SMART CONTRACTS IN LEASING: IS INDIA READY?

Pooja Dhamor[*]

Abstract

With the ever-increasing use of smart contracts and blockchain technology in various fields, the idea of regulating the technology by means of law has gained popularity. However, even so, the questions relating to the legality and validity of these technologies, particularly in India, are replete with complexities. One of the most promising uses of blockchain is in real estate, particularly, smart contracts in leasing. The contemporary technology of smart contracts has effective solutions to offer in response to the multiple difficulties faced due to the traditional form of lease agreements. However, as new is the technology, as absent are the legal strings regulating it, thereby resulting in smart lease contracts meeting with multiple legal questions pertaining to their validity and legality. Additionally, smart lease contracts also pose challenges to the mandatory registration requirements of long-run lease deeds in India.

[*]Pooja Dhamor is a third-year student at National Law University, Jodhpur. The author may be reached at pooja6dhamor@gmail.com.

This article aims to explain what the technology is, along with its functional aspects. Additionally, it attempts to illustrate the legal considerations which may obstruct the path of its legality in India. Further, it proposes a solution to the problem of the legal legitimacy of the technology, keeping in mind the licit cogency of an arbitration agreement in digital shared ledger-based contracts. The article further engages in an analysis of legislation on smart contracts in jurisdictions across the world. Subsequently, it deals with smart contracts in real estate, particularly in leasing, discussing the laws and requirements of traditional leasing in India and addressing the question of preparedness of India to embrace automated lease based on smart contracts, taking into consideration the stringent regulations on registration of instruments recording lease of immovable property.

I. INTRODUCTION

The real estate industry of India has recently witnessed market unrest. In light of these developments, the measures to strengthen and rebuild the sector gain importance. The advent of blockchain technology, in the form of what is commonly known as a 'smart contract', is widely discussed to be a promising solution to the problems faced by the industry. At the same time, it has opened up a legal lacuna because of the insufficiency of the existing legal framework to regulate anything beyond the conventional contracts. The need to bridge this legal

lacuna makes it essential to study the technology and its associated functions from the legal amplitude.

II. OVERVIEW OF BLOCKCHAIN TECHNOLOGY AND SMART CONTRACTS

"*In wake of Romanie E. Coli Scare, Walmart Deploys Blockchain to Track Leafy Greens*", read the Walmart news headline with respect to tracing back of all the contaminated lettuce, and calling it back with help of IBM's Food Trust.[1] Blockchain technology has been proving itself quite efficient in dealing with practical situations more than ever. Indian giant Tech Mahindra is already establishing its market by taking first mover's advantage of implementing blockchain technology in sectors from diverse fields ranging from updating banks to financial services to upstaging technology in the telecom sector[2] and real estate.[3] Real estate has already seen the advent of smart contracts across the world, not only in the domain of private business players but also by the governments to consolidate the land records on a shared ledger, so as to avoid problems like counterfeit title deeds, benami,etc.

---

[1]Matt Smith, *In Wake of Romaine E. coli Scare, Walmart Deploys Blockchain to Track Leafy Greens*, WALMART COMMUNICATIONS, https://news.walmart.com/2018/09/24/in-wake-of-romaine-e-coli-scare-walmart-deploys-blockchain-to-track-leafy-greens.

[2]FE Bureau, *Tech M to deploy blockchain solution to curb spam calls*, FINANCIAL EXPRESS (May 3, 2019), https://www.financialexpress.com/industry/techm-to-deploy-blockchain-solution-to-curb-spam-calls/1566356/; *Tech Mahindra to collaborate with TBCA Soft for cross-carrier blockchain platform*, E-TECH, (February 27, 2019), https://tech.economictimes.indiatimes.com/news/technology/tech-mahindra-to-collaborate-with-tbcasoft-for-cross-carrier-blockchain-platform/68183444.

[3]*Tech Mahindra Partners with Blockchain Technology Pioneer Chroma Way to Bring Consortium Databases to the Indian Market*, MAHINDRA RISE, https://www.techmahindra.com/media/press_releases/TechMahindra-Partners-with-Blockchain-Technology-Pioneer-ChromaWay.aspx.

A. Blockchain Technology

Blockchain technology became a popularly used and widely known term when the crypto-currency *Bitcoin* caught the attention of public consciousness.[4]It is no longer a wild prognostication as this technology can be used in a wide range of fields,[5] from finance to shipping.[6] Real estate, obviously, is no exception.[7]

A 'blockchain' is a particular type of data structure used in some distributed ledgers which stores and transmits data in packages called 'blocks' that are connected to each other in a digital 'chain'.[8]Blockchains employ cryptographic and algorithmic methods to record and synchronize data across a network in an immutable manner.[9] In other words, it is a peer-to-peer distributed ledger that is cryptographically secure, append-only, immutable, and updateable

[4]*See* Robby Houben, Alexander Snyers, *Cryptocurrencies and Blockchain*, POLICY DEPARTMENT FOR ECONOMIC, SCIENTIFIC AND QUALITY OF LIFE POLICIEShttp://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf.

[5]John Ream et al., *Upgrading Blockchains: Smart Contract Use Cases in Industry*, DELOITTE UNIVERSITY PRESS, https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/innovatie/deloitte-nl-innovatie-upgrading-blockchains-smart-contract-use-cases-in-industry.pdf.

[6]Nishith Desai Associates, *The Blockchain: Industry Applications and Legal Perspectives* at 8, (November 2018), http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Papers/The_Blockchain.pdf.

