SMART CONTRACTS IN STOCK TRADING

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ABSTRACT

"Smart contracts are revolutionizing stock trading, but India's legal system facing challenges to decode this digital disruption". India's securities market has hitherto been overseen by the Securities Contracts (Regulation) Act, 1956 and the Securities and Exchange Board of India (SEBI), both using intermediated systems based on central points. With the emergence of blockchain technology, facilitated by Bitcoin (2009) and Ethereum (2015), smart contracts were launched: self-enforcing contracts on peer-to-peer decentralized networks. Elsewhere, the financial markets integrated blockchain to facilitate transparency and effectiveness. Startups and fintech companies in India also started venturing into the usage of its securities trading, settlement, and compliance**.** Legal challenges in stock trading through smart contracts in India arise from the gap between rapidly evolving blockchain technology and existing regulatory frameworks. Smart contracts, being self-executing agreements coded on decentralized networks, challenge traditional contract enforcement and regulatory oversight. India's current legal and regulatory systems lack comprehensive guidelines to govern stock trading through smart contracts. This gap creates uncertainty around contract enforceability, regulatory oversight, cross-border dispute resolution, and liability for automated errors or fraud. Addressing these concerns is essential for integrating smart contracts into India's stock market. The law governing contracts and stock exchange should adapt to emerging technologies such as smart contracts in order to maintain investor protection and market integrity. Amend the Indian Contract Act, 1872, to explicitly recognize and regulate smart contracts. Develop SEBI guidelines for blockchain-based trading platforms and automated transactions. Ensure adequate cybersecurity and data protection are put in place for financial information. The researcher has undertaken this topic to, Analyze the present legal framework governing stock trading and smart contracts. Identifying gaps and challenges in the enforcement of smart contracts. Recommending legal and regulatory reforms to support and efficient smart contract-based trading.

Keywords: Legal Challenges, Legal Framework, Regulations, Smart Contracts, Stock Trading.

I. Introduction:

In 1994, it was uncovered that since cryptography is decentralized in nature, it could be used to improve the process of execution of a contract virtually. This took the shape of 'smart-contracts'. Block chain technology eliminates the requirement of any intermediaries (and subsequently, unnecessary human interaction in the form of calls and emails) owing to its decentralized nature. Thus, they operate on P2P (Peer-to-peer) technology instead of being maintained under a central server. As a result, a lot of time is saved and it leads to avoidance of any conflict which may arise owing to a third party. They rule out room for human intervention of any sort, thereby eliminating the risk of human error. Further, they cannot be altered once the agreement is finally codified, even if either party wishes to modify the terms in their favor. Additionally, they help in doing away with transactional and procedural costs associated with negotiations (paperwork) and verification (commissions); since there is no intermediary.[1]

Stock trading is the process of buying and selling publicly traded companies' shares using stock exchanges. Historically, stock trading involves the use of intermediaries like brokers, stock exchanges, and regulatory bodies to facilitate smooth transactions. But with the emergence of blockchain technology, smart contracts are being developed as a game-changing instrument in stock trading. Smart contracts are self-executing digital contracts that automatically implement terms without any intermediaries. They improve transparency, lower costs, and improve efficiency in stock transactions.

Although they have their benefits, smart contracts are subject to various legal issues, particularly in India, where financial laws are still developing. The current laws that regulate stock trading, including the Securities and Exchange Board of India (SEBI) Act, Companies Act, 2013, and Information Technology Act, 2000, might not be entirely suitable for blockchain-based trading. Problems like enforceability, regulation, jurisdiction, and fraud prevention need to be resolved to make smart contract-based stock trading legal and secure. In the modern era, the field of contract law, for instance,

[1] Sannidhi Agrawal, *Smart Contracts: Functioning and Legal Enforceability In India,* RESEARCH GATE, (Mar. 10, 2025, 1:00 PM) https://www.researchgate.net/publication/373280600_Smart_Contracts_Functioning_and_Legal_Enforceability_In_India

is faced with new challenges raised by the emerging idea referred to as smart contracts. The term 'smart contracts' is progressively becoming popular these days.

