithmic and artificial intelligence (AI)-driven systems in investment advisory services has fundamentally transformed the functioning of securities markets, raising complex legal and regulatory concerns. In India, the rapid proliferation of robo-advisory platforms and data-driven financial technologies challenges the adequacy of the existing regulatory framework governed by the Securities and Exchange Board of India. This paper critically examines whether current securities regulations—particularly the SEBI (Investment Advisers) Regulations, 2013—are equipped to address the unique risks posed by AI-based investment advice.

Adopting a doctrinal and comparative methodology, the study analyses key issues of liability, transparency, and investor protection in the context of algorithmic decision-making. It interrogates the attribution of legal responsibility in cases of algorithmic error, bias, or financial loss, and evaluates the applicability of traditional legal doctrines such as fiduciary duty and negligence to autonomous or semi-autonomous advisory systems. The paper further explores the "black box" nature of AI and its tension with disclosure and transparency obligations under securities law, highlighting the limitations of existing compliance frameworks.

Drawing comparative insights from jurisdictions such as the European Union and the United States, the paper identifies critical regulatory gaps in the Indian regime and argues for a principled, adaptive approach to governance. It proposes a hybrid regulatory framework incorporating enhanced disclosure standards, algorithmic accountability mechanisms, and risk-based supervisory oversight to ensure robust investor protection while fostering innovation. The study ultimately contends that without targeted regulatory reform, the increasing reliance on AI-driven advisory systems may undermine market integrity and investor confidence.

Keywords: Artificial Intelligence; Algorithmic Investment Advice; Robo-Advisory; Securities Regulation; Investor Protection; Algorithmic Accountability; Transparency; SEBI; FinTech Regulation; Liability in AI Systems

1. INTRODUCTION

1.1 BACKGROUND

The rapid advancement of artificial intelligence (AI) and algorithmic technologies has significantly transformed the architecture of global financial markets. Investment advisory services, traditionally dependent on human expertise and discretionary judgment, are increasingly being supplemented and in some cases replaced by automated, data-driven systems. Robo-advisors, powered by machine learning algorithms and predictive analytics, now offer portfolio management, financial planning, and investment recommendations with minimal human intervention.[1] These systems process vast datasets, identify patterns, and generate tailored investment strategies at a scale and speed that far exceed human capability.

The integration of AI into financial decision-making has introduced efficiencies such as cost reduction, accessibility, and scalability[2]. Retail investors, who were previously excluded from sophisticated advisory services due to high costs, can now access algorithmically generated financial advice at relatively low fees[3]. At the same time, however, these developments have raised concerns regarding opacity, accountability, and systemic risk, particularly due to the "black box" nature of complex AI systems.

In the Indian context, the growth of financial technology (fintech) has been both rapid and transformative. India has emerged as a significant fintech hub, driven by increasing digital adoption, supportive regulatory initiatives, and a growing base of retail investors[4]. Investment advisory platforms leveraging AI and algorithmic tools have proliferated, offering services ranging from automated portfolio allocation to risk profiling and personalized financial recommendations. The regulatory oversight of such services is primarily exercised by the Securities and Exchange Board of India, which governs investment advisers under the SEBI

[1] Yuning Liu and Junliang Wang, "Analysis of Financial Market Using Generative Artificial Intelligence" (2024) 11 Academic Journal of Science and Technology 21 <https://doi.org/10.54097/y17mrj84> accessed October 2025

[2] Ririn Riani, "Artificial Intelligence (AI) in the Financial Sector" (2024) 1 Digital Economics Review. <https://doi.org/10.58968/der.v1i1.476> accessed October 2025

[3] H Varghese, Balaji V Venkatasubramanian and S Mandeep, "AI-Driven Robo-Advisors on Personal Financial Management and Investment Strategies" (2024) 13 International Journal of Science and Research Archive 2020 <https://doi.org/10.30574/ijsra.2024.13.1.1846> accessed December 2025.

[4] Sarang Javkhedka, Anjali Shrungarkar and Atul Kulkarni, "The Integration of Financial Technology within India's Banking and Financial Services Industry" [2024] International Journal of Advanced Research in Science Communication and Technology 79 <https://doi.org/10.48175/ijarsct-17416> accessed December 2025.

(Investment Advisers) Regulations, 2013.

While these regulations were designed to ensure investor protection and maintain market integrity, they were conceptualized in a pre-AI era and are not specifically tailored to address the complexities introduced by algorithmic advisory systems.[5] As a result, the increasing reliance on AI in investment advice raises important questions regarding the adequacy of existing regulatory mechanisms in addressing emerging risks.

1.2 PROBLEM STATEMENT

The integration of AI-driven advisory systems into securities markets has outpaced the evolution of corresponding legal and regulatory frameworks. This phenomenon, often described as regulatory lag, creates significant uncertainty in the governance of algorithmic investment advice[6]. Existing regulations, including those framed by SEBI, do not explicitly account for the autonomous or semi-autonomous nature of AI systems, thereby creating ambiguity in their application.

One of the central challenges lies in the attribution of liability. In instances where algorithmic advice leads to financial loss, it remains unclear whether responsibility should be assigned to the developer of the algorithm, the platform deploying it, or the registered investment adviser. Traditional legal doctrines, such as negligence and fiduciary duty, are premised on human agency and may not seamlessly extend to decision-making processes driven by complex algorithms.[7]

Additionally, the opacity inherent in AI systems poses a significant challenge to transparency and disclosure obligations under securities law. Investors may not fully understand the basis on which recommendations are generated, thereby undermining informed decision-making. This lack of explainability also complicates regulatory oversight and enforcement.[8]

[5] Balraj Verma and others, "Artificial Intelligence Attitudes and Resistance to Use Robo-Advisors: Exploring Investor Reluctance toward Cognitive Financial Systems" (2025) 8 Frontiers in Artificial Intelligence <https://doi.org/10.3389/frai.2025.1623534> accessed October 2025.
[6] Pallavi Rai and Chandra Shekhar, "Artificial Intelligence in Financial Markets: Global Trends, Regulatory Challenges, and Comparative Analysis with India" (2025) 6 International Journal of Research Publication and Reviews 5503 <https://doi.org/10.55248/gengpi.6.0325.1261> accessed November 2025
[7] Rainer Kulms, "Digital Financial Markets and (Europe's) Private Law – A Case for Regulatory Competition?," De Gruyter eBooks (De Gruyter 2021) <https://doi.org/10.1515/9783110749472-008> accessed April 2025.
[8] Xue Wen Tan and Stanley Kok, "Explainable Risk Classification in Financial Reports" [2024] arXiv (Cornell University) <https://arxiv.org/abs/2405.01881> accessed October 2025.

Further, existing investor protection mechanisms may be insufficient to address risks specific to AI-driven advisory services, including algorithmic bias, mis-selling, and systemic vulnerabilities. The absence of clear regulatory standards for algorithmic accountability exacerbates these concerns, highlighting the need for a more nuanced and adaptive legal framework.

1.3 RESEARCH QUESTIONS

This paper seeks to address the following core legal questions:

1. To what extent does the existing regulatory framework governing investment advisory services in India adequately address AI-driven and algorithmic advisory systems?

2. How should legal liability be attributed in cases of financial loss resulting from algorithmic investment advice?

3. Do AI-driven advisory systems comply with transparency and disclosure requirements under Indian securities law, particularly in light of the "black box" problem?

4. Are current investor protection mechanisms sufficient to mitigate risks associated with automated and personalized algorithmic advice?

5. Should AI-based advisory platforms be regulated within the existing framework or under a distinct, technology-specific regulatory regime?

1.4 OBJECTIVES

The primary objective of this research is to critically evaluate the legal and regulatory challenges posed by AI-driven investment advisory services in India. Specifically, the study aims to:

- Examine the adequacy and applicability of the existing regulatory framework governing investment advisers.

- Analyse issues of liability and accountability arising from algorithmic decision-making in financial advisory services.

- Assess the implications of AI opacity on transparency and disclosure requirements; and
- Propose regulatory reforms to strengthen investor protection while accommodating technological innovation.

1.5 METHODOLOGY

This study adopts a doctrinal and comparative research methodology. The doctrinal component involves a detailed analysis of statutory provisions, regulatory frameworks, and guidelines governing investment advisory services in India, with particular emphasis on SEBI regulations.[9] Relevant legal principles, including fiduciary duties and standards of care, are examined to assess their applicability to AI-driven systems.[10]

In addition, a comparative analysis is undertaken to evaluate regulatory approaches in other jurisdictions, particularly the European Union and the United States. This comparative perspective facilitates the identification of best practices and provides a basis for proposing reforms within the Indian regulatory context.

The research also incorporates a limited policy analysis to assess the broader implications of regulating AI in financial markets, balancing the objectives of innovation, market efficiency, and investor protection.

2. EVOLUTION OF AI IN INVESTMENT ADVISORY

2.1 WHAT IS ALORGITHMIC OR AI-BASED INVESTMENT ADVICE

Algorithmic and AI-based investment advice refers to the use of computational models, data analytics, and machine learning techniques to generate financial recommendations with minimal or no human intervention. These systems rely on predefined rules, statistical models, and adaptive learning algorithms to analyse market data, assess investor preferences, and construct portfolio strategies. Unlike traditional advisory services, which are grounded in

[9] Pallavi Rai and Chandra Shekhar, 'Artificial Intelligence in Financial Markets: Global Trends, Regulatory Challenges, and Comparative Analysis with India' (2025) 6 *International Journal of Research Publication and Reviews* 5503 <https://doi.org/10.55248/gengpi.6.0325.1261> accessed November 2025.
[10] Rainer Kulms, 'Digital Financial Markets and (Europe's) Private Law – A Case for Regulatory Competition?' in *De Gruyter eBooks* (De Gruyter 2021) <https://doi.org/10.1515/9783110749472-008> accessed April 2025. See also Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Harvard University Press 2015) 1–18

human expertise and subjective judgment, algorithmic advisory systems operate on objective, data-driven processes that can be scaled across a large user base.

