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The Adaptability of Smart Contracts in the Real-Estate Sector

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ABSTRACT

With the ever-changing and evolving tech world, Blockchain-enabled Smart Contracts are making breakthroughs daily. DLT are essentially "trust-less" and has demonstrated the potential for transforming the existing systems. Important problems regarding its validity and legality are still unsolved, hindering its progress. The reason ascribed to these complexities is the reluctance of the legal regime to regulate and transcend the limits of the conventional Contracts. Thus, it is essential to understand the technologies tremendous potential and its functions from a legal perspective, further, only an effective regulation can boost its adoption. Smart contracts provide a promising solution to the current real estate industry that is plagued with problems. Its implementation requires certain regulatory amendments to conform to the current laws. This article thus discusses the potential use and limitations of smart contracts in the real estate sector and suggests that the adoption of this technology does not wither away the intermediaries and causes minimum disruption to the existing traditional system.

I. INTRODUCTION

To examine how smart contracts are being adopted in leading industries, I have confined this discussion to the applicability of smart contracts in the real estate sector. Real estate constitutes a significant portion of the world economic asset and the market size is estimated to grow from USD 1.72 billion (2019) to USD 9.30 billion by 2040. This sector comprises a great portion of India's GDP. In India, this sector is predicted to grow to a market size of US$ 1 trillion by 2030 from US$ 120 billion in 2017 and will contribute 13% to the country's total GDP by 2025.[2] But the prevailing market procedure for dealing with the transfer of land and conveyance is fraught with problems, for instance, it is time-consuming, costly, manipulation and duplicity of records, corruption, wear and tear of documents, traceability and fraud. The integration of self-executing smart contracts can accelerate the growth of this sector and reduce the existing

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[2] 'Indian Real Estate Industry Report' *IBEF* (3 September 2021) <https://www.ibef.org/industry/real-estate-india.aspx>; see also, DK Aggarwal, 'Realty Set to Look up After Years of Hiatus; Try & Catch Them Young' *The Economic Times* (4 August 2021) <https://economictimes.indiatimes.com/markets/stocks/news/realty-set-to-look-up-after-years-of-hiatus-try-catch-them-young/articleshow/85322138.cms>

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limitations; however, there are many obstacles to the implementation of a Blockchain land registry in India, which is discussed in detail below.

II. LIMITATIONS OF THE EXISTING PROCEDURE

There is a cumbersome procedure before the transfer of ownership is completed. S. 54 of the Transfer of Property Act, 1882 defines "Sale" as a transfer of ownership in exchange for a price paid or promised, or part-paid and part-promised[3]. Further, a sale is effected in case of tangible immovable property of the value of ₹100 and upwards only by a registered instrument. S. 17 (1) of The Registration Act, 1908 provides for a list of documents of which registration is compulsory, without which it cannot affect any immovable property to which it relates.[4]

Registration of the document is compulsory for the transaction to be considered 'legal facts.' It needs to be recorded in a registry of land assets known as the Record of Rights (RoR) which is maintained by the state. This government oversight is essential to monitor the ownership and to stop a land from being transferred several times; the physical registry acts as proof that the land has already been transferred. However, this centralised ledger raises the trust issue because of abundant corruption and manipulation of these paper-based ledgers into falsification of land value and transactions. Due to superfluous checking of documents and fraud in data entry, two-thirds of civil cases in India's district courts are related to land and property, due to no transparency and tampering of data, thus low trust in the government-maintained RoR becomes evident.[5]

Other limitations are, that it is time-consuming, transfer of land title takes months, to complete. A sluggish process of verification of property title, value estimation, paying stamp duty, registration by sub-registrar and submission of documents, thus the process of registering is encumbered with complications and is a sign of weak governance and corruption. Lastly, the transfer process is costly and complex, involving some parties demanding fees and commissions and the process is devoid of procedural uniformity across the states in India.[6]

III. BLOCKCHAIN SOLUTION IN THE REAL ESTATE SECTOR

Smart contract integration in this sector can help reduce the existing limitations by cutting costs and intermediaries and can provide an expedient alternative in recording property details, making the process organised[7]. By using a decentralised ledger such as a blockchain, where data in a smart contract are stored and validated, consequently preventing fraud. Additionally, the

[3] The Transfer of Property Act, 1882, s 54.
[4] The Registration Act, 1908, s 17(1).
[5] Punit Shukla, 'How India's Government can build better contracts with Blockchain' *World Economic Forum* (4 October 2019) <https://www.weforum.org/agenda/2019/10/how-indias-governments-can-build-bettercontracts-with-blockchain/>
[6] Meghna Bal, 'Report on Securing Property Rights in India through Distributed Ledger Technology' Observer Research Foundation('ORF') (23 January 2017) <https://www.orfonline.org/research/securing-property-rights-india-through-distributed-ledger-technology/>
[7] Deepti Pandey & Harishankar Raghunath, Stationing smart contract as a 'contract': a case for interpretative reform of The Indian Contract Act, 1872', 13 NUJS L. Rev. 4(2020)

immutability and irreversible nature of a block obviate tampering of records.