II. What are the smart contracts in stock trading? :

Smart contracts are a crucial element of blockchain technology. The name "smart contract" is quite self-descriptive, although the name "smartness" could be confusing. The real genius of a smart contract is that it is decentralized and third-party-free execution where parties enter into agreements under rules governed by programmed code, making it "smart." With the constantly changing technology and legal environment, the definitional conceptualizations of words and analogies are always in motion. The definition of the smart contract is no exception to this state of motion. The first definition of the smart contract comes from Nick Szabo's 1995 paper, "Smart Contracts: Building Blocks for Digital Markets." Szabo characterized a traditional contract as "a set of promises agreed to in a meeting of the minds, to make formal a relationship." He then defined a smart contract as "a set of promises, specified in digital form, including protocols within which the parties perform on the other promises."

Based on Szabo's definition, the key components include: -

1. "A set of promises" – These promises can be contractual or non-contractual, depending on the smart contract model. The terms of the contract and equivalent functional outcomes are determined by the business logic embedded in the software code.

2. "Specified in digital form" – Refers to the lines of code and software that define the contract.

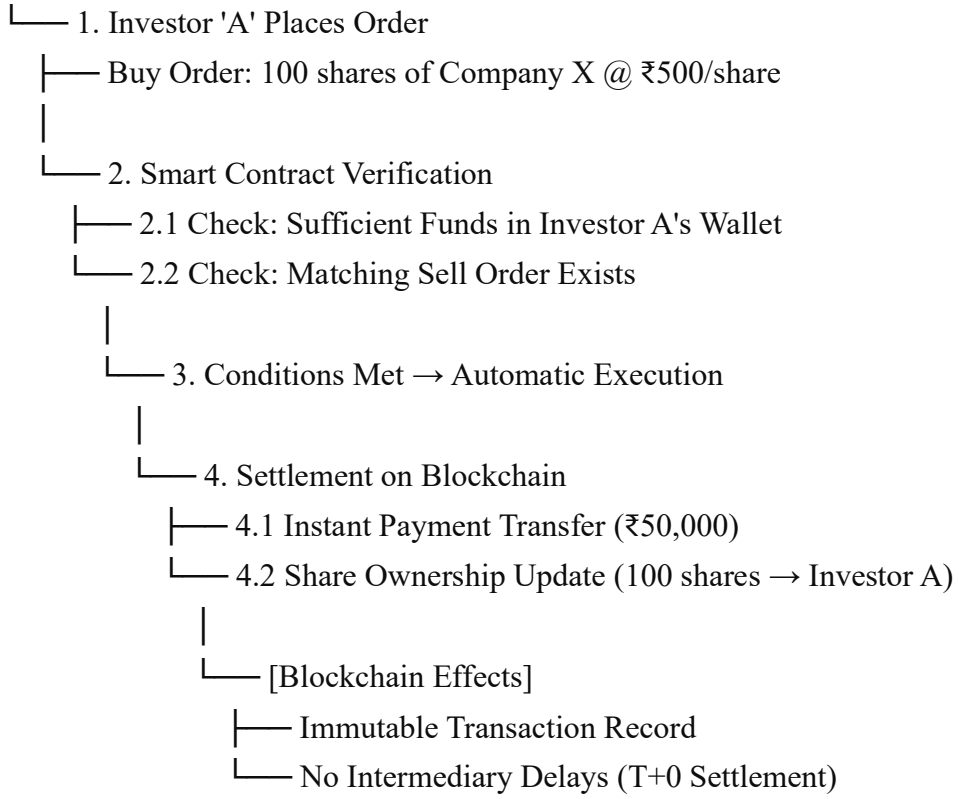
3. "Protocols" – Computer protocols are algorithms that establish rules for processing data in technologically enabled, rule-based operations.

4. "Within which the parties perform" – Denotes the blockchain technology that underlies the automation and irrevocability of smart contracts.[2]

[2] Megha Ravindranath, *Legality of Blockchain and Smart Contracts in India*, IJFMR, (Mar. 10, 2025, 2:00 PM), https://www.ijfmr.com/papers/2024/2/14877.pdf

In conventional stock trading, multiple intermediaries, including stock exchanges, brokers, depositories, and clearing corporations, are involved in transactions. This process can be slow, expensive, and susceptible to human errors. Smart contracts accelerate and simplify this process by allowing stock transactions to be executed directly on the blockchain. These contracts operate on blockchain technology and automatically execute transactions when previously defined conditions are met, without the need for intermediaries such like brokers. For Example-

Smart Contract Execution in Stock Trading



- **Benefits of Smart Contract: -**

  - **Automation and Speed:**

    - Instant Execution – Transactions are executed automatically when conditions are fulfilled, no delays.

