

A CASE FOR BLOCK CHAIN-BASED LAND REGISTERS IN INDIA

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ABSTRACT

The system of land registration and administration in India suffers from fraud and malpractices, time delays and is prone to human error. Inaccurate and incorrect land records are a cause of a majority of the land litigations in the country. To move ahead from the earlier paper-based land records and to mitigate some problems with respect to the maintenance of physical records, the Government of India initiated the digitisation of land records. However, the problem of malpractices and inaccuracy of data remained. The present article proposes the adoption of blockchain-based land registers in India to overcome the shortcomings of the present system. The article delves into the issues with the present land administration system and the bearing it has on India's desire to adopt a conclusive land titling system. The unique features of blockchain technology and how they can specifically address the problems pointed out, are also highlighted. Lastly, as with any new proposal, some potential roadblocks to switching to blockchain-based land registers are also noted.

Keywords: *Blockchain; Conclusive land titling; Land registration; Land records; Presumptive land titling.*

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Introduction

India follows a presumptive land titling system wherein holding registration documents does not provide conclusive proof of ownership. Land records in India are maintained on the basis of the details of past transactions in the form of sale deeds, records of inheritance, etc. Since land titles are based on a chain of transactions, it is necessary to keep a reliable record of the entire chain of transactions. A dispute in any link of that chain can lead to ambiguity in ownership. Accordingly, every land transaction requires an elaborate check on the veracity of the seller's title over the land that is to be purchased by the buyer. Thus, a prerequisite to conclusive titling is credible and unalterable land records.¹

Evidently, a need to leverage technology to modernise the land registration system was felt. Hence, the Government of India initiated the Digital India Land Records Modernization Programme ("DILRMP") to solve the cumbersome problem of maintaining and keeping paper-based land records.² However, much like paper-based records, digital records are also open to manipulation and alteration of data with relative ease.³

This calls for a more robust system of land registration which provides a safe, secure, transparent and credible platform for recording land transactions. Blockchain technology has certain inherent characteristics which make it the ideal choice for land administration and management.

The adoption of blockchain technology for land administration is no longer a novel concept, other countries such as Sweden⁴, Ukraine⁵ and Georgia⁶ have already adopted blockchain-based land registers. The present article seeks to examine the potential of a similar system of

¹ Moti Mahal, Invitation for presentation on "The use of Blockchain Technology for management of Land Records", https://landrecords.mp.gov.in/tender/Presentation%20Invitation%20for%20Blockchain_v3.pdf.

² Department of Land Resources, Programme Details, <https://dolr.gov.in/en/programme-schemes/dilrmp/digital-india-land-record-modernization-programme>.

³ Meghna Bal, Securing property rights in India through distributed ledger technology, Observer Research Foundation (ORF), (Jan. 5, 2017), <https://www.orfonline.org/research/securing-property-rights-india-through-distributed-ledger-technology/>.

⁴ Christine Kim, Sweden's Land Registry Demos Live Transaction on a Blockchain, CoinDesk, (Sept. 13, 2021, 1:33 PM), <https://www.coindesk.com/markets/2018/06/15/swedens-land-registry-demos-live-transaction-on-a-blockchain/>.

⁵ Volodymyr Verbany, Ukraine Turns to Blockchain to Boost Land Ownership Transparency, Bloomberg, (Oct. 3, 2017, 7:56PM), <https://www.bloomberg.com/news/articles/2017-10-03/ukraine-turns-to-blockchain-to-boost-land-ownership-transparency?leadSource=uverify%20wall>.

⁶ Marcell Nimfuehr, Blockchain application land register: Georgia and Sweden leading, Medium, (Dec. 3, 2017), <https://medium.com/bitcoinblase/blockchain-application-land-register-georgia-and-sweden-leading-e7fa9800170c>.

land administration in India. Accordingly, the following sections present a case for blockchain-based land registers, while also noting some of their shortcomings.