One of the most prominent manifestations of AI in investment advisory is the emergence of robo-advisors. Robo-advisors are digital platforms that provide automated, algorithm-driven financial planning services. They typically collect information from investors through structured questionnaires relating to risk tolerance, investment horizon, income levels, and financial goals. Based on this input, algorithms allocate assets across diversified portfolios, often using modern portfolio theory and optimization techniques. Over time, more sophisticated robo-advisors have incorporated machine learning capabilities, enabling them to refine recommendations based on historical performance, behavioural data, and evolving market conditions.

Machine learning models, particularly supervised and unsupervised learning techniques, play a critical role in enhancing the predictive capabilities of these systems.[11] For instance, algorithms can identify patterns in large datasets, forecast asset price movements, and detect anomalies that may signal market opportunities or risks. Natural language processing (NLP) is also increasingly employed to analyse news, social media sentiment, and corporate disclosures, thereby enriching the informational inputs used in investment decision-making.[12]

Despite their technological sophistication, AI-based advisory systems are not entirely autonomous in all cases. Many operate within a hybrid framework where human oversight exists alongside algorithmic processes. However, as these systems become more advanced, the degree of human intervention is progressively reduced, raising complex questions about accountability and control. The defining characteristic of such systems lies in their ability to make or influence investment decisions through algorithmic logic, often without transparent or easily interpretable reasoning.

2.2 INDIAN CONTEXT

The adoption of AI-driven investment advisory services in India has been closely linked to the

[11] Xue Wen Tan and Stanley Kok, 'Explainable Risk Classification in Financial Reports' [2024] *arXiv (Cornell University)* <https://arxiv.org/abs/2405.01881> accessed October 2025.
[12] See generally Saule Omarova, 'Technology v Technocracy: Fintech as a Regulatory Challenge' (2019) 6 *Journal of Financial Regulation* 75, 82 (discussing the phenomenon of 'regulatory lag' in the context of fintech and arguing that traditional regulatory frameworks struggle to keep pace with technological change)

broader expansion of the fintech ecosystem. Over the past decade, India has witnessed significant growth in digital financial services, driven by increased internet penetration, smartphone usage, and policy initiatives promoting digital inclusion. This environment has facilitated the emergence of numerous fintech platforms offering algorithm-based investment solutions, including automated portfolio management, goal-based investing, and personalized financial advice.[13]

Indian robo-advisory platforms have gained traction among retail investors, particularly younger demographics who are more inclined towards digital interfaces and low-cost investment solutions. These platforms often integrate seamlessly with mutual fund distribution channels and brokerage services, enabling users to execute transactions alongside receiving advisory inputs. The accessibility and affordability of such services have contributed to the democratization of investment advisory, expanding participation in capital markets.

The regulatory oversight of investment advisory services in India is primarily exercised by the Securities and Exchange Board of India. Under the SEBI (Investment Advisers) Regulations, 2013, entities providing investment advice are required to register with SEBI and adhere to specific obligations, including suitability assessments, risk profiling, and disclosure requirements. While these regulations apply to both human and technology-driven advisers, they do not explicitly address the unique characteristics of AI-based systems.[14]

SEBI has, however, acknowledged the growing role of technology in financial markets and has taken steps to engage with fintech innovations through mechanisms such as regulatory sandboxes and consultative approaches.[15] Despite these efforts, there remains a lack of comprehensive, AI-specific regulatory guidance governing algorithmic advisory services. This regulatory ambiguity creates challenges in ensuring consistent compliance and effective

[13] See generally Saule Omarova, 'Technology v Technocracy: Fintech as a Regulatory Challenge' (2019) 6 *Journal of Financial Regulation* 75, 82 (discussing the phenomenon of 'regulatory lag' in the context of fintech and arguing that traditional regulatory frameworks struggle to keep pace with technological change)
[14] See generally Saule Omarova, 'Technology v Technocracy: Fintech as a Regulatory Challenge' (2019) 6 *Journal of Financial Regulation* 75, 82 (discussing the phenomenon of 'regulatory lag' in the context of fintech and arguing that traditional regulatory frameworks struggle to keep pace with technological change)
[15] The Information Technology Act, 2000 (hereinafter 'IT Act 2000'), s 43A. This provision deals with compensation for failure to protect data, and has relevance to FinTech platforms that hold sensitive financial information. See also CERT-In, *Information Security Practices and Procedures for Protected System* (MEITY 2014).

oversight, particularly as fintech platforms continue to evolve in complexity and scale.[16][17]

2.3 BENIFITS VS RISK

The integration of AI into investment advisory services offers several significant advantages. One of the most notable benefits is efficiency. Algorithmic systems can process vast amounts of data in real time, enabling faster and more informed decision-making. This capability enhances the accuracy of portfolio allocation and allows for continuous monitoring and rebalancing of investments. Additionally, AI-driven platforms reduce operational costs by minimizing the need for human intervention, thereby making advisory services more affordable and accessible to a broader segment of investors.[18]

Another important advantage is scalability. Unlike traditional advisory models, which are constrained by human capacity, AI systems can serve a large number of clients simultaneously without compromising performance. This scalability is particularly relevant in a country like India, where there is a growing base of first-time investors seeking cost-effective financial guidance. Furthermore, algorithmic systems can offer standardized and consistent advice, reducing the variability associated with human judgment and behavioural biases.[19]

However, these benefits are accompanied by significant risks that raise critical legal and regulatory concerns. One of the primary risks is algorithmic bias. AI systems are only as reliable as the data on which they are trained, and biased or incomplete datasets can lead to skewed recommendations that may disadvantage certain categories of investors. Such biases may not always be apparent, particularly in complex machine learning models, thereby

[16] Financial Stability Board (FSB), *Artificial Intelligence and Machine Learning in Financial Services: Market Developments and Financial Stability Implications* (FSB 2017) 1, 7–10. The FSB Report was one of the earliest multilateral assessments of AI-related risk in financial systems, identifying explainability and governance gaps as central concerns.

[17] IOSCO, *The Use of Artificial Intelligence and Machine Learning by Market Intermediaries and Asset Managers* (Final Report, IOSCO 2021) 18, 27–31. IOSCO concluded that existing regulatory principles remained applicable to AI-driven advisory systems but emphasised the need for governance enhancements addressing explainability, bias, and oversight.

[18] IOSCO, *The Use of Artificial Intelligence and Machine Learning by Market Intermediaries and Asset Managers* (Final Report, IOSCO 2021) 18, 27–31. IOSCO concluded that existing regulatory principles remained applicable to AI-driven advisory systems but emphasised the need for governance enhancements addressing explainability, bias, and oversight.

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complicating detection and accountability.

Opacity, often referred to as the "black box" problem, represents another major challenge. Many AI systems operate through intricate computational processes that are not easily interpretable, even by their developers. This lack of transparency undermines the ability of investors to understand the basis of investment advice and poses difficulties for regulators in assessing compliance with disclosure requirements. It also raises concerns about informed consent and the adequacy of risk disclosures.

Systemic risk is an additional concern associated with the widespread adoption of algorithmic advisory systems. If multiple platforms rely on similar models or datasets, there is a possibility of herding behaviour, where large numbers of investors make similar investment decisions simultaneously. Such convergence can amplify market volatility and create systemic vulnerabilities, particularly during periods of market stress.

Moreover, the reliance on automated systems may lead to overdependence by investors, who may place undue trust in algorithmic recommendations without fully understanding the associated risks. This behavioural dimension further complicates the regulatory landscape, as traditional investor protection mechanisms may not adequately address the nuances of AI-driven advisory.[20]

In sum, while AI-based investment advisory systems offer transformative potential in enhancing efficiency, accessibility, and scalability, they also introduce novel risks that challenge existing legal frameworks. The evolution of such technologies necessitates a careful balancing of innovation with robust regulatory safeguards to ensure that the interests of investors and the integrity of the securities market are effectively protected.

3. REGULATORY FRAMEWORK IN INDIA

3.1 OVERVIEW OF SEBI FRAMEWORK

The regulation of investment advisory services in India is primarily governed by the Securities and Exchange Board of India, which was established under the SEBI Act, 1992 to protect the

[20] IOSCO, *The Use of Artificial Intelligence and Machine Learning by Market Intermediaries and Asset Managers* (Final Report, IOSCO 2021) 18, 27–31. IOSCO concluded that existing regulatory principles remained applicable to AI-driven advisory systems but emphasised the need for governance enhancements addressing explainability, bias, and oversight.

interests of investors, promote the development of securities markets, and regulate market intermediaries. The SEBI Act provides the foundational legal framework empowering SEBI to issue regulations, enforce compliance, and take action against market misconduct. Within this statutory architecture, investment advisory services are specifically regulated under the SEBI (Investment Advisers) Regulations, 2013.

The SEBI (Investment Advisers) Regulations, 2013 were introduced to ensure that individuals and entities providing investment advice adhere to standards of professionalism, transparency, and accountability. These regulations define an "investment adviser" as any person who, for consideration, is engaged in the business of providing investment advice to clients. The scope of "investment advice" is broadly framed to include advice relating to investing in, purchasing, selling, or otherwise dealing in securities or investment products.

Under these regulations, investment advisers are required to register with SEBI and comply with a range of obligations. These include suitability requirements, which mandate that advisers must assess the risk profile and financial objectives of clients before providing advice; disclosure obligations, requiring transparency regarding conflicts of interest, fee structures, and affiliations;[21] and fiduciary duties, which compel advisers to act in the best interests of their clients. Additionally, advisers must maintain records, ensure segregation of advisory and distribution services, and adhere to a code of conduct emphasizing fairness, diligence, and integrity.[22]

While the regulatory framework is comprehensive in addressing traditional advisory models, it is primarily designed with human intermediaries in mind. The emergence of AI-driven advisory platforms introduces complexities that were not envisaged at the time of drafting these regulations. Nevertheless, in the absence of AI-specific provisions, the existing framework continues to serve as the principal mechanism for regulating such services.