[7]There are multiple websites floating on internet undertaking contracts based on smart contracts in various fields, "smartcontractleasing.io" is one such platform facilitating application of blockchains in multiple fields, like real estate, available at https://smartcontractleasing.io/real-estate-smart-contracts/.

[8]H. Natarajan et al., *Distributed Ledger Technology (DLT) and blockchain*, WORLD BANK DOCUMENTS, REPORT NO. 122140, (1st December 2017), FinTech note, no. 1. Washington, D.C., http://documents.worldbank.org/curated/en/177911513714062215/pdf/122140-WP-PUBLIC-DistributedLedger-Technology-and-Blockchain-Fintech-Notes.pdf.

[9]*Id.*

only via consensus or agreement among peers.[10]Explaining furthermore, this ledger works somewhat like a shared Google document, recording transactions between two or more parties in a permanent way and distributes a copy to all relevant parties, without the need for a third party to authorize the transaction.[11] Every new transaction is recorded in a new block and each new block is built upon previous blocks and contains the data stored on all previous blocks.[12] Since all these blocks are interlinked and are stored on a multitude of nodes, it is virtually impossible to hack it and alter or modify the same.[13]

B. Smart Contracts

Smart contracts, as explained by Nick Szabo, the computer programmer behind the idea of smart contracts, are "*a computerized transaction protocol that executes the terms of a contract. The general objectives of a smart contract design are to satisfy common contractual conditions […], minimize exceptions both malicious and accidental, and minimize the need for trusted intermediaries*."[14] Therefore, a smart contract can be stored on a blockchain, interact with external data feeds, and then self-execute various actions/processes (such as payments, shipment of products or other actions including remedies in the case of breach) based on conditional logic (programmed as traditional "if-then" statements) and agreed

[10]IMRAN BASHIR, MASTERING BLOCKCHAIN: DISTRIBUTED LEDGER TECHNOLOGY, DECENTRALIZATION, AND SMART CONTRACTS EXPLAINED 16 (2nd ed. Packt Publishing Ltd. 2018).
[11]Amlegals, *Blockchain & IP*, MONDAQ, http://www.mondaq.com/india/x/767898/fin+tech/Blockchain+IP.
[12]*Id.*
[13]Emmanuelle Ganne, *Can Blockchain Revolutionize International Trade?*, WORLD TRADE ORGANIZATION 2018, https://www.wto.org/english/res_e/booksp_e/blockchainrev18_e.pdf.
[14]N. Szabo, *Smart Contracts: Building Blocks for Digital Markets*, (1996) www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html.

verifiable proof of performance or other trigger events.[15] Smart contracts are codes which are not readable to humans.[16]For the smart contract, in contrast to other e-contracts or contracts executed by codes, everything beyond the code is just commentary.[17]In case of smart contracts, the code is a necessary part of the agreement itself, whereas other contracts executed by codes are just a tool to execute the human-made contract.[18] Parties sign this agreement using a digital signature, mostly using signature keys.[19]

Having pointed out how lucrative the newly-embraced technology of smart contracts is to the commercial and legal spheres, it is imperative to also draw out the very inescapable drawback of the same in legal terms, as the smart contracts are not short of legal loopholes, which in some jurisdictions also poses serious questions on the validity and legality of smart contracts. In the next part, the article will attempt at analysing the legal limitations to smart contracts and the difference between traditional contract and smart contracts, keeping Indian jurisdiction the focal point.

[15]Oliver Herzfeld, *Smart Contracts May Create Significant Innovative Disruption*, FORBES, https://www.forbes.com/sites/oliverherzfeld/2016/02/22/smart-contracts-may-create-significant-innovative-disruption/#18c80379396a.
[16]Kevin Werbach& Nicolas Cornell, *Contracts Ex Machina*, 67 DUKE L.J. 313 (2017).
[17]*Id*., at 350.
[18]*Supra*note 16, at 350.
[19]Dr. Christian Cachin, *Blockchain, cryptography, and consensus*, ITU WORKSHOP ON "SECURITY ASPECTS OF BLOCKCHAIN", https://www.itu.int/en/ITU-T/Workshops-and-Seminars/201703/Documents/Christian%20Cachin%20blockchain-itu.pdf; Elli Androulaki et al, *Cryptography and Protocols in Hyperledge rFabric*, IBM RESEARCH – ZURICH REAL-WORLD CRYPTOGRAPHY CONFERENCE 2017, https://cachin.com/cc/talks/20170106-blockchain-rwc.pdf.

III. LEGAL LIMITATIONS OF SMART CONTRACTS

In order to understand the legality of smart contracts, it is significant to also understand how these contracts are different from the traditional form of contracts, in the course of which we will also unveil the limitations of smart contracts.

