भारतीय प्रतिभूति और विनिमय बोर्ड
Securities and Exchange Board of India

CIRCULAR

SEBI/HO/MIRSD/DOS2/CIR/P/2019/10   January 04, 2019

To

Stock Brokers and Depository Participants
Recognized Stock Exchanges and Depositories

Subject: Reporting for Artificial Intelligence (AI) and Machine Learning (ML) applications and systems offered and used by market intermediaries

Dear Sir / Madam,

Background

1. There is increasing usage of AI (Artificial Intelligence) and ML (Machine Learning) as product offerings by market intermediaries and participants (eg: "robo advisors") in investor and consumer facing products. SEBI is conducting a survey and creating an inventory of the AI / ML landscape in the Indian financial markets to gain an in-depth understanding of the adoption of such technologies in the markets and to ensure preparedness for any AI / ML policies that may arise in the future.

2. As most AI / ML systems are black boxes and their behavior cannot be easily quantified, it is imperative to ensure that any advertised financial benefit owing to these technologies in investor facing financial products offered by intermediaries should not constitute to misrepresentation

Scope definition

3. Any set of applications / software / programs / executable / systems (computer systems) – cumulatively called application and systems,

    a. that are offered to investors (individuals and institutions) by market intermediaries to facilitate investing and trading,

<div align="center">OR</div>

    b. to disseminate investments strategies and advice,

<div align="center">OR</div>

    c. to carry out compliance operations / activities,

where AI / ML is portrayed as a part of the public product offering or under usage for compliance or management purposes, is included in the scope of this circular. Here, "AI" / "ML" refers to the terms "Artificial Intelligence" and "Machine Learning" used as a part of the product offerings. In order to make the scope of this circular inclusive of various AI and ML technologies in use, the scope also covers Fin-Tech and Reg-Tech initiatives undertaken by market participants that involves AI and ML

4. Technologies that are considered to be categorized as AI and ML technologies in the scope of this circular, are explained in Annexure B.

Regulatory requirements

5. All registered Stock Brokers / Depository Participant offering or using applications or systems as defined in Annexure B, should participate in the reporting process by completing the AI / ML reporting form (see Annexure A).

6. With effect from quarter ending March 2019, registered Stock Brokers / Depository Participant using AI / ML based application or system as defined in Annexure B, are required to fill in the form (Annexure A) and make submissions on quarterly basis within 15 calendar days of the expiry of the quarter.

7. Stock Exchanges and Depositories have to consolidate and compile a report, on AI / ML applications and systems reported by registered Stock Brokers / Depository Participants in the reporting format (Annexure C) on quarterly basis. The said report (Annexure C) shall be

submitted in soft copy only at AI_SE@sebi.gov.in (for Stock Exchange) / AI_DEP@sebi.gov.in (for Depositories) to SEBI within 30 calendar days of the expiry of the quarter, starting from quarter ending March 2019.

8. Stock Exchanges and Depositories shall;
   a) make necessary amendments to the relevant byelaws, rules and regulations for the implementation of the above direction;
   b) bring the provisions of this circular to the notice of their members/participants and also disseminate the same on their websites; and
   c) communicate to SEBI, the status of implementation of the provisions of this circular in their Monthly Development Report.

9. This circular is being issued in exercise of powers conferred under Section 11 (1) of the Securities and Exchange Board of India Act, 1992, to protect the interests of investors in securities and to promote the development of, and to regulate the securities market.

Yours faithfully

Debashis Bandyopadhyay
General Manager
Market Intermediaries Regulations and Supervision Department

Annexure A - Form to report on AI and ML technologies – To be submitted quarterly

Intimation to Stock Exchange / Depository for the use of the AI and ML application and systems.

SNo.	Head	Value
1	Entity SEBI registration number	
2	Registered entity category	
3	Entity name	
4	Entity PAN no.	
5	Application / System name	
6	Date from when the Application / System was used	
7	Type of area where AI or ML is used	<order execution / Advisory services / KYC / AML / Surveillance / compliance/others (please specify in 256 characters)>
7.a	Does the system involve order initiation, routing and execution?	<Yes / NO>
7.b	Does the system fall under discretionary investment or Portfolio management activities?	<Yes / NO>
7.c	Does the system disseminate investment or trading advice or strategies?	<Yes / NO>
7.d	Is the application/system used in area of Cyber Security to detect attacks	<Yes / NO>
7.e	What claims have been made regarding AI and ML Application / System – if any?	<free text field>
8	What is the name of the Tool / Technology that is categorized as AI and ML system / Application and submissions are declared vide this response	<free text field>
9	How was the AI or ML project implemented	<Internally / through solution provider / Jointly with a solution provider or third party>
10	Are the key controls and control points in your AI or ML application or systems in accordance to circular of SEBI that mandate cyber security control requirements	<free text field>
11	Is the AI / ML system included in the system audit, if applicable?	<Yes / NO / NA>
12	Describe the application / system and how it uses AI / ML as portrayed in the product offering	<free text field>
13	What safeguards are in place to prevent abnormal behavior of the AI or ML application / System	<free text field>

Annexure B – Systems deemed to be based on AI and ML technology

Applications and Systems belonging but not limited to following categories or a combination of these:

1. Natural Language Processing (NLP), sentiment analysis or text mining systems that gather intelligence from unstructured data. – In this case, Voice to text, text to intelligence systems in any natural language will be considered in scope. Eg: robo chat bots, big data intelligence gathering systems.

2. Neural Networks or a modified form of it. – In this case, any systems that uses a number of nodes (physical or software simulated nodes) mimicking natural neural networks of any scale, so as to carry out learning from previous firing of the nodes will be considered in scope. Eg: Recurrent Neural networks and Deep learning Neural Networks

3. Machine learning through supervised, unsupervised learning or a combination of both. – In this case, any application or systems that carry out knowledge representation to form a knowledge base of domain, by learning and creating its outputs with real world input data and deciding future outputs based upon the knowledge base. Eg: System based on Decision tree, random forest, K mean, Markov decision process, Gradient boosting Algorithms.

4. A system that uses statistical heuristics method instead of procedural algorithms or the system / application applies clustering or categorization algorithms to categorize data without a predefined set of categories

5. A system that uses a feedback mechanism to improve its parameters and bases it subsequent execution steps on these parameters.

6. A system that does knowledge representation and maintains a knowledge base.

Annexure C – Consolidated Quarterly Reporting Form

Consolidated Quarterly report to SEBI of all registered intermediaries with Stock Exchange / Depositories using AI and ML application and systems for the Quarter Ended DD/MM/YYYY

Entity registration number	Entity name	Entity PAN no.	Application / System name	Date used from	Type of area where AI or ML is used	To be filled if System Audit is applicable			
						If system audit report is submitted by entity later than "date used from"		If system audit report is submitted with adverse remarks and Stock Exchange/Depositories is entitled to inspect the entity	
						Does system audit report comply to circular no SEBI/HO/MIRSD/DOS2/CIR/P/2019/10 dated January 4, 2019 of SEBI	Is there any adverse comment in the System audit report	Was the entity inspected in past 1 year	If inspected was any irregularity noted
					<order execution / Advisory services / KYC / AML / Surveillance / compliance/others (please specify in 256 characters)>	<Yes / NO/>	<Yes / NO/>	<Yes / NO>	<Yes / NO>

Add separate rows for each system or application.