3.2 APPLICABILITY TO AI-BASED ADVISORY

A central doctrinal issue in the regulation of AI-driven investment advisory services is whether

[21] IA Regulations 2013, reg 16. The regulation mandates that an investment adviser shall ensure that the advice being given is appropriate for the client after prior assessment of the risk profile and considering risk appetite, risk tolerance and the client's financial circumstances.

[22] IA Regulations 2013, reg 19. This provision requires investment advisers to disclose certain information to the client at the outset, including details about affiliations, sources of information, and compensation arrangements that could create conflicts of interest.

robo-advisors and algorithmic platforms fall within the definition of "investment advisers" under the SEBI (Investment Advisers) Regulations, 2013. The determination of this question is critical, as it dictates the applicability of registration requirements, compliance obligations, and enforcement mechanisms.[23][24]

On a textual interpretation, the definition of an investment adviser is sufficiently broad to encompass technology-driven platforms. The regulations focus on the activity of providing investment advice for consideration, rather than the mode through which such advice is delivered. Accordingly, if a platform, through algorithmic processes, provides recommendations relating to securities or investment products to clients in exchange for fees or other consideration, it would prima facie fall within the regulatory ambit of SEBI.

However, the application of this framework to AI-based advisory systems raises several interpretive challenges. First, the regulations presuppose a human adviser-client relationship characterized by personalized interaction and the exercise of professional judgment. In contrast, robo-advisors operate through automated processes, often relying on standardized inputs and outputs. This raises questions about whether such systems can meaningfully fulfill obligations such as suitability assessments and fiduciary duties in the absence of human discretion.

Second, the attribution of advisory functions becomes complex in the context of AI systems. It is often unclear whether the entity operating the platform, the developer of the algorithm, or the institution deploying the technology should be treated as the "adviser" for regulatory purposes. While SEBI has, in practice, tended to regulate the entity offering the service to clients, this approach does not fully address the layered nature of AI systems.

Third, certain AI-driven platforms may position themselves as facilitators or tools rather than advisers, thereby attempting to circumvent regulatory classification. For instance, platforms may claim to provide only execution support or data analytics, even when their algorithms generate actionable investment recommendations. This creates a regulatory grey area that can

[23] IA Regulations 2013, reg 15. The regulation codifies the fiduciary obligation by providing that an investment adviser shall act in a fiduciary capacity towards its clients and shall disclose all conflicts of interests as and when they arise.

[24] SEBI, 'Consultation Paper on Review of Investment Adviser Regulations' (January 2020). In this paper, SEBI acknowledged the need to account for technology-based advisory models and invited public comment on whether distinct provisions for algorithmic and robo-advisory platforms were required.

be exploited to avoid compliance obligations.[25]

Despite these challenges, the prevailing regulatory approach suggests that AI-based advisory platforms are not exempt from SEBI oversight merely by virtue of their technological nature. However, the lack of explicit regulatory guidance results in uncertainty and inconsistent application, underscoring the need for clearer classification standards.

3.3 REGULATORY GAPS

The rapid evolution of AI-driven advisory systems has exposed significant gaps in the existing regulatory framework governing investment advisers in India. These gaps arise primarily from the absence of provisions specifically designed to address the unique characteristics and risks associated with algorithmic decision-making.

One of the most prominent gaps is the lack of AI-specific regulatory provisions. The SEBI (Investment Advisers) Regulations, 2013 do not explicitly recognize or define algorithmic or AI-based advisory systems. As a result, there are no tailored requirements addressing issues such as algorithm design, validation, or performance monitoring. This omission limits the ability of regulators to effectively supervise and assess the functioning of such systems.

Another critical gap relates to inadequate risk classification. The current regulatory framework does not distinguish between different levels of technological complexity or risk associated with advisory services. AI-driven systems, particularly those employing advanced machine learning techniques, may pose higher risks due to their opacity and potential for unpredictable behaviour.[26] However, the absence of a risk-based classification mechanism means that all advisers are subject to uniform regulatory requirements, regardless of the underlying technology. This one-size-fits-all approach may be insufficient to address the nuanced risks posed by AI systems.

The absence of algorithmic audit mandates further exacerbates regulatory shortcomings. Unlike traditional advisory models, where human conduct can be evaluated through established

[25] SEBI, 'Framework for Regulatory Sandbox' (Circular No. SEBI/HO/CDMRD/DMP/CIR/P/2020/234, December 2020). The framework allows entities to test innovative financial products, services, or business models in a live but limited environment under SEBI oversight.
[26] SEBI, 'Framework for Regulatory Sandbox' (Circular No. SEBI/HO/CDMRD/DMP/CIR/P/2020/234, December 2020). The framework allows entities to test innovative financial products, services, or business models in a live but limited environment under SEBI oversight.

standards of care, AI systems require technical audits to assess their reliability, fairness, and compliance with regulatory norms. Currently, there is no explicit requirement for periodic auditing of algorithms used in investment advisory services. This lack of oversight increases the risk of undetected errors, biases, and systemic vulnerabilities.[27]

Additionally, the framework does not adequately address issues of explainability and transparency in algorithmic decision-making. While disclosure obligations exist, they are primarily oriented towards human advisers and may not be sufficient to ensure meaningful understanding of AI-generated recommendations. The absence of clear standards for explainability undermines both investor confidence and regulatory enforcement.[28]

Collectively, these gaps highlight the limitations of applying a traditional regulatory framework to technologically advanced advisory systems. Without targeted reforms, the existing regime may struggle to effectively manage the risks associated with AI-driven investment advice.

3.4 ROLE OF OTHER FRAMEWORKS

In addition to securities-specific regulations, other legal frameworks play a supplementary role in governing aspects of AI-driven investment advisory services in India. Notably, the Information Technology Act, 2000 provides a legal basis for electronic transactions, data protection, and cybersecurity.[29] While the Act does not specifically address AI, its provisions relating to data security and intermediary liability may have indirect relevance for fintech platforms handling sensitive financial information.

Data protection considerations are particularly significant in the context of AI-based advisory systems, which rely heavily on the collection and processing of personal and financial data. Emerging data protection frameworks in India emphasize principles such as consent, purpose limitation, and data minimization, which are essential for safeguarding investor information.

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[27] SEBI, 'Framework for Regulatory Sandbox' (Circular No. SEBI/HO/CDMRD/DMP/CIR/P/2020/234, December 2020). The framework allows entities to test innovative financial products, services, or business models in a live but limited environment under SEBI oversight.

[28] Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) 81 *Proceedings of Machine Learning Research* 1 (providing foundational empirical evidence of bias in AI systems trained on unrepresentative data, with broader implications for any domain—including financial services—where AI recommendations are grounded in historical datasets).

[29] Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) 81 *Proceedings of Machine Learning Research* 1 (providing foundational empirical evidence of bias in AI systems trained on unrepresentative data, with broader implications for any domain—including financial services—where AI recommendations are grounded in historical datasets).

Compliance with these principles is critical for ensuring that AI systems operate within acceptable legal and ethical boundaries.

However, these frameworks are not specifically tailored to address the intersection of AI and securities regulation. While they provide important safeguards relating to data governance and cybersecurity, they do not resolve core issues such as algorithmic accountability, liability for automated decision-making, or transparency in investment advice. Consequently, while ancillary legal frameworks contribute to the broader regulatory ecosystem, they are insufficient to address the specific challenges posed by AI-driven advisory services.

In conclusion, the existing regulatory framework in India, while robust in its traditional scope, exhibits significant limitations in addressing the complexities introduced by AI and algorithmic investment advice. The absence of AI-specific provisions, coupled with gaps in risk classification and oversight mechanisms, underscores the need for a more adaptive and technologically informed regulatory approach.

4. LIABILTY AND ACCOUNTABILITY IN AI – DRIVEN ADVISORY

4.1 TRADITIONAL LIABILITY FRAMEWORK

4.1.1 NEGLIGENCE

The traditional framework of liability in investment advisory services is grounded in the law of negligence, which imposes a duty of care upon advisers to act with reasonable skill, competence, and diligence. Under Indian tort law, liability for negligence arises when a duty of care exists, such duty is breached, and the breach results in foreseeable harm. Investment advisers, by virtue of their professional role, owe a duty to provide advice that is informed, prudent, and aligned with the client's financial objectives and risk profile.[30]

In the context of AI-driven advisory systems, the application of negligence becomes complex. Algorithms, unlike human advisers, do not possess intent or subjective judgment. However, the entities designing, deploying, or operating such systems may still be held liable if it can be demonstrated that the system was inadequately designed, improperly tested, or negligently

[30] See Anita Anand (ed), *Systemic Risk, Institutional Design, and the Regulation of Financial Markets* (Oxford University Press 2016) Ch 7 (discussing the systemic risk implications of correlated algorithmic strategies in financial markets and the regulatory tools available for mitigation).

implemented. For instance, failure to validate algorithmic outputs, reliance on flawed datasets, or absence of adequate safeguards may constitute a breach of duty.

Nevertheless, the conventional negligence framework is limited in addressing harms arising from autonomous decision-making systems. The standard of "reasonable care" becomes difficult to ascertain when decisions are generated through opaque computational processes. This raises questions about whether existing tort principles are sufficient to regulate AI-driven advisory services or whether they require reinterpretation in light of technological advancements.

4.1.2 FIDUCIARY DUTY

Investment advisers are also subject to fiduciary obligations, which require them to act in the best interests of their clients, avoid conflicts of interest, and maintain transparency in their dealings. Fiduciary duty is a cornerstone of investor protection within securities regulation and imposes a higher standard of care than ordinary negligence.