A. Self-executing nature of smart contracts- a gift from heaven or a plethora of problems?

The first and foremost difference, which is a technical one and unarguably the most distinctive one as well, is that the contracts based on smart contracts are self-executing in nature; they auto-operate based on some pre-determined conditions as fed into the computer in form of codes.[20] These conditions are mutually agreed upon by the parties and once the conditions are triggered, the smart contracts self-execute by blockchain technology.[21] While in case of a traditional contract, parties may choose to not fulfil the pre-agreed terms even at a cost of litigation and/or payment in terms of judicial remedies; in case of smart contracts, such refrain from obliging the contractual conditions is not possible,even if the party on receiving ends wants to, unless the party which initiated the blockchain terminates it. There is no human role in the execution of smart contracts and they are self-operating, once coded.[22]Due to thelack of human intervention, smart contracts can lack their 'smartness' and prove to be ineffective in

[20]Scott A. McKinney et all, *Smart Contracts, Blockchain, And The Next Frontier Of Transactional Law*, 13 WASH. J.L. TECH. & ARTS 313 (2018).
[21]Max Raskin, *The Law And Legality Of Smart Contracts*, 1 GEO. L. TECH. REV. 305 (2017).
[22]Scott Farrell et al, *Lost and found in smart contract translation – considerations in transitioning to automation in legal architecture*, UNCITRAL PAPERS FOR PROGRAMME,https://www.uncitral.org/pdf/english/congress/Papers_for_Programme/14-FARRELL_and_MACHIN_and_HINCHLIFFE-Smart_Contracts.pdf.

certain cases which are inclusive of circumstances covered under subsequent impossibility, force majeure, etc.

a) Hypothetical case study -

This is a hypothetical example of an automated monthly herbal cosmetic raw ingredients supply agreement governed by the smart contracts wherein the retailer herbal cosmetic engineering company (buyer) drafts and formulates a smart contract. The conditions agreed are that before every 5th day of the month, a certain amount of herbal cosmetic raw ingredients, the geographical location of which is such that they are available only in the country P in the continent, will be delivered by the seller to the buyer operating in the country Q. For this transaction, an advance payment of $150 per unit for a contract of 1000 units will be done on 2nd day of the month, that is, it will be auto debited from accounts of the buyer on the condition being triggered. This advance payment is specifically requested by the supplier because it is of utmost necessity to them for production of the impugned products, and which would otherwise block their funds till payment for the dispatch is done, and in their business, such blockage is almost threatening to their existence. If the goods are not supplied in time, the said amount will be refunded to the buyer. This refund condition was put in because the buyers' machines start producing another set of ingredients on the first day of every month, and it is perishable unless mixed with other ingredients. The perishability of the same was confined to 5 days, exactly the time by which the seller had to deliver the goods; on a delay of which he would suffer loss in terms of perished ingredients produced in its factory, and hence time of delivery was essential to the buyer. Considering the importance of time of payment and time of delivery, automatic execution by the way of smart contracts seemed to be an intelligent choice.

Now, automatic execution in the absence of any human intervention leaves the situation full of limitations.

Instance 1: If country P follows a religious calendar and not the universally followed calendar, and the smart contracts are executed in accordance withthe same, then the course of events which unfolds for the seller is unfavourable and not something he agreed upon. The supplier might have reasonably believed that his day of delivery is a fortnight away, only to realize after a reminder mail preceded by first auto-credit of the agreed payment to its account, that smart contract operates basis some different calendar altogether. He still hurries the production and sets it out for delivery, and it reaches to the buyer, but only 12 hours after the due date. As soon as time envisaged under smart contracts crossed, the blockchain condition got triggered which led to a refund from the seller's account, and the buyer refuses to transfer back the amount saying that time was the essence of the contract. The present set of customised dispatch isn't of any use to them. Also, the buyer mentioned that the contract never talked about remedying the refund, so they are not legally bound to. This puts the seller in a vulnerable condition where his existence in the market is threatened by blockage of funds (owing to the fact that they made it clear in the beginning that they could not possibly operate with such blockage). Similarly, if granted refund, the buyer will be in a devastatingposition, unable to use the shipped products for which he had to pay too. This situation of threatened existence could have easily been avoided, granted the absence of smart contract which led to auto-refund.

Instance 2:Now assuming that the smart contracts are drafted and incorporated by seller and can be cancelled by him only, plus there is no refund condition;, if the dispatch is set for delivery and the subsequent impossibility as envisaged under Section 56 of the Indian Contract Act[23] occurs as and when country Q bans herbal goods from

[23]Indian Contract Act, 1872§ 56; Satyabrata Ghosev. Mungneeram Bangur& Co &Anr, AIR 1954 SC 44; Taylor v. Cardwell, 1863, 3 B.&S. 826; Sushila Devi v. Hari Singh, AIR 1971 SC 1756.

country P, goods are seized at customs for change in regulations, or country Q declares a war against P, then even if the contract stands void under Section 56, auto-debit will continue from buyer's account unless the smart contracts are suspended or terminated.

Takeaway from the case study: Despite the alluring advantages of self-executing nature of smart contracts, they are not always fit in commercial situations which are usually highly complex and require flexibility.

In other words, smart contracts have limitations when it comes to their application in even slightly demanding circumstances,[24] thereby making the efficiency of smart contracts less efficient than traditional semantic contracts when it comes to ex-post uncertainty.[25] Smart contracts are the codes thatknow exactly what to do but only in given conditions, thus, closing the possibilities for "second thoughts" in un-predictable circumstances.[26]The peculiar*per se*defining of smart contractsdefeats flexibility,[27] and such forms of flexibility are vital to the contracting process.[28] This loss of flexibility might put parties in circumventing unpredictable outcomes and bad faith litigation.[29]

B. Non-readability to humans- consent caused by mistake?

[24]Jerry I-H Hsiao, *Smart Contract on the Blockchain-Paradigm Shift for Contract Law*, 14 US-CHINA L. REV. 685, 690, (2017).
[25]Jeremy M. Sklaroff, *Smart Contracts and the Cost of Inflexibility*, 166 U. PA. L. REV. 263, 291, (2017).
[26]Larry D. Wall, *Smart Contracts in a Complex World*, FEDERAL RESERVE BANK OF ATLANTA, https://www.frbatlanta.org/cenfis/publications/notesfromthevault/1607.
[27]Karen E. C. Levy, *Book-Smart, Not Street-Smart: Blockchain-Based Smart Contracts and the Social Workings of Law*, 3 ENGAGING SCI., TECH., SOC'Y 1(2017).
[28]Jerry I-H Hsiao, *Smart Contract on the Blockchain-Paradigm Shift for Contract Law*, 14 US-CHINA L. REV. 685, 690, (2017).
[29]Jeremy M. Sklaroff, *Smart Contracts and the Cost of Inflexibility*, 166 U. PA. L. REV. 263, 279, (2017).