    - No Manual Processing – No paperwork, approvals, or human intervention required.

- Real-Time Settlement – In contrast to conventional stock trading (T+2 settlement cycle), smart contracts facilitate instant settlement.

- **Cost Reduction:**

  - No Middlemen – Removes brokers, clearinghouses, and other middlemen, lowering fees.

  - Lower Administrative Costs – Lowers operational costs associated with reconciliation and record-keeping.

  - Reduced Legal Expenses – Automated compliance verification decreases legal oversight requirements.

- **Security and Transparency:**

  - Blockchain Ledger – All transactions are added to a decentralized and unalterable ledger, minimizing fraud threats.

  - Tamper-Proof Records – Transactions are irreversible once stored, guaranteeing data integrity.

  - More Security – Cryptographic encryption keeps unauthorized access and manipulation at bay.

- **Eradication of Human Error:**

  - No Manual Entry Errors – Smart contracts automate pre-defined rules, eliminating execution errors.

  - Automated Compliance – Ensures trade compliance with the rules of a stock exchange without manual checks.

  - Enhanced Precision – Eliminates errors in share transfers, payments, and settlements.

- **Trust and Efficiency:**

- Decentralized Trade – Investors make trades directly without depending on an intermediary authority.

- Quicker Decision-Making – Eliminates the need to depend on third-party validation for making decisions, enhancing market efficiency.

- Global Trading – Facilitates cross-border trade with less complexity.

III. Legal Framework Governing Stock Trading in India:

Stock trading in India is regulated by multiple laws and regulatory bodies to ensure transparency, protect investors, and maintain the integrity of the financial markets.

The Securities and Exchange Board of India (SEBI) serves as the primary regulatory body overseeing India's securities markets. Formed in 1988, the SEBI's main objectives are to protect the interests of investors (particularly retail investors), ensure the integrity of market operations, and foster the development of the securities market in India. Its jurisdiction spans the regulation of stock exchanges, mutual funds, market intermediaries, fund raisings, insider laws and market manipulation, and corporate governance practices. Additionally, the SEBI plays a crucial role in investigating and acting against market manipulation, fraudulent activities and other malpractices.[3] Following are some important frameworks governing stock trading in India-

- **Securities Contracts (Regulation) Act, 1956 (SCRA) -** SCRA is an Act of the Parliament of India enacted to prevent undesirable exchanges in securities and to control the working of the stock exchange in India It provides the legal framework for the regulation of securities contracts in India. It also covers the listing and trading of securities, the registration and regulation of stockbrokers and sub-brokers, and the prohibition of insider trading.[4]

  It Provides fair and transparent functioning of stock exchanges in India. SCRA also help to prevent fraudulent practices by implementing bans in market

[3] LAW ASIA, https://law.asia/sebi-regulations-capital-markets-india/, (Last visited Mar. 13, 2025)
[4] Swathi Satish, *Stock Market Regulations in India*, Clearias, (Mar. 13,2025, 1:00 PM), https://www.clearias.com/stock-market-regulations/?srsltid=AfmBOopE591N3JyOTpO9a4NyNMa5N9LtJqZyxN94eoW3bcMpOhzwNNYl

manipulation, insider trading, and price rigging. Investor Protection is also a vicious part of SCRA regulation provisions, provides for fair treatment in trading in securities to safeguard investors against malpractice. Regulation of Stockbrokers & Sub-brokers, SCRA mandates registration and regulation of market intermediaries and control over securities contracts, establishes listing, trading, and settlement rules of securities. Although, SCRA presently does not regard blockchain-based trading or smart contracts as a legitimate means of conducting securities transactions. Present laws mandate centralized stock markets, while blockchain facilitates decentralized trading. SEBI would have to change SCRA rules to include smart contract-based auto stock trading.