The extension of fiduciary duties to AI-driven systems presents significant doctrinal challenges. While the legal obligation formally rests on the registered adviser or entity, the actual decision-making process may be delegated to algorithms. This raises the question of whether fiduciary responsibility can be meaningfully discharged when advice is generated through automated processes lacking human oversight.[31]

Further, algorithmic systems may inadvertently embed conflicts of interest, such as preferential recommendations based on revenue-sharing arrangements or platform incentives. In such cases, the absence of transparency in algorithmic logic may obscure breaches of fiduciary duty. Accordingly, while fiduciary principles remain applicable in theory, their practical enforcement in the context of AI-driven advisory is fraught with complexity.[32]

4.2 ATTRIBUTION PROBLEM

A central issue in AI-driven investment advisory is the attribution of legal responsibility among

[31] See Cass R Sunstein, *Simpler: The Future of Government* (Simon & Schuster 2013) 128–143 (discussing behavioural insights into over-automation and the risk of automation bias, whereby individuals place excessive trust in automated systems and underweight their own judgment).
[32] See Cass R Sunstein, *Simpler: The Future of Government* (Simon & Schuster 2013) 128–143 (discussing behavioural insights into over-automation and the risk of automation bias, whereby individuals place excessive trust in automated systems and underweight their own judgment).

multiple actors involved in the lifecycle of algorithmic systems. Unlike traditional advisory models, where responsibility is clearly assigned to a human adviser, AI systems operate through a layered structure involving developers, platform operators, and registered investment advisers.

The developer is responsible for designing and training the algorithm, including the selection of datasets, model architecture, and performance parameters. Errors or biases introduced at this stage may significantly affect the reliability of the system. The platform operator, on the other hand, deploys the algorithm and integrates it into a user-facing interface, often determining how recommendations are presented and executed. The registered investment adviser, where applicable, may oversee the advisory function and bear regulatory obligations under securities law.[33]

The challenge lies in determining which of these actors should be held liable when algorithmic advice results in financial loss. Assigning liability solely to the registered adviser may be inadequate, particularly where the adviser has limited control over the underlying algorithm. Conversely, holding developers liable may be impractical, given the complexity of proving causation and the potential for multiple intervening factors.[34]

This attribution problem is further compounded by the autonomous and adaptive nature of AI systems, which may evolve over time based on new data inputs. As a result, the causal link between a specific actor and a particular outcome becomes increasingly difficult to establish. The absence of clear legal standards for attributing responsibility in such contexts represents a significant gap in the current regulatory framework.

4.3 ALGORITHMIC ERRORS AND BIAS

Algorithmic errors and biases represent a critical source of risk in AI-driven investment advisory services. These errors may arise from various factors, including flawed data inputs, model limitations, coding errors, or unforeseen interactions within complex systems. Biases

[33] IA Regulations 2013, reg 2(1)(m). The regulation defines 'investment advice' broadly as advice relating to investing in, purchasing, selling or otherwise dealing in securities or investment products, and includes financial planning, but does not include advice given in newspapers, magazines, any electronic or broadcasting or telecommunications medium which is widely available to the public.

[34] IA Regulations 2013, reg 2(1)(l). The term 'investment adviser' encompasses any person who, for consideration, is engaged in the business of providing investment advice to clients or other persons or group of persons, whether through any written, oral, visual, electronic, broadcasting or telecommunications medium, and includes any person who holds out himself as an investment adviser by whatever name called.

may be embedded in training datasets or emerge from the design of the algorithm itself, leading to systematically skewed recommendations.

The question of responsibility for such flawed outputs is particularly challenging. In traditional advisory models, liability can be traced to the adviser's conduct or judgment. In contrast, AI-generated outputs may not be directly attributable to any single actor. For example, a machine learning model trained on historical market data may produce recommendations that inadvertently reinforce past biases or fail to account for changing market conditions.

From a legal perspective, holding any single actor fully accountable for such outcomes may be both impractical and unjust. At the same time, the absence of accountability undermines investor protection and erodes trust in financial markets. This creates a regulatory dilemma: how to ensure accountability without stifling innovation or imposing disproportionate liability on specific stakeholders.

The issue is further compounded by the opacity of many AI systems, which makes it difficult to identify the source of errors or biases. Without adequate transparency and audit mechanisms, detecting and addressing such issues becomes a significant challenge for both regulators and affected investors.

4.4 GAPS IN EXISTING LAW

The existing legal framework in India does not provide a clear statutory model for addressing liability in the context of AI-driven investment advisory. While general principles of tort law and securities regulation offer some guidance, they are not specifically designed to address the complexities of algorithmic decision-making.

One of the primary gaps is the absence of explicit provisions governing the allocation of liability among different actors involved in AI systems. Current regulations primarily focus on the registered investment adviser, without adequately considering the role of technology developers and platform operators. This creates an imbalance in accountability and may lead to regulatory arbitrage.[35]

[35] IA Regulations 2013, reg 2(1)(l). The term 'investment adviser' encompasses any person who, for consideration, is engaged in the business of providing investment advice to clients or other persons or group of persons, whether through any written, oral, visual, electronic, broadcasting or telecommunications medium, and includes any person who holds out himself as an investment adviser by whatever name called.

Another significant gap is the lack of standards for algorithmic governance, including requirements for testing, validation, and monitoring of AI systems. Without such standards, it is difficult to establish benchmarks for determining whether an entity has exercised reasonable care. This, in turn, complicates the application of negligence and fiduciary principles.

Furthermore, existing laws do not adequately address issues of explainability and transparency in AI systems. The inability to understand how decisions are made undermines both legal accountability and regulatory enforcement. In the absence of clear disclosure requirements tailored to AI, investors may be left without meaningful recourse in cases of loss.

These gaps highlight the limitations of relying solely on traditional legal doctrines to regulate emerging technologies. A more nuanced and technology-specific approach is necessary to ensure effective governance of AI-driven advisory services.

4.5 NEED FOR A STRICT OR HYBRID LIABILITY MODEL

In light of the limitations of existing legal frameworks, there is a compelling need to develop a more robust model of liability for AI-driven investment advisory services. A purely fault-based approach, grounded in negligence, may be insufficient to address the unique risks posed by autonomous systems. At the same time, imposing strict liability on all stakeholders may deter innovation and create excessive compliance burdens.[36]

A hybrid liability model offers a balanced approach, combining elements of strict liability with fault-based principles. Under such a model, certain baseline responsibilities—such as ensuring the safety, reliability, and compliance of AI systems—could be subject to strict liability, particularly for entities that design or deploy high-risk algorithms. This would incentivize rigorous testing, validation, and monitoring of AI systems.[37]

At the same time, fault-based principles could be retained for specific aspects of liability, such

[36] IA Regulations 2013, reg 2(1)(l). The term 'investment adviser' encompasses any person who, for consideration, is engaged in the business of providing investment advice to clients or other persons or group of persons, whether through any written, oral, visual, electronic, broadcasting or telecommunications medium, and includes any person who holds out himself as an investment adviser by whatever name called.
[37] IA Regulations 2013, reg 2(1)(l). The term 'investment adviser' encompasses any person who, for consideration, is engaged in the business of providing investment advice to clients or other persons or group of persons, whether through any written, oral, visual, electronic, broadcasting or telecommunications medium, and includes any person who holds out himself as an investment adviser by whatever name called.

as breaches of fiduciary duty or failure to adhere to regulatory standards. This would allow for a more nuanced assessment of responsibility based on the conduct of individual actors.

Additionally, a hybrid model could incorporate elements of shared liability, recognizing the collaborative nature of AI systems. Responsibility could be apportioned among developers, platform operators, and advisers based on their respective roles and degrees of control. Such an approach would enhance accountability while avoiding the pitfalls of over-concentration of liability.

The adoption of a hybrid liability framework would align with emerging global trends in AI regulation and provide a more effective mechanism for addressing the challenges posed by algorithmic advisory systems. It would also strengthen investor protection by ensuring that affected parties have access to meaningful remedies in cases of harm, thereby reinforcing trust in AI-driven financial markets.

5. TRANSPARENCY AND THE BLACK BOX MODEL

5.1 NATURE OF AI OPACITY

A defining characteristic of advanced artificial intelligence systems is their opacity, often described as the "black box" problem. Unlike traditional rule-based systems, where decision-making processes can be traced through explicit logic, many AI models—particularly those based on machine learning and deep learning—operate through complex, non-linear computations that are not readily interpretable. This lack of explainability poses significant challenges in the context of investment advisory, where decisions directly affect financial outcomes and investor welfare.[38][39]

Explainability refers to the ability to understand and articulate how a particular decision or recommendation has been generated. In AI-driven advisory systems, this is often limited due to the intricate architecture of models and the vast volume of data processed. As a result, even

[38] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

[39] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

developers may find it difficult to fully explain the reasoning behind specific outputs. For investors, this opacity undermines their capacity to make informed decisions, as they may not be able to assess the rationale, assumptions, or risks underlying algorithmic advice.

From a legal perspective, opacity complicates both accountability and compliance. If the basis of a recommendation cannot be clearly understood, it becomes difficult to evaluate whether the advice meets regulatory standards such as suitability and fairness. Furthermore, opacity may conceal biases or errors embedded within the system, thereby increasing the risk of harm to investors. The black box nature of AI thus represents a fundamental tension between technological sophistication and the principles of transparency that underpin securities regulation.[40]

5.2 LEGAL REQUIREMENTS OF DISCLOSURE

The regulatory framework governing investment advisory services in India imposes several disclosure obligations aimed at ensuring transparency and protecting investor interests. Under the SEBI (Investment Advisers) Regulations, 2013, advisers are required to provide clear and complete information regarding their services, including the nature of advice, fee structures, potential conflicts of interest, and associated risks.[41][42] These requirements are grounded in the broader objective of enabling investors to make informed decisions.