Another distinction creates most of the difference *legally* between a smart contract and a traditional contract. This being that smart contracts are not readable to humans, butonly to the machines.[30] This forms a bone of contention for its non-validity and illegality.

While on one hand the ones backing up smart contracts argue that Indian Contract Act very well allows the contracts which are not written,[31] this is in-fact a contract in written form, just not readable to humans. On the other hand, the problem with non-readability of smart contracts to humans is that parties undertaking to come under smart contracts can challenge consensus-ad-idem by contending that due to the non-readability of the same, they were unable to infer the exact same things as written in the smart contracts and that what is being self-executed by smart contract is not exactly what they meant it to be, rendering the given consent an incomplete and uninformed one. According to Section 13 of the Indian Contract Act, "*two or more persons are said to consent when they agree upon the same thing in the same sense*."[32] It is often argued against the validity of smart contracts that it is hit by Section 13 because, in absence of readability of codes, it cannot be ensured that valid consent is reached. In such a case, it cannot be ensured that whether the mind of the customer accompanies its signature to the contract, hence making smart contracts void.

C. Signature requirement of smart contracts- electronic and cryptic

The last difference between the signing of the contracts, that is, in smart contracts, signing is almost always electronic and mostly in cryptic form, unlike traditional contracts. This though not a limitation in India, might form a limitation in multiple jurisdictions where

[30]*Supra* note 16, at 350.
[31]Alka Bose v. Parmatma Devi &Ors, Civil Appeal No. 6197 of 2000; Sheela Gehlot v. Sonu Kochar & Ors, 2006(92) DRJ 498.
[32]Indian Contract Act, 1872§13.

digital signatures are not recognized. These electronic signatures, including cryptographic signatures, are recognized in India under the Indian Information Technology Act, 2000 under Section 2(ta) of the Act as inserted by the 2008 amendments, which takes inspiration from the UNCITRAL Model Law on Electronic Signatures 2001.[33] Quoting Section 2(ta), an electronic signature means:

"[A]uthentication of any electronic record by a subscriber by means of the electronic technique specified in the Second Schedule and includes digital signature; sections explaining dig sign; distinguishing e-sign; etc."[34]

Sincenot all forms of electronic signatures are safe and can be tampered with, only the ones specified in the Second Schedule of the IT Act are allowed.[35] Digital signatures take into account the cryptographic signatures, as are the signature keys mostly used for smart contracts.[36]

IV. LEGAL VALIDITY OF THE SMART CONTRACT

Based on the previous part, the key limitations which can possibly pose a challenge to the legal validity of the smart contract in India are 1) non-fitness of self-execution in some commercially complex circumstances like frustration, force majeure, etc.; and 2) non-readability to humans which makes the consent questionable.

[33]UNCITRAL Model Law on Electronic Signatures 2001 art. 2(a), defines electronic signatures. Guide to UNCITRAL Model Law on Electronic Signatures 2001 sheds light on digital signature based on cryptography in Chapter III.B.2. at 22, available at https://www.uncitral.org/pdf/english/texts/electcom/ml-elecsig-e.pdf.

[34]Information Technology Act, 2000§ 2(ta).

[35]Indian Information Technology Act, 2000, Sch. II.

[36]Ravikant Agrawal, *Digital Signature from Blockchain context*, MEDIUM, https://medium.com/@xragrawal/digital-signature-from-blockchain-context-cedcd563eee5.

Electronic contracts are recognized in India under multiple provisions of the IT Act, specifically Section 10, which states:

"Section 10-A: Validity of contracts formed through electronic means. -

Where in a contract formation, the communication of proposals, the acceptance of proposals, the revocation of proposals and acceptances, as the case may be, are expressed in electronic form or by means of an electronic record, such contract shall not be deemed to be unenforceable solely on the ground that such electronic form or means was used for that purpose."[37]

Smart contracts are a subset within the broader set of e-contracts. Therefore, their validity is recognized in India. Section 10 of the Indian Contract Act is the touchstone to test the validity of any contract.[38] It lays down essential requirements of a valid contract, which are, free consent, parties competent to contract, lawful consideration and a lawful object.[39] Along with these, any agreement which is expressly declared to be void under the Contract Act isalso not a contract.[40] In the present scenario, it is "*any agreement which is expressly declared to be void*" element, and "*free consent*" element which is in question because of the respective limitations as expressed in the preceding part.