To better understand the potential utilisation of smart contracts in land administration and dealings, take, for example, A wants to sell his land and he signs a smart contract using his private key, after which it is deployed on the blockchain. B wants to buy the land and can check all the digitised information about the property i.e., rightful owner, survey number. Smart contracts ensure that the transaction conforms to the State's regulation. After that, B agrees to purchase the property signifying his assent using his private key. This agreement is compressed down to a unique hash code and put into the blockchain. Stakeholders such as banks, land registries, revenue authority, RERA can validate the accuracy of the data through their unique digital signature. The nodes who have access to the information on the blockchain will check the distributed registry of land assets and verify if A is the real owner. Further, banks will validate if B has sufficient capital to buy the land and initiate a payment debit; confirm credit to A's account. The revenue officer will ensure the land is free from all encumbrances and that the duties and taxes are deducted and paid. If a consensus is reached that all conditions in the smart contract are met, the registrar will register and grant land title to B and that information is added to the blockchain land registry.

An interesting fact to note in India is that the current process of ownership transfer involves newspaper advertising. This public notice is an opportunity for any concerned party who may have a genuine claim in the property to object, thus avoiding fraud. This is nothing but a physical form of "consensus protocol" where the community validates the transaction.[8]

IV. PROBLEMS WITH BLOCKCHAIN IMPLEMENTATION

The first difficulty posed is whether the digitised information deployed on a blockchain is reliable. Blockchain is a "Garbage in, garbage out" system: If a false deed is uploaded to the blockchain, it will remain false.[9] Before blockchain is deployed, the information about the land needs to be valid and the stakeholders must ensure that they aren't registering inaccurate data on the blockchain, thus it would require a significant change in the traditional process.

Accuracy in maintaining the records is a reason ascribed to the success of the Bitfury Group project in the Republic of Georgia. Georgia's government in collaboration with the Bitfury group launched a project to register land titles via a private blockchain. Once recorded, that data is made available to the public, on a public blockchain where the citizens could verify the authenticity of the ownership certificate.[10]

[8] Shukla (n 104).

[9] 'Blockchain: The India Strategy' NITI Aayog (11 February 2020) https://niti.gov.in/sites/default/files/2020-01/Blockchain_The_India_Strategy_Part_I.pdf; Michael Pisa and Matt Juden, *'Blockchain and Economic Development: Hype vs. Reality'* CGD Policy Paper. Washington, DC: Center for Global Development (20 July 2017) <https://www.cgdev.org/publication/blockchain-and-economic-development-hype-vs-reality>

[10] 'The Bitfury Group and Government of Republic of Georgia Expand Historic Blockchain Land- Titling Project' (7 February 2016) https://bitfury.com/conten

The question now is whether the above success can be replicated in India. In India, land records fall under the jurisdiction of state laws (Entries 18 and 45 in List II of the Seventh Schedule). The non-existence of a unique record of ownership, and land disputes are some challenges that permeate this sector.

In India, a new system to store land records in the blockchain is proposed by Excellence in Blockchain Technology (CoE BCT) and the National Informatics Centre (NIC)[11]. They propose a system wherein the existing history of transactions on land should be approved by Revenue functionaries before coming into the blockchain.[12] However, this is possible only if the existing recordkeeping is done meticulously. Chandigarh is a strong candidate to start with, the UT of Chandigarh has done a laudable job in ensuring that every parcel of land has a UID and every change in ownership has been systematically recorded.[13]

Furthermore, Georgia's National Agency of Public Registry (NAPR) has successfully registered land records on public blockchain and every citizen can verify if their land title is legitimate by use of a cryptographic hash. Their success is also largely dependent on the fact that Georgia became independent in 1991 and thus it had only 26 years' worth of records to digitise. Therefore, implementation in India of such a pilot project would be difficult because it requires 100% clean antecedents as a starting point. Hence, requiring a great deal of groundwork for them to be compliant to blockchain solutions.[14] (Considering there are several paper-based documents and the failure of the Land registry to do what is required during manual registration.)

Another challenge in India would be the modification or easing of regulations. Andhra Pradesh has partnered with start-up ChromaWay on a land registry pilot that uses blockchain[15]. It is the same start-up that partnered with Lantmäteriet, a land registry authority in Sweden. ChromaWay uses Esplix Smart Contract, which decrees that the buyer's bank submits (using its key pair) that it has received the purchased funds and send the contract to the land registry. The advantages of this process in Sweden were that the transaction time was reduced from 4 months to a few days, the buyer was granted a pending property title and thus the property cannot be sold the second time by the seller, further, the whole process was less expensive using a smart contract. However, a major challenge was that the use of electronic signatures for property transactions was not

t/downloads/the_bitfury_group_republic_of_georgia_expand_blockchain_pilot_2_7_16.pdf>

[11] 'Projects: Centre of Excellence- BlockChain Technology' <https://blockchain.gov.in> (CoE BCT & NIC are a team that collaborates with global experts to facilitate and encourage the development of blockchain to address and improve problems in governance).