- **Securities and Exchange Board of India Act, 1992 (SEBI Act):** The Capital Markets Division of the Department of Economic Affairs sees to the administration of rules made within the bounds of the SEBI Act of 1992. This is the act that established the Securities and Exchange Board of India, or SEBI, the main authorized regulatory body that regulates Indian stock exchanges. The key function of SEBI is to keep the interests of investors/traders protected. While trading in the Indian stock market, investors and traders have to execute trades while abiding by rules, to promote fairness. SEBI monitors the rules.[5]

  With the advent of blockchain-based share trading and smart contracts, SEBI might have to revise its rules in order to incorporate- Decentralized and automated trading through blockchain, Smart contract regulatory control to avoid abuse, Legal acceptance of self-executing digital contracts for stock purchases. The SEBI Act, 1992, serves to uphold the integrity of the Indian stock market by providing a level playing field, transparency, and protection of investors. With changes in the financial markets, SEBI will have to modify its regulations to newer technologies such as smart contracts and blockchain-based stock trading.

- **The Companies Act 2013:** The Companies Act, 2013 governs the incorporation, management, and financial reporting of Indian companies. Stock trading is done in the shares of companies, so this Act has a vital role. Major

[5] *ID*, (Mar.13,2025, 3:00 PM)

Provisions Pertaining to Smart Contracts-

Section 2(84): Provides the definition of securities, such as shares and debentures, covered in stock exchanges.

Section 42 & 62: Governs the issue of shares, including preferential allotments and private placements.

Section 56: Regulates transfer of shares, to ensure legal compliance and resolution of disputes.

Section 129 & 134: Ensures that companies keep proper books of accounts and financial disclosures.[6]

- **Smart Contract Legal Challenges:**

- Legality of Electronic Transfer of Shares: As depositories (such as NSDL and CDSL) deal with electronic securities, blockchain-based share transfers might not have regulatory clarity.

- Automated Execution & Corporate Governance: If human decision-making is substituted by smart contracts, it could be in violation of corporate governance provisions of the Act.

- **The Information Technology Act, 2000 (IT Act):** This act regulates electronic contracts, digital transactions, and cybersecurity in India. As smart contracts are digital contracts run on blockchain, this Act is relevant. Important Provisions Applicable to Smart Contracts-

  Section 10 A: Validates electronic contracts, but with the consent and legal enforceability.

  Section 43 & 66: Addresses cybersecurity and hacking, securing smart contracts from cyberattacks.

[6] Companies Act,2013, § 2(84), 42 and 62, 56, 129 and 134, Act of Parliament,2013 (India).

Section 72: Safeguards data privacy, essential for blockchain-based trading platforms.[7]

- **Smart Contract Legal Challenges under IT Act-** Issues of Enforceability, Indian law of contracts mandates express agreement between parties, whereas smart contracts automatically execute, posing legal issues. Jurisdictional Issues, -Blockchain is decentralized and international, so resolving disputes will be challenging if a smart contract has international parties. Another legal challenge is regarding Data Privacy & Security, blockchain permanently retains transaction information, which may clash with India's developing data protection legislation.

- **Depositories Act, 1996:** This Act introduced and legitimized the concept of dematerialized securities being held in an electronic form.[8]

  Regulation of Electronic Securities in India, The Depositories Act, 1996 was passed with the aim to allow electronic holding and transfer of securities in India in place of the conventional paper-based system. This Act makes it possible for investors to own and trade securities in a dematerialized (Demat) form, bringing efficiency, security, and transparency to stock trading. Key Features of the Depositories Act, 1996 Regulation of Depositories the Act creates depositories (e.g., NSDL & CDSL) where securities are stored in electronic format. Depositories operate in association with Depository Participants (DPs) (e.g., banks, brokers) and offer Demat account facilities to investors. Dematerialization of Securities Share certificates held physically can be converted into electronic (Demat) form by the investors. Risks such as loss, theft, and counterfeiting of paper-based securities are removed. Electronic Transfer & Settlement Facilitates faster and hassle-free trading by allowing electronic settlement of securities transactions.

  - **Legal Challenges:** Trading based on blockchain has to adhere to existing legislation on securities depositories. SEBI might have to amend the

[7] The Information Technology Act,2000, § 10A, 43 and 66, 72, Act of Parliament,2000 (India).
[8] Shankar IAS Parliament, https://www.shankariasparliament.com/current-affairs/stock-market-regulation-in-india, (last visited 14 March, 2025)

Depositories Act to support decentralized models of trading while providing protection to investors.