Both these contentions, however, the opinion of the author doesnot hold enough water to stand against the validity of the smart contracts asall the above-mentioned limitations are 'exceptions and not rules'. Firstly, dealing with theargument of non-readability, it must be

[37]Information Technology Act, 2000, § 10-A.
[38]Indian Contract Act, 1872, §10; 1 POLLOCK AND MULLA, THE INDIAN CONTRACT & SPECIFIC RELIEF ACTS, 241 (R Yashod Vardhan et al. eds., 15thedn., 2017); R. Sudhakar Reddy v. Government of A.P., AIR 2005 (NOC) 553 AP.
[39]1 POLLOCK AND MULLA, THE INDIAN CONTRACT & SPECIFIC RELIEF ACTS, 243 (R Yashod Vardhan et al. eds., 15thedn., 2017).
[40]*Id.*

pointed out that the initiator of the smart contract, in most cases, lays down the important content of the same in a language readable to humans, this hence facilitates an opportunity of a fair and rational judgment making to the parties when they are made aware of the important particulars of the smart contract in a natural language. Admittedly, it is still highly likely to not beable to cover each and every aspect of the same but any failure to not include a highly relevant and commercially important term shall be treated as an exception, which is possible in a traditional pen-paper contract as well. In the cases of paper contracts too, such circumstances do arise and have arisen in past as well, which are treated as an exception and such contract held to be void and invalid. But this does not make the entire class of contract invalid, and that shall be applicable to smart contracts as well.

Next, the argument of non-suitability of the self-execution trait of smart contract, which is indeed the key trait, in some commercially complex circumstances like frustration, force majeure, etc. also falls short on the same ground that such situations of frustration and impossibilities, subsequent or otherwise, are exceptional situations. In these situations, contracts are held void in traditional contracts and can be held void in case of smart contracts as well. It will be bizarre and without much rationale to hold it against the entire class.

This added with India's willingness to be to open to adopt and accept technologically advanced contracts as is displayed in the IT Act and others by accepting e-contracts and developing a conducive legal environment for the same,[41] opens the door of Indian legal sphere towards the validity of smart contracts.

[41]News article titled *"India's PM Modi touts digitized economy to business leaders",* published on the Thomson Reuters, quoted Indian Prime Minister making remarks like "We are working to adopt and absorb newer technologies, to bring about transparency, and to end discretion,", "Believe me, we are on the threshold of becoming the world's most digitized economy. Most of you wanted this change in

A. Arbitration agreement in smart contracts

It is possible to also include an arbitration clause in the smart contract, as is commonly a preferred method of dispute resolution for corporates these days. The Arbitration and Reconciliation Act, 1996 under Section 7(3) of the Act lays down that such a clause needs to be in 'writing' to constitute a valid arbitration agreement.[42] This condition attracts challenges to validity of the arbitration agreement, if it is not in writing. However, this problem is solved by virtue of Section 7(4)(a) in the Act which statesthat an arbitration agreement is in writing if it is contained in a document signed by the parties.[43] Since smart contracts satisfy this condition of being signed by both the parties, any arbitration clause contained in a smart contract, by the method of reference[44] or otherwise, will constitute to be a valid arbitration agreement.

B. Comparative study of legislations on smart contract in legal spheres across the world

The world has already seen some of the States being quick to act on recognizing and regulating this new technology and acting upon it, trying to capture the new market full of potential and opportunities. Arizona, Tennessee, Delaware, Georgia, Belarus, and Illinois, namely, are some of the governments taking explicit legislative

India. I am proud to say that it is happening before you.", "Creating an enabling environment for business, and attracting investments, is my top priority." Available at https://www.reuters.com/article/us-india-vibrantgujarat-modi/indias-pm-modi-touts-digitized-economy-to-business-leaders-idUSKBN14U213; Along with this, the Government of India has been working on and promoting a full-fledged initiative named "Digital India" aimed to empower economy, education and overall status of nation, *See* https://www.digitalindia.gov.in/.

[42]Arbitration and Reconciliation Act, 1996, § 7(3).

[43]Arbitration and Reconciliation Act, 1996, § 7(4)(a).

[44]Arbitration and Reconciliation Act,1996§7(5); Giriraj Gargv. Coal India Ltd & Ors., Civil Appeal No.1695 of 2019.

strides towards the same.[45] Arizona has introduced legislative framework regulating smart contract world making changes in laws governing signatures and contracts, making transactions on a blockchain legally valid.[46] States like Delaware have been the fast runners in deciding to update their legal structure to offer a better environment in terms of ease and friendliness to the huge corporates aiming to use the asset blockchain technology is, no doubt, almost 60% of the Forbes top-500 business giants are functional there owing to the State's determination to provide a welcoming policy-framework for functioning.[47] However, apart from being lauded worldwide, these steps have also met with criticisms, primarily voiced by Mike Orcutt, who points out that such legislative steps aim to define that new technology of science (smart contracts) which still has no universal definition in science.[48] Other disparaging factors stem from inconsistency in these domestic law versions which might create chaos, plus, some business lawyers perceive such legislative

[45] *"Georgia to use smart contracts in real estate registrations"*, AGENDA. GE,http://agenda.ge/news/96094/eng; Douglas Heaven, *"A house has been bought on the blockchain for the first time"*,NEWSCIENTIST,https://www.newscientist.com/article/mg23631474-500-a-house-has-been-bought-on-theblockchain-for-the-first-time/; *"Belarusian banks may be allowed to sign smart contracts"*, BELARUSIAN TELEGRAPH AGENCY, http://eng.belta.by/economics/view/belarusian-banks-may-be-allowed-to-sign-smart-contracts-111225-2018/; Craig A. de Ridder, et al., *"Recognition of Smart Contract"*, PILLSBURY LAW,https://www.pillsburylaw.com/en/news-and-insights/recognition-of-smart-contracts.html.

[46] Madir, Jelena, *Smart Contracts: (How) Do They Fit Under Existing Legal Frameworks?* ,SSRN, https://ssrn.com/abstract=3301463.