[12] ibid

[13] NITI Aayog (n 108)

[14] ibid

[15] Sharanya Haridas, 'This Indian City Is Embracing Blockchain Technology—Here's Why' *Forbes* (5 March 2018) <https://www.forbes.com/sites/outofasia/2018/03/05/this-indian-city-is-embracing-blockchain-technology-heres-why/?sh=1bdbeb328f56>; Chromaway, 'The Land Registry in the Blockchain-Testbed' *Kairos Future* (March 2017) <https://static1.squarespace.com/static/5e26f18cd5824c7138a9118b/t/5e3c35451c2cbb6170caa19e/1581004119677/Blockchain_Landregistry_Report_2017.pdf>

allowed by Swedish Law[16]. Therefore, India to realise the full potential of blockchain and smart contract must modify its regulation, which will enable to scale such projects to production level.

A decentralised land registry would not only allow parties to trace ownership records, transaction history and permit verification of data, but it also encourages the payment of stamp duty, utilities, and can automate mutation of property. To promote its adoption, NITI Aayog in its discussion paper on 'Blockchain: The India Strategy' has emphasised the need to amend the existing laws on land transactions.

Moreover, laws such as The IT Act[17], does not afford legal sanctity to contracts causing the transfer of land. Additionally, The Registration Act requires the parties and witnesses to be present at the registrar's office[18]. Amending these laws will help solve the problem of mistrust and regulatory uncertainty surrounding blockchain.

The current plan to digitize land records is known as 'The Digital India Land Records Modernization Programme' (DILRMP) under 'Digital India'. The objective of the programme is to supplant the manual presumptive land-title system with a digital conclusive land-titling system. An Aadhar like UID is to be created for every land parcel in India by March 2022.[19] However, the implementation of this programme comes with certain warnings, the issues surrounding Aadhar including demographic and biometric duplication, lack of security, etc. Further, a cyber-attack on a digital land registry could result in the loss or theft of important data.[20]

Blockchain has the potential to eliminate a single point of failure and thus protect the sensitive data of the citizens. Lastly, smart contract enabled blockchain systems are inherently pseudonymous. But it will be essential, especially for rural beneficiaries to prove their real-life identity to rightfully access government land schemes. Through oracles, government databases containing user identities can be connected to smart contract applications, either by tying a user's identity to their on-chain address or off-chain server by attesting the data. This will ensure regulatory compliance and an additional level of security via dealing with known entities.[21]

V. THE WAY FORWARD

The first step would be to survey each parcel of land, which can then be registered directly on the blockchain. The land records on the blockchain are timestamped and can be made accessible to nodal governmental agencies, who can use unique private keys to verify the transfer of

[16] Rohan Bennett, Todd Miller, Mark Pickering and Al-Karim Kara, 'Hybrid Approached for Smart Contracts in Land Administration: Lessons from Three Blockchain Proofs-of-Concept' Land (22 February 2021) <https://www.mdpi.com/2073-445X/10/2/220>

[17] The Information Technology Act, 2000, s 24.

[18] The Registration Act, 1908, s 32.

[19] 'Digital India Land Records Modernization Programme-MIS 2.0' <http://nlrmp.nic.in/.>; See also 'DILRMP at a Glance' <http://revenueodisha.gov.in/sites/default/files/document/DILRMP/DILRMP_at_Glance.pdf.> Accessed on 25 August 2021.

[20] Bal (n 105)

[21] '77+ Smart Contract Use Cases Enabled' (Chainlink, 24 Nov 2020) <http://blog.chain.link>

title.[22] The relevant stakeholders who would have access to the data on the blockchain would be the owner (seller), buyer, Registrar, survey officer, Regulatory authority, Revenue department, banks and insurance providers. Data stored in blocks can trigger clauses in a smart contract to automate property transactions, provided they adhere to the regulations. Additionally, smart contracts can also control real-life assets example immovable property and insurance claims.

To sum up, several obstacles need to be resolved for the smooth adoption of smart contracts and blockchain in land-dealing applications. For instance, regulatory amendments, restructuring the existing administrative authorities responsible for land records, etc. Having said that, the government initiative to digitize land records for efficient management in land administration (DILRMP) and the proposed strategy by NITI Aayog, a government think tank is one step towards integrating the blockchain system in India. This technology, though at the nascent stage could be implemented without the need for significant disruption of the existing system and the potential of which should be realised.

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[22]Bal (n 105); See also, Vishnu Chandra, 'Blockchain for Property: A Roll Out Road Map for India', India Institute (2017) <http://indiai.org/blockchain-handbook/>