- **Other Relevant Statutes:**

  - **Indian Contract Act, 1872:** Particular statute governs the validity and enforceability of contracts., newly propounded smart contracts must fulfill legal requirements like offer, acceptance, lawful object and free consent to be legally binding.

  - **Payment and Settlement Systems Act, 2007:** Governs electronic payment systems in India, essential for smart contract-based transactions. Cryptocurrency payments (if employed) are not accepted by the Reserve Bank of India (RBI), giving rise to legal uncertainty.

IV. Legal Challenges in Implementing Smart Contracts in Stock Trading:

With the emergence of blockchain technology—initially through Bitcoin (2009) and subsequently through Ethereum (2015)—smart contracts have made it possible for decentralized and automated financial transactions. Several global markets, including India, have begun exploring blockchain solutions for trading, settlements, and regulatory compliance in securities. Nevertheless, there remains a regulatory vacuum between India's existing paradigm of regulations and the rapidly growing ecosystem of blockchain, resulting in issues like contract enforceability, regulation, liability, and cross-border resolution of disputes.

- Regulatory Uncertainty: – India's legislation does not acknowledge or govern smart contracts in equity trading explicitly, and hence leaves a grey area in enforcement.

- Contract Enforceability: – Smart contracts use self-executing code, thereby creating doubts as to their legitimacy under the Indian Contract Act, 1872, which was established on classic contract principles.

- Lack of Regulatory Oversight: – Current regulations by SEBI and other financial regulators are formulated for centralized trading systems, and it is challenging to track and regulate decentralized transactions.

- Jurisdiction and Dispute Resolution: – Smart contracts run on international blockchain networks, resulting in challenges in determining jurisdiction and resolving cross-border disputes.

- Liability for Mistakes or Fraud: – Automated execution can cause unforeseen results or abuse by malicious parties, and liability in instances of fraud, bugs, or security compromise becomes a concern.

- Cybersecurity and Data Protection: – Trading platforms based on blockchain need to have strong security protocols to avoid hacks, unauthorized access, and abuse of financial information.

- Compliance with KYC/AML Laws: – The decentralized format of smart contracts can be troublesome in meeting requirements of Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations mandated by Indian authorities.

- Risk of Algorithmic Bias and Manipulation: – Automated trading using smart contracts can be at risk of biased code, price manipulation, or flash crashes, where regulatory protection will be needed.

Smart contracts do not contain the legal language or even the terms of a contract between two parties. They are scripts that contain functions, module imports, and other programming that automate the actions between two parties.[9] Smart contracts are not legal contracts per se but are self-executing code that enforces, verifies, or executes an agreement between parties on a blockchain. Smart contracts are legal scripts, not contracts. They execute actions according to pre-coded rules but do not contain standard legal language or intent. To be fully legally enforceable, they

[9] INVESTOPEDIA, https://www.investopedia.com/terms/s/smart-contracts.asp, (last visited Mar. 13,2025 2:00 pm)

might need to be accompanied by standard contracts or legal systems.

V. Case Studies and Recommendations:

- **National Stock Exchange of India (NSE) case: -** In 2024, India's National Stock Exchange (NSE) settled with a more than ₹640 crore payment following accusations of unequal access to its algorithmic trading platform.[10] This is not directly a smart contract case, but it illustrates the danger of high-frequency trading (HFT) and algorithmic trading when there is an absence of regulation and equal access.

  - Certain traders were provided with discriminatory premature access to NSE's algorithmic trading system.

  - This enabled them to make trades milliseconds in front of other traders, gaining an unfair edge.

  - High-frequency trading (HFT) depends on extremely fast execution times to make money from infinitesimal price discrepancies. A few milliseconds can have a gigantic effect.

  - The Securities and Exchange Board of India (SEBI) investigated and found irregularities in NSE's co-location services, where servers were placed close to the exchange to reduce latency (time delay).

  - Consequently, NSE was penalized and requested to resolve the case with ₹6.43 billion in penalties and disgorgements.