[47] Luke Parker, *Delaware to 'embrace the emerging blockchain and smart contract technology industry,' with distributed ledger shares,* BRAVE NEW COIN, http://bravenewcoin. com/news/delaware-to-embrace-the-emergingblockchain-and-smart-contract-technologyindustry-with-distributed-ledger-shares/.

[48] Mike Orcutt, *States that are passing laws to govern "smart contracts" have no idea what they're doing,* MIT TECHNOLOGY REVIEW,https://www.technologyreview.com/s/610718/states-that-are-passing-laws-to-govern-smart-contracts-have-no-idea-what-theyre-doing/.

framework as an intrusion in the freedom the smart contract enjoyed till date, and only an additional burden on cost and efforts.[49]

V. LEASE AGREEMENTS IN INDIAN REAL ESTATE

Lease agreements are defined in Section 105 of the Transfer of Property Act, 1882 as:

"*105. Lease defined.—A lease of immovable property is a transfer of a right to enjoy such property, made for a certain time, express or implied, or in perpetuity, in consideration of a price paid or promised, or of money, a share of crops, service or any other thing of value, to be rendered periodically or on specified occasions to the transferor by the transferee, who accepts the transfer on such terms. Lessor, lessee, premium and rent defined.—The transferor is called the lessor, the transferee is called the lessee, the price is called the premium, and the money, share, service or other thing to be so rendered is called the rent.*"[50]

A lease can be of movable or immovable property.[51] But for the present article, we are concerned only with the lease of immovable property. A lease can be made by oral or written agreement.[52] However, the lease of immovable property for one year or more can only be made by a registered document.[53] In absence of a local governing law, written contract, or when a contract is silent, a lease of immovable property for agricultural or manufacturing purposes shall

[49]Clean App, *Against "Smart Contracts",* CRYPTO LAW REVIEW, https://medium.com/cryptolawreview/against-smart-contracts-4a1f43133215.
[50]Transfer of Property Act, 1882, § 105.
[51]Narain Swadeshi Weaving Mills v. CEPT, AIR 1955 SC 176.
[52]Transfer of Property Act, 1882, § 107, para 2.
[53]Transfer of Property Act, 1882, §107, para 1; Registration Act, 1908§ 17; Registration Act, 1908§ 49; Rajendra Prasad Singh v. Rameshwara Prasad, AIR 1999 SC 37.

be deemed to be on yearly basis and terminable on the part of either party by giving 6 months' notice.[54]For any lease other than the aforementioned two, it shall be to be on a monthly basis, terminable by either party by giving a prior notice of 15 days.[55] In absence of any time in the contract, the lease usually begins from the day it was entered into.[56]

There are eight modes of terminating a lease of an immovable property before expiration as given under Section 111, which are the only grounds to get a lease determined.[57] One of the grounds to determine a suit is by forfeiture for non-payment of rent.[58] In a situation where the lessor files a suit for determination on this ground and while the suit has not been decided and the lessee pays to the lessor rent in arrear with interest, full cost of suit or provides sufficient security within 15 days, the court may pass an order to relieve the lessee from forfeiture and allow him to hold on to the property.[59]

In a case where even after the determination of the lease, the relationship between the parties continues as if the lease was still in force, in such a situation, the lease stands renewed year after year or month after month according to the purpose for which the property is leased.[60]

Recently, the real estate industry of India has been subjected to the gripping and critically acclaimed change in legal framework

[54]Transfer of Property Act, 1882, § 106(1).
[55]Park Street Properties (Pvt.) Ltd. v. Dipak Kumar Singh &Ors, AIR 2016 SC 4038.
[56]P. Krishnaiah Settyv. A.V. Lakshmana Rao & Anr., AIR 1952 Kant 139.
[57]Niranjan Pal &Anr.v. Chaitanyalal Ghosh & Anr., AIR 1964 Pat 401.
[58]Transfer of Property Act, 1882, § 111.
[59]Transfer of Property Act, 1882, § 114; Shah Ambalal Chhotalal & Ors. v. Shah Babaldas Dayabhai & Ors., AIR 1964 Guj 9.
[60]Transfer of Property Act, 1882, § 116; *See* The Metal Press Works Ltd. v. Guntur Merchants Cotton Press Co., AIR 1976 AP 205.

regulating the market by introduction of the Real Estate (Regulation and Development) Act, 2016 ("**RERA**").[61] While on one hand, rental agreements and short term lease are not a part of RERA; on the other hand, a recent ruling of Bombay High Court has held that that long run lease agreements which involve an investment of substantial amounts are covered under Maharashtra RERA.[62]

Additionally, for the execution of lease documents, a mandatory requirement for payment of stamp duty under the Stamp Duty Act 1899 under Article 35 is to be fulfilled.[63]A sub-lease or an agreement to let and sublet is also included in this Article.[64]Under Article 35, stamp duty is charged on the average yearly rent which then in accordance with the length of the lease period is multiplied by the number of years.[65]

Therefore, essential provisions to be adhered to while entering into a lease is not confined to the Transfer of Property Act provisions, but also extends to the relevant provisions of the Registration Act, and the Stamp Duty Act.