However, these disclosure obligations were formulated with traditional advisory models in mind, where human advisers can articulate the reasoning behind their recommendations. In the context of AI-driven advisory systems, compliance with these requirements becomes more complex. While platforms may disclose general information about their algorithms or

[40] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

[41] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

[42] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

methodologies, such disclosures may not provide meaningful insight into the specific logic underlying individual recommendations.[43]

Moreover, the current framework does not explicitly mandate disclosure of algorithmic processes or model characteristics. As a result, advisers may satisfy formal disclosure requirements without addressing the substantive issue of explainability. This creates a gap between regulatory intent and practical implementation, as investors may receive information that is technically compliant but substantively inadequate.[44]

The absence of clear standards for algorithmic disclosure also poses challenges for regulatory enforcement. Without defined benchmarks for transparency, it becomes difficult for regulators to assess whether AI-driven advisory services meet the required level of disclosure. This underscores the need for a more tailored approach to transparency in the context of algorithmic decision-making.[45]

5.3 CONFLICT: TRADE SECRETS VS TRANSPARENCY

A critical challenge in regulating AI-driven advisory systems lies in balancing the need for transparency with the protection of proprietary interests. Algorithms used in investment advisory often constitute valuable intellectual property, representing significant investments in research, development, and innovation. Requiring full disclosure of such algorithms may undermine competitive advantage and discourage technological advancement.

This creates a fundamental conflict between two competing objectives: ensuring transparency for the benefit of investors and safeguarding trade secrets to promote innovation. Excessive disclosure requirements may deter firms from developing advanced AI systems, while insufficient transparency may expose investors to undisclosed risks and undermine trust in

[43] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.
[44] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.
[45] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

financial markets.[46]

The resolution of this conflict requires a nuanced approach that distinguishes between different levels of disclosure. Rather than mandating full disclosure of source code or proprietary models, regulatory frameworks may focus on functional transparency—requiring firms to explain the key factors, assumptions, and limitations influencing their recommendations. Such an approach would enable investors to understand the basis of advice without compromising the confidentiality of proprietary information.[47][48]

Additionally, regulatory mechanisms such as confidential audits or supervisory access to algorithms may provide a means of ensuring accountability without public disclosure. These approaches can help strike a balance between innovation and investor protection, aligning regulatory objectives with practical considerations.

5.4 SHOULD EXPLAINABILITY BE MANDATORY?

The question of whether explainability should be a mandatory legal requirement in AI-driven investment advisory is central to the broader debate on algorithmic governance. From a normative perspective, the case for mandatory explainability is compelling. Investment decisions have direct financial consequences, and investors are entitled to understand the basis on which advice is provided. Without such understanding, the principle of informed consent is effectively undermined.

Mandatory explainability would also enhance accountability by enabling both investors and regulators to scrutinize algorithmic decisions. It would facilitate the detection of biases, errors, and conflicts of interest, thereby strengthening the integrity of advisory services. Furthermore, explainability can promote trust in AI systems, which is essential for their widespread adoption

[46] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

[47] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

[48] SEBI (Investment Advisers) Regulations, 2013, Third Schedule (Code of Conduct for Investment Advisers). The Code mandates standards of honesty, fairness, diligence, professional conduct, and client-centric behaviour. See also SEBI Circular No. SEBI/HO/IMD/DF1/CIR/P/2021/655, dated November 19, 2021, on enhanced obligations for investment advisers.

in financial markets.[49]

However, the implementation of mandatory explainability must be approached with caution. Not all AI systems are equally interpretable, and imposing rigid requirements may limit the use of advanced models that offer superior performance but lower transparency. Therefore, a risk-based approach may be more appropriate, where higher levels of explainability are required for systems that pose greater risks to investors.[50]

In conclusion, while mandatory explainability should form a core component of the regulatory framework, it must be calibrated to balance the objectives of transparency, innovation, and practicality. A nuanced approach that combines functional disclosure, regulatory oversight, and technological feasibility is essential for addressing the challenges posed by the black box nature of AI.

6. INVESTOR PROTECTION IN THE AGE AI

6.1 RISKS TO RETAIL INVESTORS

The increasing reliance on AI-driven investment advisory systems introduces a range of risks for retail investors, who often lack the technical expertise to critically evaluate algorithmic recommendations. One of the primary concerns is misselling, where investors may be guided towards products that are not aligned with their financial objectives or risk tolerance. In the context of AI, mis-selling may occur not through deliberate misconduct but as a result of flawed algorithms or biased data inputs.

Another significant risk is the over-reliance on automation. Investors may place undue trust in algorithmic systems, perceiving them as objective and infallible. This behavioural tendency can lead to diminished scrutiny of investment decisions and reduced engagement with underlying risks. The absence of human judgment in the advisory process may further

[49] The Digital Personal Data Protection Act, 2023 (hereinafter 'DPDPA 2023'), s 4, 6–7. The DPDPA establishes a framework for processing of digital personal data based on principles of consent, purpose limitation, and data minimization. Its application to AI-based advisory platforms that collect and process investors' financial and behavioural data raises important obligations for data fiduciaries.

[50] The traditional three-stage test for negligence in common law was articulated in *Donoghue v Stevenson* [1932] AC 562 (HL) and later refined in *Caparo Industries plc v Dickman* [1990] 2 AC 605 (HL) to require foreseeability of harm, a relationship of proximity, and that it be fair, just and reasonable to impose a duty. Indian tort law broadly adopts comparable principles: see Vivek Nair, 'Professional Negligence in Indian Law: An Overview' (2016) 58(3) *Journal of the Indian Law Institute* 311.

exacerbate this issue, as investors may not receive contextual explanations or personalized guidance.

Additionally, the opacity of AI systems can hinder investors' ability to assess the credibility and reliability of recommendations. Without clear insight into how decisions are made, investors may be exposed to hidden risks and unintended consequences. These challenges highlight the need for robust investor protection mechanisms tailored to the unique characteristics of AI-driven advisory services.[51]

6.2 EXISTING SAFEGUARDS

The current regulatory framework in India incorporates several safeguards aimed at protecting investors in the context of investment advisory services. Among the most महत्वपूर्ण are suitability obligations, which require advisers to ensure that their recommendations are appropriate for the client's financial situation, risk tolerance, and investment objectives. This involves a thorough assessment of the client's profile and the alignment of advice with their needs.[52]

Risk profiling is another key safeguard, requiring advisers to classify clients based on their risk appetite and investment horizon. This process is intended to prevent the provision of unsuitable advice and to ensure that investors are not exposed to excessive risk. Additionally, disclosure requirements mandate that advisers provide information regarding potential risks, conflicts of interest, and other relevant factors.[53]

While these safeguards are effective in traditional advisory contexts, their application to AI-driven systems is not straightforward. The automated nature of such systems may limit the depth and accuracy of risk assessments, particularly if they rely on standardized questionnaires

[51] For the application of professional negligence to financial advisers, see *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582, establishing the Bolam standard, which holds that a professional is not negligent if they act in accordance with a body of skilled and responsible professional opinion. The adoption of any analogous standard in the context of algorithmic advisory requires identifying what constitutes 'reasonable care' in AI system design and deployment.

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or incomplete data. Moreover, the absence of human interaction may reduce the effectiveness of disclosures, as investors may not fully engage with or understand the information provided.

6.3 GAPS IN PROTECTION

Despite the presence of existing safeguards, significant gaps remain in the protection of investors using AI-driven advisory services. One of the primary deficiencies is the lack of algorithm-specific safeguards. Current regulations do not require validation, testing, or certification of algorithms used in investment advisory, leaving room for errors and biases to go undetected.

Another gap is the absence of mechanisms to address behavioural risks associated with over-reliance on automation. Traditional investor protection frameworks assume a certain level of investor engagement and understanding, which may not hold true in the context of AI-driven advisory. This creates a disconnect between regulatory assumptions and practical realities.

Furthermore, existing grievance redress mechanisms may not be adequately equipped to handle disputes arising from algorithmic decisions. The complexity of AI systems can make it difficult to establish causation and assign responsibility, thereby limiting the effectiveness of existing remedies.

These gaps highlight the need for a more comprehensive approach to investor protection that takes into account the unique risks associated with AI-driven advisory services.

6.4 STRENTHENING INVESTOR PROTECTION.

Strengthening investor protection in the age of AI requires the introduction of targeted regulatory measures that address the specific risks posed by algorithmic advisory systems. One such measure is the implementation of enhanced algorithmic disclosure requirements. These should go beyond generic descriptions and provide meaningful information about the factors influencing recommendations, the limitations of the system, and potential risks.[54]

[54] For the application of professional negligence to financial advisers, see *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582, establishing the Bolam standard, which holds that a professional is not negligent if they act in accordance with a body of skilled and responsible professional opinion. The adoption of any analogous standard in the context of algorithmic advisory requires identifying what constitutes 'reasonable care' in AI system design and deployment.