    Recommendations-

  - Regulatory Framework Development: - Develop a complete legal framework that specifically deals with the enforceability of smart contracts. This involves classifying their legal status, having them comply with

[10] BUSINESS STANDARD, https://www.business-standard.com/markets/news/nse-pays-76-5-million-to-settle-algorithmic-trading-software-cas,e-124100401053_1.html , (last visited on Mar. 15,2025 1:00 pm)

conventional contract law standards, and delineating the utilization of digital signatures and records.

- Standardization and Certification: - Establish standardized practices for the creation and implementation of smart contracts. Institute certification procedures to guarantee that smart contracts comply with legal and technical regulations, reducing conflicts based on coding errors or vagueness.

- Stakeholder Education: - Carry out educational courses for legal experts, developers, and users aimed at increasing understanding of the legal aspects of smart contracts. This will encourage engaged participation and conformity with regulatory frameworks.

- **Comparative Perspective: -**

Smart contracts are made up of lines of code that automatically carry out all or parts of an agreement. Even smart contracts written entirely in code can be valid under the CISG because they satisfy the Convention's offer and acceptance conditions in Articles 14 and 18. The UK and the EU are currently taking a progressive approach to smart contracts. The UK is trying to adapt an existing legal framework to regulate smart contracts, and conflicts arise pertaining to those, while the EU is trying to regulate the execution of legal contracts with new legislation. WTO is also continuing the feasibility studies regarding smart contracts and other related technologies. Therefore, it can be understood that the international trade rules will not be much affected by the digitalization of the contracts as per the current situation. However, as smart contracts are still an emerging technology, there can be a need for new legislation to address the novel issues that might arise in the future.[11]

In India, SEBI has not yet defined clear guidelines for blockchain-based stock trading.

The Information Technology Act, 2000, acknowledges electronic records, but smart contracts are not specifically covered. Cryptocurrency-related smart contracts are under scrutiny due to RBI's strict stance on virtual assets.

[11] JOURNAL OF DIGITAL TECHNOLOGIES AND LAW, https://www.lawjournal.digital/jour/article/view/311, (Last visited on Mar.15,2025 3:45 PM)

VI. Conclusion:

Smart contracts are revolutionizing stock trading by providing automation, transparency, cost-effectiveness, and security. They eliminate the intermediaries to execute faster and more precise transactions. Nonetheless, legal and regulatory issues hamper their implementation in India. India's regulatory laws, such as the SEBI Act, SCRA, IT Act, and Companies Act, regulate centralized markets mainly. Although the IT Act acknowledges electronic contracts, it does not explicitly endorse self-executing smart contracts in securities trading. Issues regarding KYC/AML compliance, cybersecurity, and dispute resolution further hinder their implementation. Internationally, countries such as the UK and EU are revising laws to include smart contracts, while India has no definite legal position regarding decentralized financial technologies. It can be concluded from this research study that the hypothesis has been proved, as there is in actuality the need for implementation of latest provision in existing laws governing stock market i.e. enactment of provision of smart contract and to add in binding rules and regulations.

This uncertainty in regulation leads to ambiguity and possible risks. To use smart contracts in stock trading with risk reduction, India requires a formal legal framework. SEBI and other regulators must amend the current laws or enact new provisions concerning smart contract enforceability, regulation, cybersecurity, and investor safeguarding. Standardizing protocols for smart contracts, establishing certification processes, and improving legal consciousness will be extremely important for safe deployment.

Legal professionals, financial regulators, and tech developers must collaborate to incorporate blockchain into mainstream financial regulations. In summary, smart contracts have the potential to transform India's stock market, but their implementation will need to be supported by precise regulations to ensure security and protection of investors. Forward-looking legal reforms will play a crucial role in unlocking the advantages of decentralized stock trading without compromising market integrity.

References

Online sources: -

1) https://www.ijfmr.com/papers/2024/2/14877.pdf

2) https://www.business-standard.com/markets/news/nse-pays-76-5-million-to-settle-algorithmic-trading-software-cas,e-124100401053_1.html

3) https://law.asia/sebi-regulations-capital-markets-india/

Statutes: -

1) *Indian Contract Act*, No. 9 of 1872, INDIA CODE (1872).

2) *Information Technology Act*, No. 21 of 2000, INDIA CODE (2000).

3) *Companies Act*, No. 18 of 2013, INDIA CODE (2013).