VI. SMART CONTRACTS IN LEASING

A. Smart contracts in real estate

Blockchain technology has already crept in the real estate sector. The uses and advantages of blockchain in real estate include smart

[61]The Real Estate (Regulation and Development) Act, 2016.
[62]Lavasa Corporation Ltd. v. JitendraJagdishTulsiani,2018 SCC OnLineBom 2074.
[63]Stamp Duty Act 1899 art 35; State of Rajasthan v. Bhilwara Spinners Ltd. And Ors., AIR 2001 Raj 184.
[64]*Id.*
[65]*Id.*

contracts but are not limited to it.[66] Among many others, a few which have caught most highlight are digitising land titles, disintermediation, transfer of property through blockchain, etc.[67]However, for this article, we shall stay confined to smart contracts itself.

Smart contracts are the place to go for transactions which are repetitive, such as, auto-debit of lease installments, etc. The question 'why smart contracts?' stands answered by the ability of smart contracts to reduce risk in a market where trust is hard found; plus, this process ensures that the buyer/lessee has requisite funding, and the seller/lessor has the requisite ownership of the property. In the commercial world of real estate, it provides the players an inordinate advantage of 24/7 liquidity, which is how people want to invest.[68]

One such example of smart contracts in real estate will be Midasium Contract which is a digital representation of the mutual agreements contained in a traditional real estate contract as lines of software code that are self-executing and self-enforcing in nature.[69]Midasium contracts have the power to move funds between bank accounts, transfer property titles and reconcile payments.[70]Other examples would include *Propy, Harbour, ShelterZoom, StreetWire*, etc.[71]

---

[66]Subhasish Das,*How Blockchain Will Transform the Indian Real Estate Sector*, PROPSTORY, https://propstory.com/how-blockchain-will-transform-the-indian-real-estate-sector/.

[67]*Id.*

[68]Tom Bill, *Can blockchain and bitcoin really revolutionise the property market?*, KNIGHT FRANK, https://www.knightfrank.com/wealthreport/2018/global-wealth/blockchain-and-real-estate.

[69]Midasium is an enterprise functioning in real estate arena of smart contracts and makes use of blockchain technology based smart contracts to conduct transactions like leasing, sale, etc. *See*http://midasium.herokuapp.com/smart-contracts.

[70]*Id.*

[71]Jacob Dunn, "*4 blockchain real estate startups shaking up property investment"*, ESPEO BLOCKCHAIN,https://espeoblockchain.com/blog/blockchain-real-estate-startups/; *See also* Platform for proptech business of 'Propy' available at

B. Smart contracts in leasing

This sub-part aims at explaining the functioning of smart contracts in case of lease agreements. A smart contract is programmed and coded by the owner of the property/lessor or his agent. These codes contain all the terms and conditions of the lease which would generally be present in a traditional document of lease, such as lease instalments, duration of the lease, duration of instalments, premium, details of property, renewal conditions (if any), etc. This content, since not readable in human language, the lessor is given a version of the content in a language readable by humans. After evaluation of the lease conditions provided to him and once an agreement has been reached, the smart contract is signed digitally by both the parties using a signature key which is indicative of the particular identity of the person/ organisation doing the signature. This walks us into the formation of a valid smart contract digitally regulating lease.

After which, the smart contract self-executes and automatically debits, digitally withdrawing the agreed rent from the lessee's account and gets deposited in lessor's account as and when the conditions fed in the smart contract for payment triggers, that is, at the regular payment period, or otherwise as agreed by the parties with consent. This automatic payment system ensures lesser cost, transparency, complete traceability for audit, reducing chances of errors and frauds to almost nullity. It also ensures a timely and an honest performance of the contracts in a risky market where trust is hard-found, and numerous cases based on non-payment, unfair pre-eviction, etc., are common-place. This is made possible based on data fed into the

https://propy.com/browse/; 'Street Wire' available at http://streetwire.net/; Shelter Zoom available at https://www.shelterzoom.com/; Nikhilesh De, *Harbor Launches Tokenized Equity Purchases With Real Estate Offering,* COINDESK (Nov 27, 2018).

blockchain from Internet of Things devices that record energy, utilities, and more, transparently.[72]

When the smart contract expires, protocols for the security deposit can facilitate deductions – for example concerning reinstatement – or return, it to the tenant at the lease-end. Smart contracts can include third-party decision making, such as the independent expert of a surveyor to determine the reinstatement costs that are due.[73]

VII. LEGAL VALIDITY OF AN AUTOMATED LEASE BASED ON SMART CONTRACT

We have already established the validity of smart contracts in India. However, unlike testing the validity of smart contracts on the touchstone of the essentials of a contract laid down in Section 10 of the Indian Contract Act, the yardstick for the validity of 'smart contracts operating a lease' demands satisfaction of additional factors over and above Section 10 of the Contract Act. The reason for the same is that the provisions of IT Act validating e-contracts are not applicable to transactions relating to Transfer of Property.[74] For this reason, we will attempt to satisfy additional criteria for establishing the legal validity of what is not explicitly held to be either valid or invalid. After the satisfaction of essentials of a valid contract, we need to test them on the parameters of the ability to register and stamp smart contracts, which is a pertinent requirement in events of lease.

[72]Robparker, *3 Ways Smart Contracts Will Power Automated Leasing*, https://www.whatsnextcw.com/3-ways-smart-contracts-will-power-automated-leasing/.
[73]*Id.*
[74]Information Technology Act, 2000§ 1(4); 1 S.V. JOGA RAO, COMPUTER CONTRACTS & INFORMATION TECHNOLOGY LAW, 54 (1st ed. 2003).