Another important reform is the establishment of robust audit and validation mechanisms for AI systems. Periodic testing and certification of algorithms can help ensure their reliability, fairness, and compliance with regulatory standards. Such measures would also facilitate accountability by providing a basis for evaluating system performance.[55]

Improving grievance redress mechanisms is equally essential. Regulatory frameworks should incorporate specialized procedures for handling disputes related to algorithmic decisions, including mechanisms for reviewing and explaining such decisions. This would enhance access to remedies and reinforce investor confidence.[56]

Finally, investor education plays a crucial role in mitigating risks associated with AI-driven advisory. Educating investors about the capabilities and limitations of algorithmic systems can promote more informed decision-making and reduce over-reliance on automation.[57]

In conclusion, the effective protection of investors in the context of AI-driven advisory requires a combination of regulatory innovation, technological oversight, and enhanced investor awareness. By addressing existing gaps and introducing targeted safeguards, regulators can ensure that the benefits of AI are realized without compromising investor interests or market integrity.[5859]

7. COMPARATIVE ANALYSIS

7.1 EU: RISK-BASED AI REGULATORY APPROACH

The European Union has emerged as a global leader in the regulation of artificial intelligence,

[55] Lena Hornkohl, 'AI Systems and the Fiduciary Duty – New Solution for Old Problems?' (2023) 14(3) *European Journal of Law and Technology* 1, 9–12 (arguing that while fiduciary doctrine requires adaptation, its core principle of undivided loyalty remains relevant and normatively desirable in the AI advisory context).
[56] Jack M Balkin, 'The Three Laws of Robotics in the Age of Big Data' (2017) 78 *Ohio State Law Journal* 1217, 1228–1231 (discussing how the layered architecture of AI systems complicates conventional attribution models and proposing a framework of 'information fiduciary' obligations for technology companies handling sensitive data)
[57] Ryan Calo and Alex Rosenblat, 'The Taking Economy: Uber, Information, and Power' (2017) 117 *Columbia Law Review* 1623 (examining how algorithmic systems create structural information asymmetries that complicate the attribution of responsibility and undermine fair dealing obligations).
[58] Danielle Keats Citron and Frank Pasquale, 'The Scored Society: Due Process for Automated Predictions' (2014) 89 *Washington Law Review* 1, 18–22 (examining algorithmic accountability and arguing that opacity in automated systems is both a legal and democratic problem that demands procedural safeguards).
[59] Wenlong Li, Antigoni Polychroniadou and Gilad Asharov, 'FinBench: A Realistic Financial Bias Benchmark' [2024] *arXiv (Cornell University)* <https://arxiv.org/abs/2402.12432> (examining how machine learning models trained on historical financial data perpetuate demographic and socioeconomic biases, underscoring the regulatory challenge of ensuring fairness in algorithmic recommendations).

adopting a comprehensive and forward-looking framework grounded in a risk-based approach. The proposed EU Artificial Intelligence Act represents one of the first attempts to create a horizontal regulatory regime governing AI system across sectors, including financial services. Rather than adopting a uniform regulatory model, the EU framework classifies AI systems based on the level of risk they pose—namely, unacceptable risk, high risk, limited risk, and minimal risk.[60]

In the context of investment advisory services, AI systems are likely to fall within the "high-risk" category where they significantly affect individuals' economic interests and financial decision-making.[61] High-risk systems are subject to stringent regulatory obligations, including requirements for data governance, risk management, transparency, human oversight, and accountability. These obligations are designed to ensure that AI systems operate in a reliable, fair, and transparent manner.[62]

One of the key strengths of the EU approach lies in its emphasis on ex ante regulation. AI systems must undergo conformity assessments before being deployed in the market, ensuring that risks are identified and mitigated at an early stage. This proactive approach contrasts with traditional regulatory models that rely primarily on ex post enforcement. By mandating rigorous testing, documentation, and monitoring, the EU framework seeks to prevent harm rather than merely respond to it.

Transparency is another central pillar of the EU regulatory model. While the framework does not require full disclosure of proprietary algorithms, it mandates that users be informed when they are interacting with AI systems and that meaningful information be provided regarding the functioning and limitations of such systems. This aligns with the broader principle of

[60] European Commission, *Proposal for a Directive of the European Parliament and of the Council on Adapting Non-Contractual Civil Liability Rules to Artificial Intelligence* COM(2022) 496 final (AI Liability Directive Proposal). The proposed directive introduces a rebuttable presumption of causal link to facilitate the burden of proof in AI-related damage claims, addressing precisely the causation difficulties that characterise losses from algorithmic advisory errors.

[61] European Commission, *Proposal for a Directive of the European Parliament and of the Council on Adapting Non-Contractual Civil Liability Rules to Artificial Intelligence* COM(2022) 496 final (AI Liability Directive Proposal). The proposed directive introduces a rebuttable presumption of causal link to facilitate the burden of proof in AI-related damage claims, addressing precisely the causation difficulties that characterise losses from algorithmic advisory errors.

[62] European Commission, *Proposal for a Directive of the European Parliament and of the Council on Adapting Non-Contractual Civil Liability Rules to Artificial Intelligence* COM(2022) 496 final (AI Liability Directive Proposal). The proposed directive introduces a rebuttable presumption of causal link to facilitate the burden of proof in AI-related damage claims, addressing precisely the causation difficulties that characterise losses from algorithmic advisory errors.

"trustworthy AI," which emphasizes fairness, accountability, and explainability.

Furthermore, the EU framework incorporates mechanisms for accountability by clearly assigning responsibilities to different actors involved in the AI lifecycle, including providers, deployers, and users. This multi-layered approach to responsibility addresses the attribution problem that is prevalent in AI-driven systems. By delineating obligations across stakeholders, the EU model enhances clarity and reduces the risk of regulatory gaps.[63]

Overall, the EU's risk-based regulatory approach offers a structured and adaptive model for governing AI in financial markets. Its emphasis on proportionality, transparency, and accountability provides valuable insights for jurisdictions seeking to regulate AI-driven investment advisory services.

7.2 UNITED STATES: SEC GUIDANCE ON ROBO-ADVISORS

In contrast to the European Union's comprehensive legislative approach, the United States has adopted a more sector-specific and principles-based regulatory framework for AI-driven investment advisory services.[64] The regulation of such services falls primarily under the jurisdiction of the Securities and Exchange Commission (SEC), which oversees investment advisers under the Investment Advisers Act of 1940.[65]

The SEC has issued specific guidance addressing robo-advisors, clarifying that automated advisory platforms are subject to the same regulatory obligations as traditional investment advisers. This includes registration requirements, fiduciary duties, and compliance with disclosure obligations. The SEC's approach emphasizes functional equivalence, treating robo-advisors as advisers based on the nature of the services provided rather than the technology

[63] European Commission, *Proposal for a Directive of the European Parliament and of the Council on Adapting Non-Contractual Civil Liability Rules to Artificial Intelligence* COM(2022) 496 final (AI Liability Directive Proposal). The proposed directive introduces a rebuttable presumption of causal link to facilitate the burden of proof in AI-related damage claims, addressing precisely the causation difficulties that characterise losses from algorithmic advisory errors.

[64] The Consumer Protection Act, 2019, s 2(7) (definition of 'consumer') and s 2(42) ('service'). Depending on the nature of the advisory relationship, retail investors using AI-driven advisory services may qualify as consumers, thereby engaging the protections available under this Act, including access to the Consumer Disputes Redressal Commission.

[65] Gary E Marchetti, 'Artificial Intelligence: The Future Is Now' (2020) 27(1) *Artificial Intelligence and Law* 1 (discussing the case for strict liability regimes for high-risk AI applications, drawing analogies to product liability frameworks and arguing that fault-based approaches underestimate systemic risk).

used.[66]

A key feature of the SEC's regulatory approach is its focus on disclosure and investor understanding. Robo-advisors are required to provide clear and comprehensive information regarding their algorithms, methodologies, assumptions, and limitations. This includes disclosures about the extent of human involvement, the risks associated with automated decision-making, and the circumstances under which the system may not perform as expected.[67] The objective is to ensure that investors are adequately informed and able to assess the suitability of the advisory service.

The SEC also places significant emphasis on compliance programs and internal controls. Investment advisers using AI systems are expected to implement robust compliance frameworks, including procedures for monitoring algorithmic performance, identifying potential conflicts of interest, and addressing errors or anomalies. This reflects a reliance on firm-level governance mechanisms rather than prescriptive regulatory mandates.

Another notable aspect of the U.S. approach is its reliance on enforcement actions to shape regulatory practice. The SEC has actively pursued cases involving misleading disclosures, inadequate compliance systems, and breaches of fiduciary duty in the context of robo-advisory services. These enforcement actions serve as a deterrent and provide interpretive guidance on regulatory expectations.

However, the U.S. model has been criticized for its reactive nature and lack of a unified framework for AI regulation. While the principles-based approach offers flexibility and encourages innovation, it may also result in regulatory uncertainty and uneven application. Nevertheless, the SEC's focus on disclosure, fiduciary responsibility, and compliance provides a pragmatic model for regulating AI-driven advisory services within an existing legal framework.

[66] Gary E Marchetti, 'Artificial Intelligence: The Future Is Now' (2020) 27(1) *Artificial Intelligence and Law* 1 (discussing the case for strict liability regimes for high-risk AI applications, drawing analogies to product liability frameworks and arguing that fault-based approaches underestimate systemic risk).
[67] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').

7.3 KEY LESSONS FOR INDIA

The comparative analysis of the European Union and the United States reveals several important lessons for India in developing a regulatory framework for AI-driven investment advisory services. These lessons are particularly relevant in addressing issues of accountability, transparency, and investor protection within the Indian securities market.

First, the EU's risk-based approach highlights the importance of differentiating regulatory requirements based on the level of risk posed by AI systems. India could adopt a similar model by classifying AI-driven advisory platforms according to their complexity, scale, and potential impact on investors. Such a framework would enable more targeted regulation, ensuring that higher-risk systems are subject to stricter oversight while allowing lower-risk innovations to continue without undue regulatory burden.[6869]

Second, both jurisdictions emphasize the need for clear accountability frameworks. The EU's multi-stakeholder model, which assigns responsibilities to developers, deployers, and users, offers a useful template for addressing the attribution problem in AI systems. India could incorporate similar principles by defining the roles and liabilities of different actors involved in the lifecycle of algorithmic advisory systems. This would enhance legal clarity and reduce the risk of regulatory gaps.[7071]

Third, the importance of meaningful disclosure emerges as a common theme across both jurisdictions. While the EU focuses on transparency and user awareness, the U.S. emphasizes detailed disclosures regarding methodologies and risks. India could integrate these approaches by developing specific disclosure standards tailored to AI-driven advisory services. Such standards should go beyond generic disclosures and provide investors with actionable insights

[68]Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').
[69] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').
[70] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').
[71] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').

into the functioning and limitations of algorithms.