A Case for Block chain-Based Land Registers

Block chain technology is a peer-to-peer system based on a distributed ledger which can be used to keep a chronological record of transactions over the internet. The information stored is protected by a series of cryptographic functions and interconnected mechanisms. The technology has been highly praised for its application in the cryptocurrency domain – and rightly so, as it provides unmatched transparency, security, and an unalterable chronology of transactions, which can be used in land management and administration.⁷ The following section traces some inherent characteristics of blockchain technology and how it can overcome the ailments of the current land administration system.

1. The database's decentralised peer-to-peer structure

One of the major shortcomings of the current system of land administration is the lack of transparency. Despite the shift from paper-based records to digital records by way of the DILRMP initiative, the system for storing land data still heavily relies on government employees to process deeds and verify transactions as trusted third parties. This exposes the system to inefficient processing. The system is also prone to the dangers of cyberattacks which can compromise the sensitive information of thousands and lakhs of people.

A decentralised peer-to-peer system implies that the information is not stored in a centralised domain, rather it is distributed over a network of computer resources. In a national land registry system, this can mean a network of computers across national and state land departments/authorities.⁸ The distribution of information over multiple computers allows transactions to have a “public witness” which can help reduce the risk of cyber-attacks, as there is no one point of attack.⁹

⁷ Desiree Daniel & Chinwe Ifejika Speranza, The Role of Blockchain in Documenting Land Users' Rights: The Canonical Case of Farmers in the Vernacular Land Market, *Frontiers in Blockchain* 3, (2020).

⁸ Ana Reyna et al., On Blockchain and Its Integration with IoT. Challenges and Opportunities, 88 *Future Generation Computer Systems* 173, (2018).

⁹ Felix Bekemeier & Phillip Sandner, Public administration on a journey to decentralization, GIS, (Apr. 1, 2020), <https://www.gisreportsonline.com/r/blockchain-public-administration/>.

2. Reduction of intermediaries

The Registration Act of 1908's provisions state that registration does not need to verify the legitimacy of documents or transactions. The act of registering does not attest to the legitimacy of the underlying transaction; it only notifies the public that an agreement between the parties exists.¹⁰ Additionally, the system of presumptive titling only increases the chances of a dispute.

A transition to conclusive titling is required to minimise land-related litigations, which is why the Model Bill on Conclusive Titling was proposed. The Bill suggests the establishment and appointment of designated authorities and officers for title registration of immovable property.¹¹ Evidently, this system of conclusive titling will also rely on government employees, meaning the existing problem of processing inefficiency will remain. Further, if the conclusive titling is not based on true and updated land records, it can have catastrophic effects.

Blockchain technology is attractive for land administration as it enhances processing efficiency and removes third-party verification entities in validating transactions onto the blockchain. Provided the information entered on the blockchain is credible, it can reduce the effort and administration expenses that otherwise will have to be incurred to implement the Model Bill on Conclusive Titling. Updating land records on a nationally distributed ledger can guarantee conclusive titling automatically because of the secure and transparent nature of blockchain technology. In this manner, blockchain technology can provide the same results for conclusive titling but with fewer efforts.

3. Cryptographic and chronological linkages of transactions

The present system is rid of corruption and malpractices¹² which may be attributed to the high number of intermediaries. Further, land records are also not promptly updated. Hence, present records very rarely reflect the true ownership of a particular parcel of land. A report of the Comptroller Auditor General of India highlighted a backlog of 124,325 cases for registration

¹⁰ Lachhman Dass v. Ram Lal, 3 SCC 99, (1989).

¹¹ NITI Aayog, Government of India, Report of the Committee to Draft-Model Act Rules and Regulation on Conclusive Land Titling, https://prsindia.org/files/bills_acts/bills_parliament/1970/Report-of-the-Committee-to-Draft-Model-Act-Rules-and-Regulation-on-Conclusive-Land-Titling.pdf.