A. Registration of the instrument recording lease of immovable property

The primary additional condition for validity is the mandatory requirement of registration of the instrument recording the lease of immovable property from year to year, or for any term exceeding one year, or reserving a yearly rent.[75] The same is laid down under Section 107 of the Transfer of Property Act, 1882[76] read with Section 17(1)(d)[77] and Section 49 of the India Registration Act, 1908,[78] according to which, it is mandatory to register the lease of an immovable property for a term exceeding one year or system of yearly payment of rent.[79] A lease deed that needs to be mandatorily registered is void if it is not registered.[80] This mandatory requirement of registration is a problem because of the lack of any established e-registration mechanism in India. Another problem that arises is that according to Section 19 of the Registration Act, 1908, it is obligatory for the instrument to be in a language readable to the registrar or a language commonly prevalent in the district.[81] Smart contracts are codes which, as already explained, are not readable to humans.

[75]R. Suresh Babuv. G. Rajalingam, Civil Revision Petition No.4066 of 2016; Usha Ranjan Ray Burmanv. Sova Das, AIR 1990 Cal 1; Ariffv. Jadunath, AIR 1931 PC 79.
[76]Transfer of Property Act, 1882§ 107;MULLA, THE TRANSFER OF PROPERTY ACT, 840 (Dr. Poonam Pradhan Saxena, 11thedn., 2013).
[77]Registration Act, 1908, § 17(1)(d).
[78]Registration Act, 1908, § 49.
[79]A SulaikhaBeeviv.KC Mathew, AIR 2001 Ker 177; Shantibaiv. State of Bombay, AIR 1958 SC 532.
[80]Anthony v. KC Ittoop& Sons &Ors., (2000) 6 SCC 394; Paul v. Saleena, 2004 (1) KLT 924; Badal Chandra Sadu Khan v. Debendra Nath Dey, AIR 1933 Cal 612; Mopurappav. Ramaswami Gramani, AIR 1936 Nag 295; Ramayan Saran v. Patna Improvement Trust, AIR 1972 Pat 7; Darbari Lalv. Ranee Gunj Coal Association, AIR 1944 Pat 7; Bajaj Auto Limited v. Behari La Kohli, AIR 1989 SC 1806.
[81]Registration Act, 1908, § 19.

However, even in the presence of these hurdles, registration of smart contracts can pave a way out. The major hurdle is the language of the instrument to be registered. A possible solution for this could be to provide true translation and a true copy of the original contract. To do this, the source code of the smart contract can be provided which will constitute to be the true copy of the original. Next, a human-readable version of the same can be created by writing down what exactly is done by the source code in the English language or in any other language commonly prevalent in the district in which the instrument is sought to be registered for that matter. This can be considered as the required translated copy. However, a contrary argument can also be presented to rebut this method of providing a translated copy of source code by contending that this kind of translated copy doesn't constitute to be true translation as required under Section 19 because it is merely a description of what codes say and not exactly the translation of the codes.

VIII. SUGGESTIONS AND CONCLUSION

The lack of a proper legislative framework to deal with this new realm of blockchain technology, smart contracts based on this technology, Ricardian contracts, etc. was conspicuous throughout the analysis. This reality does not align with the aim of India's recent economic and other governmental policies like digitization, policies aiming to make India technologically advanced and the country's conducive attempts to attract foreign investments. Legislative and executive steps recognizing validity of smart contracts, and the guidelines regulating these new technologies will offer a steadfast, dependable and lucrative environment to investors in the country, bringing players of a wide-growing market which is only in its nascent stages and promises illustrious efficiency.

Laws related to registration need to be updated to give more and better clarity as to how the registration of smart contracts can be made possible. The e-stamping process which allows paying stamp duty online and cutting short old-school requirements of paper documents is commendable.[82]Additionally, bringing something similar in order to ensure registration without mandating physical paper and wet-ink signatures, as well as better facility and lesser ambiguity in the 'registration policy of smart contracts' is also advisable. Agreeably, India already has e-registration portals in many states,[83] but this facility of e-registration still mandates presenting the hard copy of the documents in a language readable to the Registrar officer. Moving ahead, blockchain technology can be used in this registration process because of its efficiency to protect the data against hacks, frauds, and thereby avoiding the problem of fake title deeds, counterfeits and so on. Governments in the Republic of Georgia, Sweden, Honduras and Cook County in Chicago are already making good use of blockchains in their registry process where a government official updates the distributed land ledger to reflect the change in ownership of property in case of sale of land.[84]

[82]The Government of India has initiated e-stamping, where one needs to visit https://www.shcilestamp.com/ and check whether e-stamping is available for their state or not, if available, there are options as to user registration and e-payment which are provided on the website itself.

[83]A lot of Indian states such as Maharashtra, Rajasthan, Andhra Pradesh, etc. have portals dedicated for e-registration of lease deeds. Refer to the following portal addresses for the respective webpages offering official e-registration and stamping facilities :https://efilingigr.maharashtra.gov.in/ereg/, http://epanjiyan.nic.in/e-search.aspx, http://registration.ap.gov.in/.

[84]Laura Shin, *The First Government To Secure Land Titles On The Bitcoin Blockchain Expands Project*, FORBES, https://www.forbes.com/sites/laurashin/2017/02/07/the-first-government-to-secure-land-titles-on-the-bitcoin-blockchain-expands-project/#1adfde844dcd.It is stated in the article that "The Bitfury and Republic of Georgia initiative is just one of several collaborations aimed at creating blockchain-based land-titling services. (Such software is also being created in Sweden, Honduras and Cook County in Chicago with start-ups Chroma Way, Factom and Velox, respectively."