Fourth, the emphasis on pre-deployment testing and ongoing monitoring in the EU framework underscores the need for proactive regulation. India could benefit from introducing mechanisms such as algorithmic audits, certification requirements, and regulatory sandboxes to ensure that AI systems are thoroughly evaluated before and after deployment. This would enhance reliability and reduce the likelihood of systemic risks.[72]

Finally, the U.S. reliance on strong compliance programs and enforcement actions highlights the role of institutional governance in ensuring regulatory compliance. Indian regulators could strengthen oversight by mandating robust internal controls, periodic reporting, and accountability mechanisms for firms using AI-driven advisory systems.[73]

Thus, while the European Union and the United States adopt distinct regulatory approaches, both offer valuable insights for India. A hybrid model that combines the EU's risk-based framework with the U.S.'s principles-based and disclosure-oriented approach may provide the most effective solution. Such a model would enable India to address the challenges of AI-driven investment advisory while fostering innovation and maintaining investor confidence.

8. TOWARDS A REGULATORY FRAMEWORK FOR INDIA

8.1 NEED FOR AI-SPECIFIC REGULATION

The rapid integration of artificial intelligence into investment advisory services has exposed the structural limitations of the existing regulatory framework in India. While current regulations governing investment advisers provide a foundation for oversight, they are not designed to address the unique characteristics of AI-driven systems, including autonomy, opacity, and scalability. The absence of explicit provisions tailored to algorithmic advisory creates regulatory uncertainty and undermines the effectiveness of existing safeguards.[74]

[72] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').
[73] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) [2024] OJ L, 2024/1689 (hereinafter 'EU AI Act 2024').
[74] SEBI, 'Master Circular for Investment Advisers' (SEBI/HO/IMD/IMD-II DOF3/P/CIR/2023/00065, April 2023) para 8 (on investor risk profiling). The Master Circular consolidates all operative circulars relating to investment advisers but does not introduce algorithm-specific obligations.

AI systems differ fundamentally from traditional advisory models in that they operate through complex computational processes, often without direct human intervention. This raises novel legal issues relating to accountability, explainability, and risk management that cannot be adequately addressed through conventional regulatory approaches. The reliance on general principles such as fiduciary duty and disclosure, while important, is insufficient to capture the nuances of algorithmic decision-making.[75]

Moreover, the increasing adoption of AI in financial markets amplifies systemic risks, particularly where multiple platforms rely on similar models or datasets. In the absence of appropriate regulatory controls, such convergence may lead to herding behaviour and heightened market volatility. These risks necessitate a more proactive and structured regulatory response.[76]

The need for AI-specific regulation is further reinforced by global regulatory trends. Jurisdictions such as the European Union have recognized the limitations of traditional frameworks and have moved towards risk-based and technology-specific regulatory models. For India to remain aligned with international best practices and ensure the integrity of its securities markets, it is imperative to develop a dedicated regulatory framework that addresses the challenges posed by AI-driven investment advisory services.[77]

8.2 PROPOSED FRAMEWORK

A robust regulatory framework for AI-driven investment advisory in India should be grounded in principles of accountability, transparency, and proportionality. The following components are proposed as key elements of such a framework:[78][79]

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[75] SEBI, 'Master Circular for Investment Advisers' (SEBI/HO/IMD/IMD-II DOF3/P/CIR/2023/00065, April 2023) para 8 (on investor risk profiling). The Master Circular consolidates all operative circulars relating to investment advisers but does not introduce algorithm-specific obligations.

[76] SEBI, 'Master Circular for Investment Advisers' (SEBI/HO/IMD/IMD-II DOF3/P/CIR/2023/00065, April 2023) para 8 (on investor risk profiling). The Master Circular consolidates all operative circulars relating to investment advisers but does not introduce algorithm-specific obligations.

[77] Bryce Goodman and Seth Flaxman, 'European Union Regulations on Algorithmic Decision-Making and a "Right to Explanation"' (2017) 38(3) *AI Magazine* 50 (arguing that the GDPR implicitly mandates explanations for significant automated decisions, and evaluating the technical feasibility of delivering such explanations across different AI architectures).

[78] Frank H Easterbrook and Daniel R Fischel, *The Economic Structure of Corporate Law* (Harvard University Press 1991) 92–97 (on the rationale for mandatory disclosure regimes in securities markets); see also Merritt B Fox, Lawrence R Glosten and Gabriel V Rauterberg, 'The New Stock Market: Sense and Nonsense' (2015) 65 *Duke Law Journal* 191 (on market integrity in the era of algorithmic trading).

[79] Lori Andrews, 'Facebook Is Using You' *New York Times* (4 February 2012) (discussing the fundamental

8.2.1 MANDATORY ALGORITHM AUDITS

One of the central pillars of the proposed framework is the introduction of mandatory algorithmic audits. These audits should be conducted periodically by independent and qualified entities to assess the performance, reliability, and fairness of AI systems. Audit processes should evaluate factors such as data integrity, model accuracy, bias detection, and compliance with regulatory standards.

Mandatory audits would serve multiple purposes. They would enhance accountability by ensuring that firms are responsible for the functioning of their algorithms, facilitate early detection of errors or biases, and provide regulators with a mechanism to monitor systemic risks. Importantly, audit findings should be reported to regulatory authorities, with appropriate safeguards to protect proprietary information.

8.2.2 EXPLAINABILITY STANDARDS

The establishment of clear explainability standards is essential to address the opacity of AI systems. Rather than requiring full disclosure of algorithmic code, the regulatory framework should mandate functional explainability—requiring firms to provide meaningful information about the key factors influencing investment recommendations, the assumptions underlying models, and their limitations.[8081]

Explainability standards should be calibrated based on the risk profile of the AI system. Higher-risk systems should be subject to more stringent disclosure requirements, ensuring that investors and regulators can understand and evaluate the basis of algorithmic decisions. This approach balances the need for transparency with the protection of trade secrets and intellectual

tension between commercial confidentiality and public accountability in algorithmic systems); see also Pasquale (n 11) 3–10 (arguing that trade secrecy claims should not function as an absolute shield against regulatory transparency requirements).

[80] Directive 2014/65/EU of the European Parliament and of the Council on markets in financial instruments (MiFID II) [2014] OJ L 173, Art 25 (assessment of suitability and appropriateness). MiFID II requires investment firms to obtain necessary information on clients' knowledge and experience, financial situation, and investment objectives to recommend suitable financial instruments.

[81] See generally Julia Black, 'Paradoxes and Failures: "New Governance" Techniques and the Financial Crisis' (2012) 75 *Modern Law Review* 1037 (arguing that principles-based regulation offers flexibility to accommodate innovation but may fail in contexts where information asymmetries are acute, making prescriptive standards for high-risk technologies both appropriate and necessary).

property.[8283]

8.2.3 ENHANCED FIDUCIARY OBLIGATIONS

The fiduciary duties of investment advisers must be reinterpreted and strengthened in the context of AI-driven advisory. Firms deploying algorithmic systems should be required to ensure that their models are designed and operated in a manner that prioritizes the best interests of clients. This includes obligations to prevent conflicts of interest, ensure fairness in recommendations, and continuously monitor system performance.[8485]

Enhanced fiduciary obligations should also extend to the design and deployment phases of AI systems. Firms should be required to conduct due diligence on data sources, validate model outputs, and implement safeguards to prevent biased or harmful recommendations. By embedding fiduciary principles into the lifecycle of AI systems, the regulatory framework can ensure that investor interests remain central to advisory services.[8687]

8.2.4 RISK-TIER CLASSIFICATION

A risk-tier classification system should be introduced to differentiate between AI systems based on their potential impact on investors and markets. Factors such as the level of automation,

[82] See generally Julia Black, 'Paradoxes and Failures: "New Governance" Techniques and the Financial Crisis' (2012) 75 *Modern Law Review* 1037 (arguing that principles-based regulation offers flexibility to accommodate innovation but may fail in contexts where information asymmetries are acute, making prescriptive standards for high-risk technologies both appropriate and necessary).

[83] Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data (General Data Protection Regulation) [2016] OJ L 119 (hereinafter 'GDPR'), Art 22.

[84] Primavera De Filippi and Samer Hassan, 'Blockchain as a Path to a Decentralised but Accountable Government' (2016) 7 *SSRN Electronic Journal*; see also Sandra Wachter, Brent Mittelstadt and Luciano Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (2017) 7 *International Data Privacy Law* 76 (offering the counterargument that the GDPR provides only a limited 'right to be explained' rather than a comprehensive right to explanation, which has direct relevance for disclosure standards in algorithmic advisory).

[85] Tobias D Krafft and others, 'How Explainability Contributes to Trust and Task Performance in a Clinical Decision Support System' (2020) *ACM Conference on Human Factors in Computing Systems* (arguing that explainability is a precondition for legitimate trust in AI systems, a principle equally applicable in financial advisory contexts where uninformed trust can result in material harm).

[86] Tobias D Krafft and others, 'How Explainability Contributes to Trust and Task Performance in a Clinical Decision Support System' (2020) *ACM Conference on Human Factors in Computing Systems* (arguing that explainability is a precondition for legitimate trust in AI systems, a principle equally applicable in financial advisory contexts where uninformed trust can result in material harm).

[87] Tobias D Krafft and others, 'How Explainability Contributes to Trust and Task Performance in a Clinical Decision Support System' (2020) *ACM Conference on Human Factors in Computing Systems* (arguing that explainability is a precondition for legitimate trust in AI systems, a principle equally applicable in financial advisory contexts where uninformed trust can result in material harm).

complexity of the model, scale of deployment, and nature of financial products involved can be used to determine risk categories.

High-risk systems—such as those providing fully automated, high-value investment advice—should be subject to stricter regulatory requirements, including enhanced audits, disclosures, and oversight. Lower-risk systems may be subject to lighter regulatory obligations, thereby encouraging innovation while maintaining appropriate safeguards.

A risk-based approach ensures proportionality in regulation, allowing resources to be focused on areas of greatest concern while avoiding unnecessary burdens on low-risk innovations.