¹² Varinder Bhatia, Land Deed Registration Scam: Khemka puts scale to 'bribe economy': Rs 300 crore in 52 months, The Indian Express, (Mar. 28, 2022, 9:42PM), <https://indianexpress.com/article/cities/chandigarh/land-deed-registration-scam-khemka-puts-scale-to-bribe-economy-rs-300-crore-in-52-months-7841567/>.

of property in 2015.¹³ Even recently, due to the COVID-19 pandemic, revenue offices were shutdown, which put the registration of several high-value properties on hold.¹⁴

Blockchain technology contains cryptographic functions that secure the network and transactions. Daniel & Speranza explain that the data on a blockchain is linked in chronological order into a block. The block contains records of all transactions and/or updations which, due to the distributed nature of the ledger, are stored across all nodes. Hence, once a transaction and/or update is added to the blockchain, it is unalterable. Additionally, any data which is so contained in the blockchain, cannot be removed. Due to such working of the blockchain ledger, a virtually tamper-proof database of land records is possible.¹⁵ Thus, blockchain-based land registers can help overcome the corruption and malpractices rife in land registration and administration.

Shortcomings of Blockchain Based Land Registers

Even with the benefits mentioned above, some issues must be clarified before blockchain technology is adopted for land administration and management. The main roadblocks can broadly be classified as – 1) Legal, and 2) Organisational.

Organisational roadblocks pertain to certain limitations that blockchain registers are subject to because of human intervention and the availability (or lack thereof) of digital infrastructure. The correctness of the data being entered into the system is one human-related limitation; if the data is not reliable, then putting it on a distributed ledger will not produce the expected outcomes.¹⁶ Further, there is also a huge digital divide across communities which can hamper the adoption rate of blockchain for land transactions and administration.

Regarding legal restrictions, a smooth transition to blockchain registers will require data protection frameworks, accurately digitised land information, and the creation of rules for smart contracts. At present, the Information Technology Act, 2000 governs the collection, maintenance, processing and transfer of data, but to a limited extent. To fully switch to blockchain-based land registers, the law will need to keep up with technological developments.

¹³ Meghna Bal, *supra*.

¹⁴ Faizan Haidar, Several high-value property transactions in Delhi put on hold, The Economic Times, (Jan. 16, 2022, 7:34PM), <https://economictimes.indiatimes.com/industry/services/property/-/construction/several-high-value-property-transactions-in-delhi-put-on-hold/articleshow/88934753.cms>.

¹⁵ Desiree Daniel & Chinwe Ifejika Speranza, *supra*.

¹⁶ *Id.*

The Way Forward

India is beginning to move towards a blockchain-based land registration system. In 2017, Andhra Pradesh was the first State to announce that the land registration system of ChromaWay will be used as a pilot.¹⁷ Following suit, the government of Madhya Pradesh also released a tender, inviting presentations for the development of a blockchain system for land records.¹⁸

Blockchain technology has some obvious benefits, such as processing efficiency, prevention of fraud in property exchange, ensuring security, accountability and transparency of land transactions, and lowering the vulnerability to natural or man-made disasters (cyberattacks), which makes it ideal for land management and administration. However, it must also be noted that it is not a panacea for all deficiencies with the current system. Nonetheless, when a cost-benefit analysis of the advantages of the technology (reducing land administration malpractices) vis-a-vis its cost (high investment in the technology and personnel development) is done, the benefits of the technology far outweigh its shortcomings.

In conclusion, to reap the maximum benefits of blockchain-based land registers, India will first have to build an adequate level of digital infrastructure, spread awareness of digital literacy, accurately digitise land information, and provide a robust legal framework to govern land registration and administration over the blockchain.

¹⁷ Ryan Browne, [An Indian state wants to use blockchain to fight land ownership fraud](https://www.cnbc.com/2017/10/10/this-indian-state-wants-to-use-blockchain-to-fight-land-ownership-fraud.html), CNBC, (Oct. 10, 2017, 4:21 AM), <https://www.cnbc.com/2017/10/10/this-indian-state-wants-to-use-blockchain-to-fight-land-ownership-fraud.html>.

¹⁸ Moti Mahal, *supra*.