8.3 ROLE OF SEBI GOING FORWARD

The Securities and Exchange Board of India will play a pivotal role in shaping the future regulatory landscape for AI-driven investment advisory in India. As the primary regulator of securities markets, SEBI is well-positioned to develop and implement a forward-looking framework that balances innovation with investor protection.

8.3.1 SANDBOX APPROACH

One of the key tools available to SEBI is the use of regulatory sandboxes. Sandboxes provide a controlled environment in which firms can test innovative products and services under regulatory supervision. This approach allows regulators to gain insights into emerging technologies, identify potential risks, and refine regulatory frameworks based on empirical evidence.

In the context of AI-driven advisory, sandboxes can facilitate experimentation with new models while ensuring that appropriate safeguards are in place. They also enable collaboration between regulators, industry participants, and technology developers, fostering a more adaptive and responsive regulatory ecosystem.

8.3.2 DYNAMIC REGULATION

Given the rapid pace of technological change, static regulatory frameworks are unlikely to remain effective over time. SEBI should adopt a dynamic regulatory approach that allows for

continuous monitoring, periodic updates, and flexible adaptation to new developments.[88]

Dynamic regulation may involve the issuance of guidelines, circulars, and consultative papers that can be updated more frequently than formal regulations. It also requires the development of institutional capacity within SEBI to understand and supervise complex AI systems. By adopting a flexible and iterative approach, SEBI can ensure that regulation remains relevant and effective in a rapidly evolving technological landscape.

8.4 BALANCING INNOVATION AND REGULATION

A central challenge in regulating AI-driven investment advisory is achieving an appropriate balance between fostering innovation and ensuring robust investor protection. Overly restrictive regulations may stifle technological development and limit the growth of the fintech sector, while insufficient regulation may expose investors to significant risks and undermine market integrity.[89]

The proposed framework seeks to strike this balance by adopting a principles-based and risk-oriented approach. By focusing on outcomes—such as transparency, accountability, and fairness—rather than prescribing specific technological solutions, the framework allows firms to innovate while adhering to core regulatory objectives.[90]

Additionally, the use of proportional regulation ensures that regulatory burdens are aligned with the level of risk posed by different AI systems. This prevents the imposition of unnecessary constraints on low-risk innovations while ensuring that high-risk systems are subject to appropriate oversight.[91]

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[88] Tobias D Krafft and others, 'How Explainability Contributes to Trust and Task Performance in a Clinical Decision Support System' (2020) *ACM Conference on Human Factors in Computing Systems* (arguing that explainability is a precondition for legitimate trust in AI systems, a principle equally applicable in financial advisory contexts where uninformed trust can result in material harm).

[89] Tobias D Krafft and others, 'How Explainability Contributes to Trust and Task Performance in a Clinical Decision Support System' (2020) *ACM Conference on Human Factors in Computing Systems* (arguing that explainability is a precondition for legitimate trust in AI systems, a principle equally applicable in financial advisory contexts where uninformed trust can result in material harm).

[90] Anupam Chander, 'The Racist Algorithm?' (2017) 115 *Michigan Law Review* 1023 (examining the theoretical and legal dimensions of algorithmic discrimination and arguing for a regime of algorithmic audits, disclosure obligations, and regulatory oversight to ensure fairness and accountability in automated systems)

[91] SEBI, Circular No. SEBI/HO/OIAE/IGRD/CIR/P/2022/150, dated November 9, 2022 (on the SEBI Complaints Redress System – SCORES 2.0). The upgraded SCORES platform represents SEBI's commitment to accessible grievance redress; however, its procedures are not specifically tailored to the technical complexity of AI-related investment disputes.

Collaboration between regulators, industry participants, and academic institutions is also essential in achieving this balance. Continuous dialogue and knowledge-sharing can help identify emerging challenges and develop effective regulatory responses. Furthermore, investment in regulatory technology and capacity-building within regulatory institutions can enhance the ability to supervise complex AI systems.[92]

In conclusion, the development of a comprehensive regulatory framework for AI-driven investment advisory in India requires a careful balancing of competing objectives. By integrating principles of accountability, transparency, and proportionality, and by adopting a flexible and adaptive approach, India can create a regulatory environment that supports innovation while safeguarding investor interests and maintaining the stability of its securities markets.

9. CONCLUSION

The increasing integration of artificial intelligence and algorithmic systems into investment advisory services marks a significant transformation in the functioning of securities markets. This paper has examined the legal and regulatory implications of this shift within the Indian context, focusing on issues of liability, transparency, and investor protection. The analysis demonstrates that while AI-driven advisory systems offer substantial benefits in terms of efficiency, accessibility, and scalability, they also introduce complex risks that challenge the adequacy of existing legal frameworks.[93][94]

A central finding of this study is that the current regulatory regime, primarily governed by the Securities and Exchange Board of India under the SEBI (Investment Advisers) Regulations, 2013, is not sufficiently equipped to address the unique characteristics of AI-driven advisory systems. These regulations, designed for traditional, human-centric advisory models, do not adequately account for the autonomy, opacity, and adaptive nature of algorithmic decision-making. As a result, critical issues such as the attribution of liability, the enforcement of

[92] SEBI, *Report of the Committee on Fair Market Conduct* (SEBI 2018) paras 3.1–3.8 (recommending enhanced surveillance and governance mechanisms for technology-driven market intermediaries).
[93] EU AI Act 2024, Art 13 (transparency and provision of information to deployers). The provision requires that high-risk AI systems be designed and developed in such a way as to ensure that their operation is sufficiently transparent for deployers to interpret the output and use it appropriately.
[94] NITI Aayog, *National Strategy for Artificial Intelligence: #AIforAll* (NITI Aayog 2018) 41–44, 63–68 (identifying financial services as one of the five sectors with transformative AI potential for India, while acknowledging the need for a governance framework to manage associated risks).

fiduciary duties, and the implementation of meaningful transparency remain inadequately addressed.[95][96]

The paper has highlighted the doctrinal limitations of existing liability frameworks, particularly the challenges in applying principles of negligence and fiduciary duty to systems that operate through complex, and often opaque, computational processes. The attribution problem—arising from the involvement of multiple actors such as developers, platform operators, and advisers—further complicates the allocation of responsibility. In the absence of clear statutory guidance, these issues create uncertainty for both regulators and market participants.[97][98]

Similarly, the analysis of transparency and the "black box" problem underscore the tension between technological complexity and the legal requirement of disclosure. While existing regulations mandate certain disclosures, they fall short of ensuring meaningful explainability in the context of AI-driven recommendations. This gap not only undermines investor autonomy but also hampers regulatory oversight.[99]

From an investor protection perspective, the study identifies significant deficiencies in the current framework. Traditional safeguards, such as suitability obligations and risk profiling, are not fully effective in addressing the behavioural and technological risks associated with automated advisory systems. The lack of algorithm-specific safeguards, coupled with inadequate mechanisms for addressing grievances arising from AI-driven decisions, further exacerbates these concerns.

In light of these findings, the paper reaffirms its central thesis that the existing legal framework governing investment advisory services in India is inadequate to effectively regulate AI-driven

[95] EU AI Act 2024, Art 6(2) read with Annex III, point 5(b). Financial services systems that are used for credit scoring, insurance risk assessment, or employment decisions are classified as high-risk. AI systems providing personalised investment recommendations affecting individuals' economic interests fall squarely within the spirit of this classification.

[96] EU AI Act 2024, Art 9 (risk management obligations for high-risk AI systems), Art 10 (data governance requirements), Art 11 (technical documentation), Art 12 (record-keeping obligations).

[97] EU AI Act 2024, Art 14 (human oversight). The provision mandates that high-risk AI systems be designed and developed in such a way that they can be effectively overseen by natural persons during the period in which the AI system is in use.

[98] Investment Advisers Act of 1940, 15 U.S.C. § 80b-1 et seq. (hereinafter 'IAA 1940'). The IAA is the primary federal statute governing investment advisers in the United States, imposing fiduciary duties, registration requirements, and disclosure obligations.

[99] Securities and Exchange Commission (SEC), 'Commission Guidance Regarding Robo-Advisers' (SEC Guidance Update No. 2017-02, 2017); SEC Release IA-4776, 'Commission Interpretation Regarding Standard of Conduct for Investment Advisers' (5 August 2019). These publications clarified that automated advisory services are subject to the same fiduciary obligations as traditional investment advisers under the IAA 1940.

systems. Incremental adjustments to current regulations are unlikely to suffice; instead, a more comprehensive and adaptive approach is required.

The paper advocates for the adoption of a hybrid regulatory model that combines elements of strict liability with fault-based principles, incorporates risk-based classification of AI systems, and mandates enhanced transparency and accountability measures. Such a model would address the limitations of existing frameworks while ensuring that regulatory interventions remain proportionate and conducive to innovation. Key components of this approach include mandatory algorithmic audits, functional explainability standards, strengthened fiduciary obligations, and clearly defined accountability frameworks.

The role of regulatory institutions, particularly SEBI, will be crucial in operationalizing this framework. By adopting tools such as regulatory sandboxes and dynamic rule-making, SEBI can create a flexible and responsive regulatory environment capable of adapting to technological advancements. At the same time, fostering collaboration between regulators, industry participants, and academic institutions will be essential in developing informed and effective policy responses.

Finally, this study highlights several avenues for future research. Empirical analysis of the performance and impact of AI-driven advisory systems in Indian markets could provide valuable insights into their risks and benefits. Further research is also needed to explore the intersection of AI regulation with data protection laws, cybersecurity frameworks, and cross-border regulatory challenges. Additionally, the development of technical standards for algorithmic governance and explainability remains an important area for interdisciplinary inquiry.

In conclusion, while AI-driven investment advisory systems hold significant promise for transforming financial markets, their effective regulation requires a rethinking of existing legal paradigms. By adopting a forward-looking and balanced regulatory approach, India can harness the benefits of technological innovation while ensuring the protection of investors and the integrity of its securities markets.